

Supplemental Materials for:
A Revolution of Rights in American Founding Documents

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1 Comparison of Different Scaling Methods

1.1 Bayesian, WOMINATE, and Optimal Classification

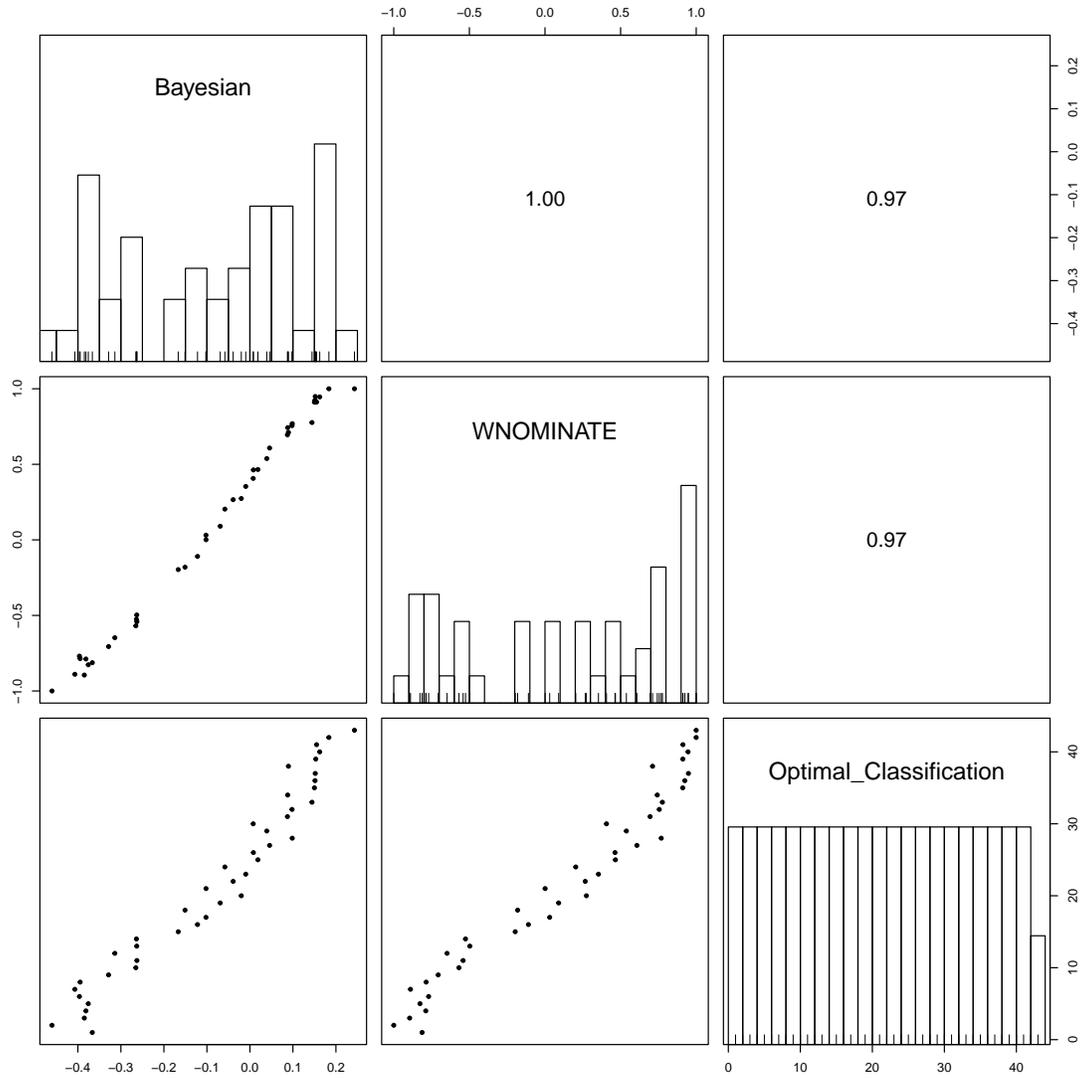


Figure A1: Using a Bayesian estimation procedure (as used in the main text) produces estimates that are highly correlated with other estimation procedures - the WNOMINATE procedure and an optimal classification model.

1.2 Omit One Category of Features at a Time

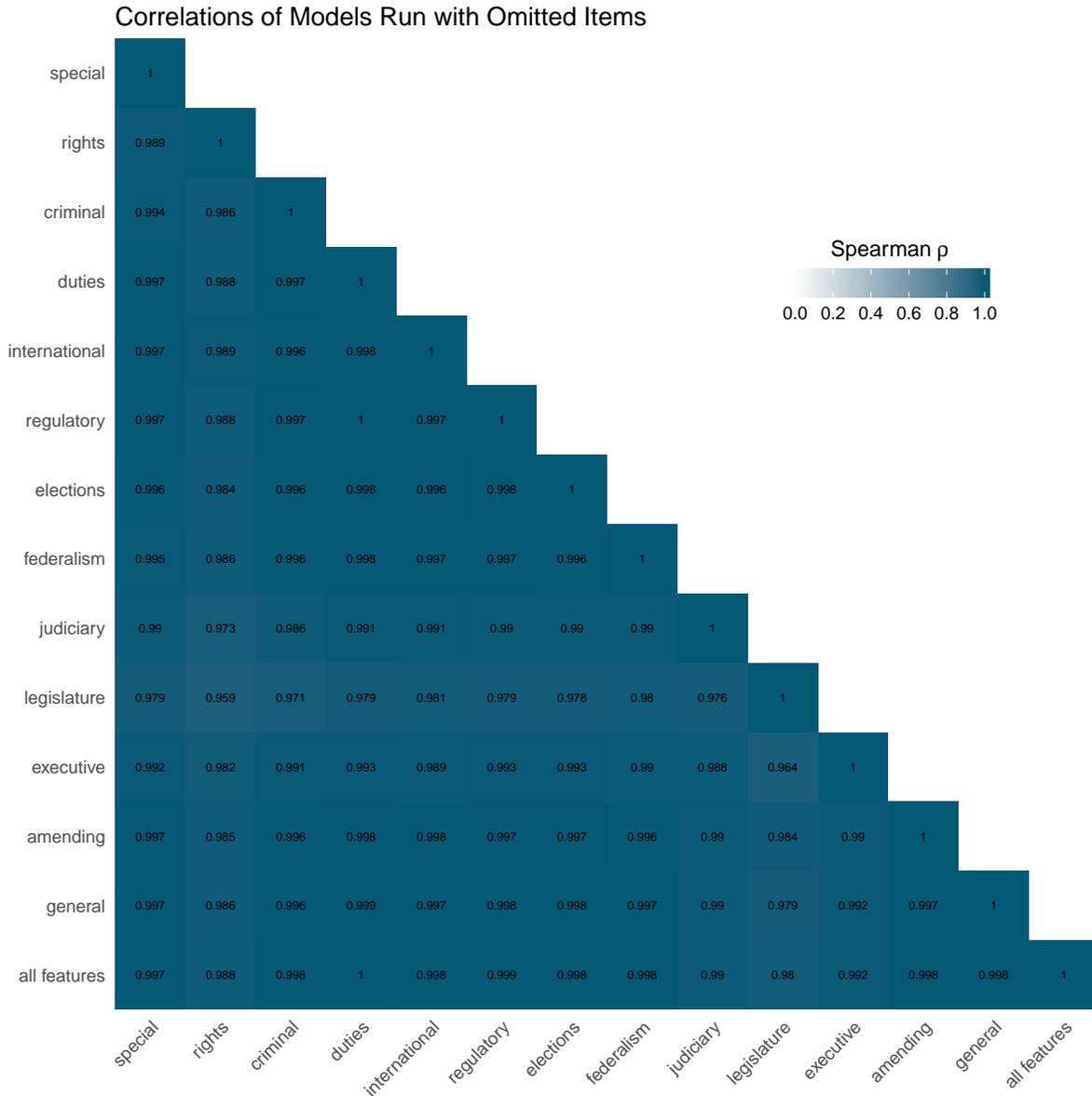


Figure A2: This matrix shows the correlation between estimates when one of the 13 institutional categories is omitted. In this way, we show that the estimated latent dimension is robust to the exclusion of different categories of institutional features. Most correlations are above 0.95, and no category is systematically driving the latent estimates described in the manuscript.

1.3 A Short Case Study: Virginia

The empirical data and statistical analyses in the main paper strongly support the claim that constitutions became more about the rights of citizens' protections from government with the advent of the American Revolution. In this section we take a brief moment to document exactly how this shift played out and use the state of Virginia as an example case study.¹

While under the king, subjects retained rights that were protected from the sovereign. However, the colonists were dissatisfied with these protections. About two months before the Declaration of Independence was adopted in Philadelphia, George Mason of Virginia began drafting a kind of preamble to the new Virginia Constitution. He eventually drafted ten articles (though three others were added in committee). Mason drew his inspiration from the English Bill of Rights (assented to by King William III and Queen Mary II in 1689) as well as colonial sentiment and philosophy. Consider a portion of the document that was finalized and adopted. It opens with the following passage:

A declaration of rights made by the representatives of the good people of Virginia, assembled in full and free convention; which rights do pertain to them and their posterity, as the basis and foundation of government.

SECTION 1. That all men are by nature equally free and independent, and have certain inherent rights, of which, when they enter into a state of society, they cannot, by any compact, deprive or divest their posterity, namely, the enjoyment of life and liberty, with the means of acquiring and possessing property, and pursuing and obtaining happiness and safety.

The document goes on to describe the rights of the people, the equality of the citizens, the importance of free elections, and several restrictions on the government such as legal protections, the freedom of the press and of religion, as well as the idea that “a well-regulated militia, composed of the body of the people, trained to arms, is the proper, natural, and safe defense of a free state . . . and that in all cases the military should be under strict subordination to, and governed by, the civil power.” This beginning stands in stark contrast to the beginning of the 1611 Virginia Charter:

JAMES, by the Grace of God, King of England; Scotland, France, and Ireland; Defender of the Faith; To all to whom these Presents shall come, Greeting. WHEREAS at the humble Suit of divers and sundry our loving Subjects, as well Adventurers as Planters of the first Colony in Virginia, and for the Propagation of Christian Religion, and Reclaiming of People barbarous, to Civility and Humanity, We have, by our Letters-Patents, bearing Date at Westminster, the three-and-twentieth Day of May, in the seventh Year of our Reign of England, France, and Ireland, and the two-and-fortieth of Scotland, GIVEN and GRANTED unto them that they and all such and so many of our loving Subjects as should from time to time, for ever after, be joined with them as Planters or Adventurers in the said Plantation, and their Successors, for ever, should be one Body politick, incorporated by the Name of The Treasurer and Company of Adventurers and; Planters of the city of London for the first Colony in Virginia.

The remainder of the document is no less tedious. And indeed, the only section of that document that uses the term “right” is the following quotation which, after naming the key planters who are to be given authority in the colony, states:

¹For more on how the Virginia state constitution evolved over time see ?.

[they] are become Adventurers, and have joined themselves with the former Adventurers and Planters of the said Company and Society, shall from henceforth be reputed, deemed, and taken to be, and shall be Brethren and free Members of the Company; and shall and may respectively, and according to the Proportion and Value of their several Adventures, HAVE, HOLD, and ENJOY, all such Interest, Right, Title, Privileges, Preheminences, Liberties, Franchises, Immunities, Profits, and Commodities, whatsoever, in as large and ample and beneficial Manner, to all Intents, Constructions, and Purposes, as any other Adventures nominated and expressed in any our former Letters-Patents, or any of them have or may have by Force and Virtue of these Presents, or any our former Letters-Patents whatsoever.

In contrast, the simple word “right” or “rights” appears no fewer than fourteen times in the 1776 Virginia Constitution. Furthermore, this is not an exhaustive catalogue of the rights that were protected by the 1776 constitution. We merely offer it as an example of how dramatically things changed. Both the rhetoric and the substance of rights changed significantly in the fundamental laws of the colonies in 1776. Though not all colonies have as stark a story as does Virginia, a glance at Figure 3 in the main manuscript reveals that Virginia’s record on rights was far from an outlier of any sort.

1.4 Text-based scaling methods

As an additional validation of our estimates, we exploit the textual content of each document. In this analysis we re-estimate the latent position of each constitution or charter using the actual language contained within the document rather than as a function of a features-based coding. Using the actual text of the documents addresses concerns of systematic bias in the coding of the document-features matrix that we analyzed in the previous section. Furthermore, we earlier noted a limitation of the features-based analysis was the fact that any set of features will inevitably omit potential features that code be included in the analysis. Using the text of the documents is immune to this concern as there are no features to be coded but rather the analysis is conducted using the actual words that each constitution-writing body chose to include in their final documents. Political scientists have used text analysis to study the public statements of U.S. legislators (Grimmer, 2013), the manifestos of political parties (Volgens and Hearl, 1992), and national constitutions (Rockmore et al., 2018). We take this method of document analysis and apply it to the charters and constitutions of the early American republic.

To accomplish this, we first use the “WordFish” method proposed by Laver, Benoit and Garry (2003) which estimates the following model:

$$y_{ij} \sim \text{Poisson}(\lambda_{ij})$$
$$\lambda_{ij} = \exp(\alpha_i + \psi_j + \beta_j x_i)$$

Where the outcome y_{ij} is the count of word j in document i . As before we treat this outcome as a function of a set of unobservable latent parameters where α_i is an estimate of the “loquaciousness” of each document. The parameter ψ_j gives us an estimate of how frequently a given word appears across documents and is analogous to the difficulty parameter in our IRT setting. Similarly, the parameter β_j is analogous to the discrimination parameter in the IRT framework and gives us the word specific weight capturing the importance of word j in discriminating across constitutions. Last, our parameter interest x_i gives the ideal point estimate of document i based upon its text.

The goal of this exercise is to compare the estimates of x_i derived from our IRT procedure to our estimates of the equivalent parameter derived from the WordFish estimator.² In the IRT analysis of the documents of the early United States we found that documents are best differentiated by the degree to which they delineate the rights of citizens. We, likewise, expect to find a similar pattern when considering the text of these documents. In Figure A3 we display the IRT (y-axis) and wordfish estimates (x-axis) for each document in a simple scatterplot. The strong correlation between the two measures of the location of each document in the underlying latent space is immediately apparent. The correlation in the full set of charters and constitutions between the IRT and WordFish estimators is .86. Excluding the clear outlier of the Articles of Confederation increases the correlation to .92.

We note that the Articles of Confederation are a distinct outlier in this plot. While the Articles group with the charters in the features-based analysis, they cluster with the state constitutions of 1776 in the wordfish text analysis. This may be the case because the Articles represent a unique document in the corpus of charters and constitutions. As the first national constitution of the early United States, they represented the first attempt at the idea of a federal document that applied to the entire nation rather than an individual state. Given the view at the time of the

²We follow standard stemming procedures and remove numbers, punctuation and common English stopwords. In the supplemental materials we provide results indicating that our results are strongly robust to the degree of sparsity we admit.

federal government acting as a weak confederation of strong and largely independent states, the Articles lacked many of the references to individual rights that the state constitutions contained. In this way, the features contained in the Articles are more similar to the charters than they are to the state constitutions or the US Constitution of 1788. However, the Articles were composed and ratified several years after many of the state constitutions that were drafted in 1776. Thus, the text and language used in the Articles may be more similar to the documents that were written during the same time period. Thus the Articles represent an interesting link between the charters and constitutions as they use the language of post-revolutionary constitutions but contain the features of the pre-revolutionary charters

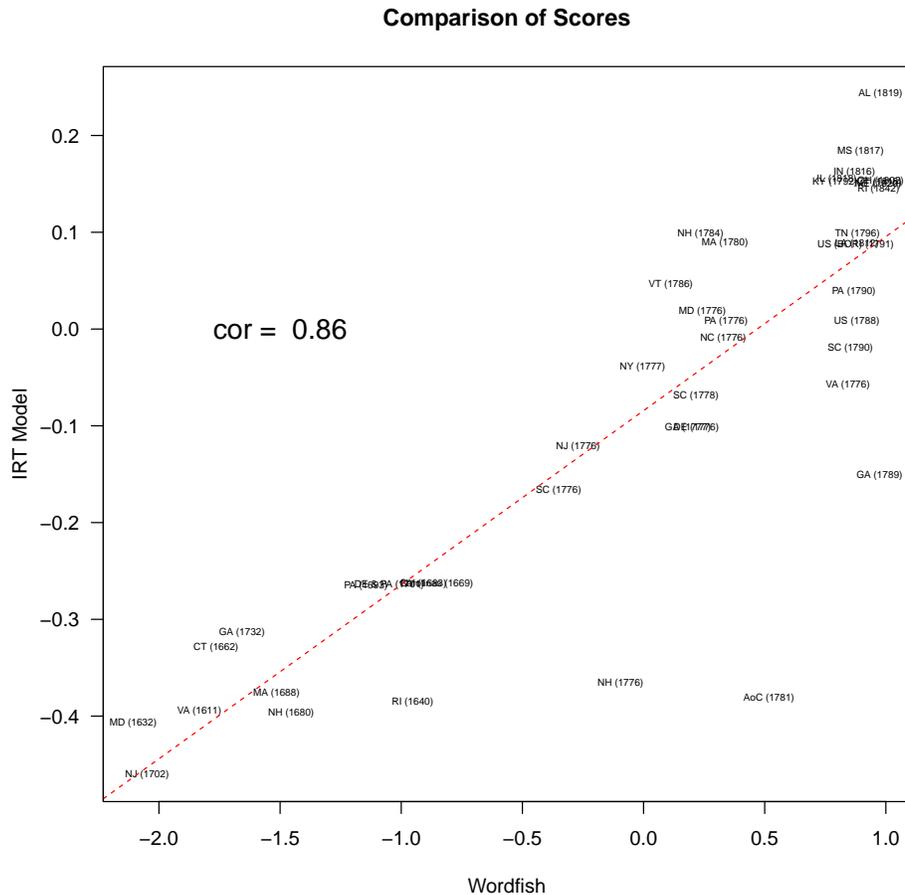


Figure A3: The x-axis displays the *Characteristic Score* for each constitution when estimated using the Wordfish text scaling method. The y-axis displays the *Characteristic Score* for each constitution when estimated using the IRT model. We see a strong correlation between the two different methods, despite their very different methods of estimation.

In Table A1 we replicate Table 2 in the main text but now treat the WordFish estimate of each document’s latent similarity as the outcome variable. The results are nearly identical to those using the IRT measure and indicate that there are three broad clusters of documents: pre-revolutionary charters, revolutionary constitutions, and documents composed after the promulgation of the Federal constitution of 1789. The only substantive difference between Table A1 and Table 2 is the insignificance of the coefficient on document length when it is included as a

regressor (Column 4). Of course, this is because when estimating WordFish scores, unlike as in the IRT model, document length is accounted for directly in the loquaciousness parameter of the model.

Table A1: Regression Results using Wordfish Estimation Procedure

Dependent Variable: Text-Based <i>Characteristic Score</i>					
Revolutionary Constitution	1.67*** (0.12)	1.41*** (0.28)	1.36*** (0.28)	1.36*** (0.28)	1.33** (0.42)
Post-Revolution Constitution	2.34*** (0.12)	2.01*** (0.35)	1.98*** (0.34)	1.98*** (0.34)	1.80** (0.50)
National Document			0.34* (0.19)	0.34* (0.19)	
Document Length (Logged)				-0.02 (0.10)	-0.16 (0.16)
Year		0.002 (0.003)	0.003 (0.002)	0.003 (0.002)	0.004 (0.004)
N	43	43	43	43	43
$Adj.R^2$	0.90	0.90	0.91	0.90	0.88

In each model the dependent variable is the estimated document *Characteristic Score*. Revolutionary and post-revolution constitutions have consistently higher scores than colonial charters, which serve as the baseline category. This is true even after controlling for the year of ratification and document length. The final model includes state fixed effects, which measure the within state effects and account for time-invariant features unique to each state. Significance codes $*p < .1$, $**p < 0.05$, $***p < 0.01$, two-tailed tests.

Both our analyses of the features and text based estimates of constitutional similarity indicate that there are three broad clusters of documents—pre-revolutionary charters, the constitutions of the revolutionary period, and the constitutions of states admitted after the formation of the Union in 1789. To further explore the grouping of these different documents, we exploit a related automated method of text analysis that uncovers the best classification, or grouping, of textual documents, the latent Dirichlet allocation method of Blei, Ng, and Jordan (2003). This particular method of analysis assumes that each document is a mixture of latent topics and assigns and recovers numerical estimates describing the proportion of each “topic” that best characterizes each document. Given our hypothesis of three distinct periods of constitution writing, we constrain the number of latent topics to be equal to three. We note that the particular substance of the topics will be an amalgamation of concepts, ideas, words, and phrases. The substance of each topic is, however, less important here. We are instead primarily interested in the clustering of documents within topics, not the content of the topics themselves. Figure A4 then plots the topic that best characterize each document against our IRT and Wordfish estimates. It is apparent in Figure A4 that our regression based method of describing the clusters of constitutions and charters matches this text-based method of clustering with, generally, the same three classes of documents emerging.

The colonial charters are represented by triangles and are exclusively classified as belonging best to Topic 1. The revolutionary constitutions are represented by circles and tend to best belong to Topic 2. Finally, the post-revolutionary constitutions are shown in Figure A4 by squares and

mostly cluster around the third topic. In sum, while there are a few misclassifications, across all three classification techniques—IRT, text-based, and topic modelling—we find very close alignment of our measures of document similarity.

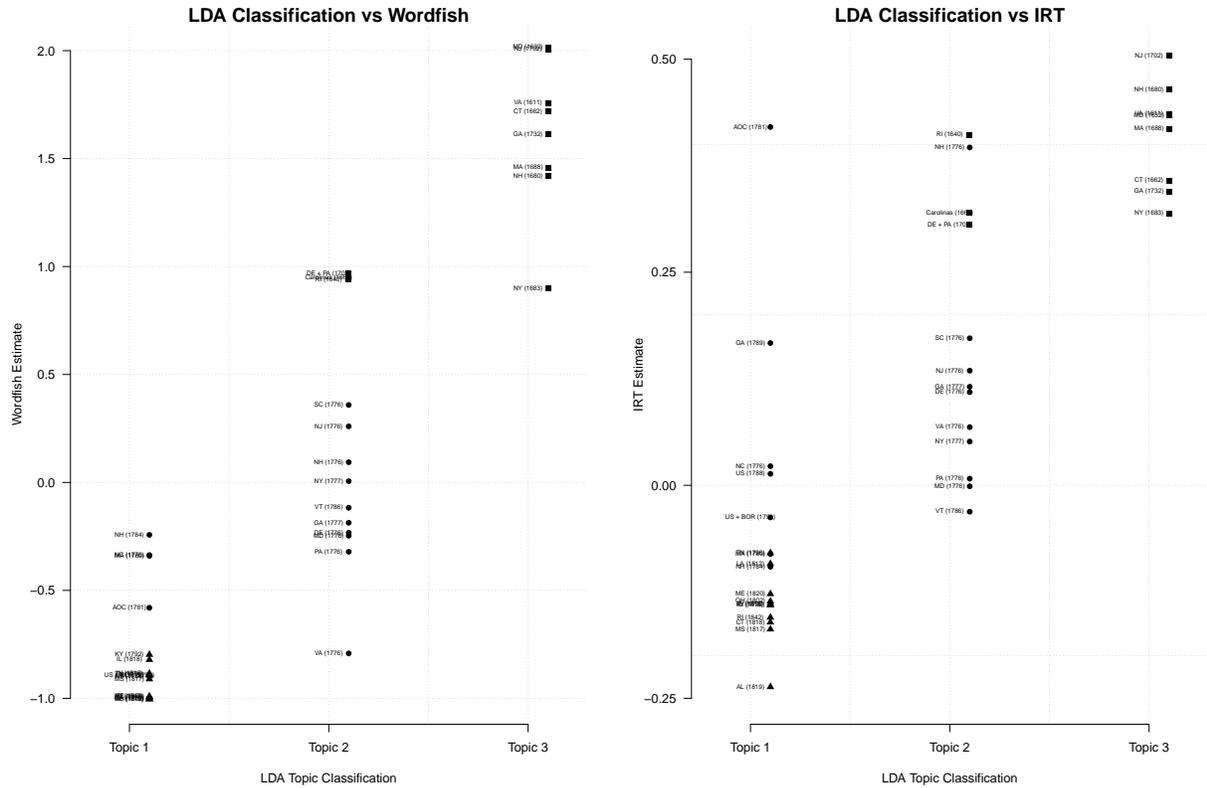


Figure A4: The x-axis displays which documents are classified as belonging to each of the three latent “topics” using a topic modelling method of estimation. The y-axis of the left panel shows the *Characteristic Score* of each document when estimated using the wordfish text scaling method. The y-axis of the right panel shows the *Characteristic Score* of each document when estimated using the IRT scaling method. The strong correlation indicates that all three methods of estimation produce very similar results.

2 IRT Model - Second Dimension

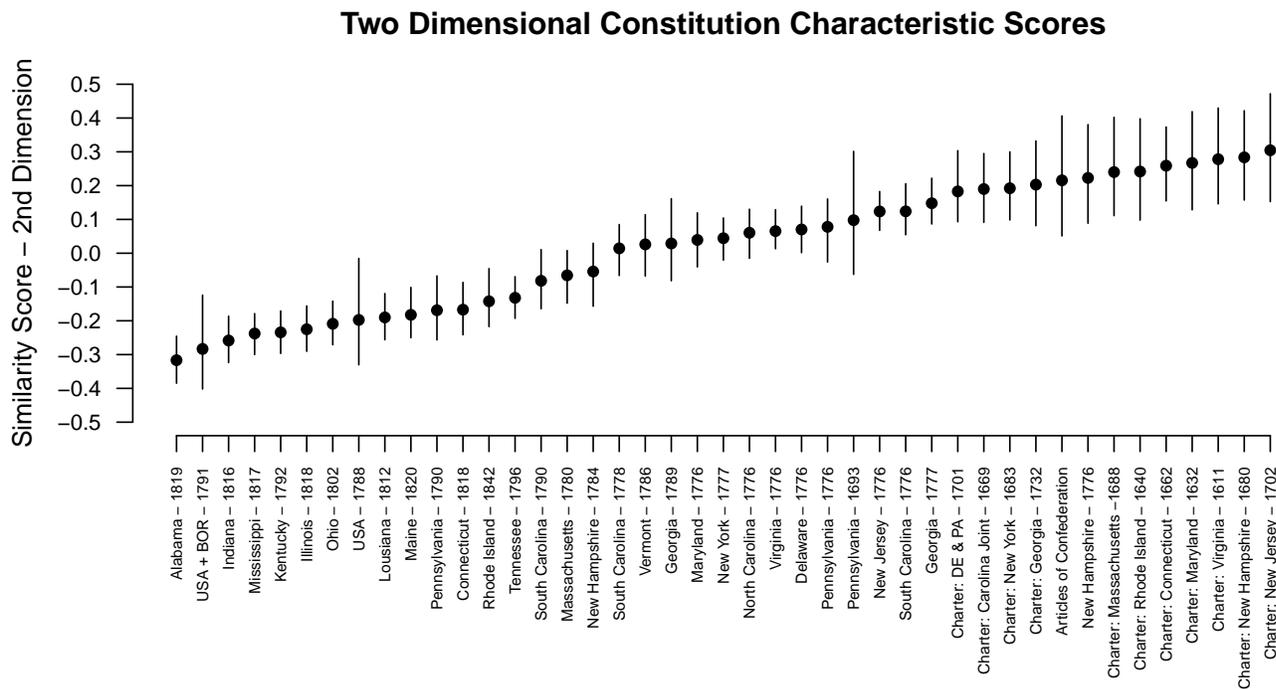


Figure A5: This figure plots the estimated latent scores for the second dimension of the Characteristic Score. In the main manuscript we present and discuss the first dimension only. This is, as we say in the manuscript, largely because the second dimension (and additional dimensions beyond that) explains significantly less of the variation in documents than does the first dimension. However, we show the second dimension here and hypothesize that the second dimension is capturing the difference between charters, state constitutions, and national documents. Note that the largest scores are the charters while the US constitution is the second smallest value. This dimension, however, is estimated with much greater uncertainty, as is evidenced by the larger confidence intervals around the latent scores.

3 Full Distribution of Discrimination Parameters

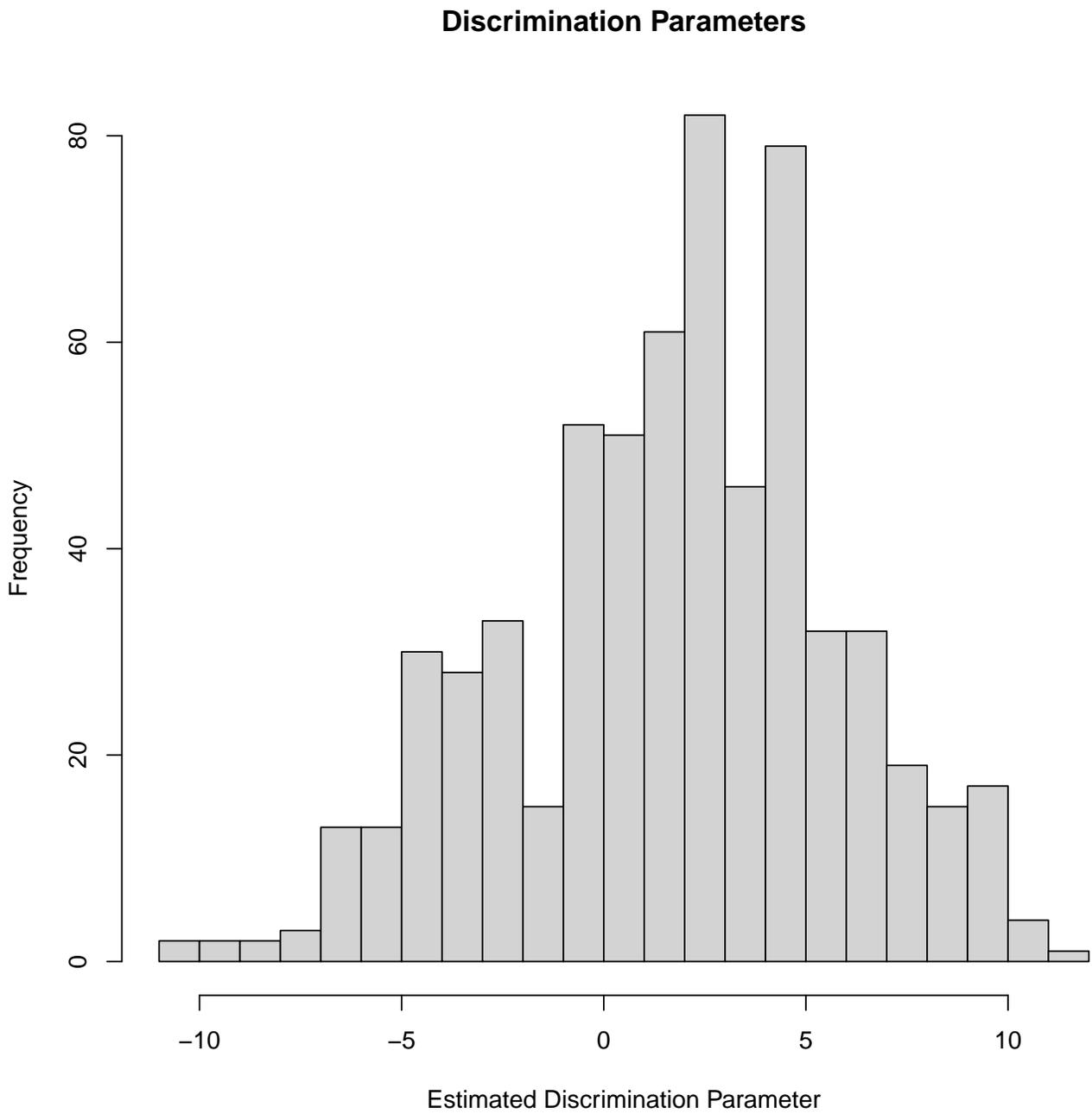


Figure A6: This figure shows the full distribution of discrimination parameters produced when estimating the first dimensional model.

4 List of Rights Provisions Used in Analysis

- Requirement of juries for criminal trials
- Citizen involvement in indicting process
- Regulation of collection of evidence
- Pre-trial release
- Habeus Corpus
- Capital punishment prohibited
- Corporal punishment prohibited
- Due Process
- Right to confront witnesses
- No ex post facto laws
- False imprisonment redress
- Fair trial guarantee
- Public trial guarantee
- Presumption of innocence
- Double jeopardy prohibition
- Right to counsel
- Detention of debtors forbidden
- Equality before the law
- No Property ownership restrictions
- No Women's rights restrictions
- No other groups rights restrictions
- Official religion prohibited
- Freedom of religion
- Expropriation protections
- Right to own property
- Provision for civil marriage
- Right to life
- Prohibition on slavery
- Prohibition on torture
- Prohibition on cruel treatment
- Right of privacy
- Freedom of movement
- Freedom of opinion
- Freedom of speech
- Prohibition on censorship
- Freedom of the press
- Freedom of assembly
- Freedom of association
- Conscientious objector to military service
- Right to bear arms

5 Constitutions and the Battle Over a National Bill of Rights

As a final investigation of our theory about the substance of rights and their importance to this founding period, we consider how the shift towards including political rights in the founding documents of the American colonies may have affected the drafting of the US Constitution. One of the most contentious issues in the debate over the ratification of the US Constitution was the inclusion of a bill of rights (?). The Anti-Federalists refused to ratify without such a listing, or at least the promise of one. When James Madison and the other Federalists agreed to enact such amendments (after ratification) it was, perhaps, the key concession that secured ratification.

Alone, this fact suggests that the culture of rights was deeply important at this time. However, we can go one step further and ask if states with a greater number of political rights in their *own* constitutions—and thus perhaps a greater political culture favoring the explicit protection of

rights—were more inclined to support or oppose the ratification of the U.S. Constitution. The ratification debate often turned on the question of a bill of rights. Even though the existing Constitution had some guarantees of rights such as the protection of *habeas corpus* and the prohibition of *ex post facto* laws, the promise of a bill of rights became the key to winning passage of the document. Throughout the debates the anti-federalists emphasized that the proposed constitution insufficiently protected rights. For instance, in the Virginia ratifying convention Patrick Henry argued that the convention should “refer a declaration of rights with certain amendments to the most exceptionable parts of the Constitution, to the other States” previous to any ratification vote (?). Since the prospect of a second convention that could reopen the entire set of bargains and proposals carried with it enormous risks, proponents of the Constitution publicly agreed to support amendments that would eventually become the Bill of Rights as it is known today.

Was there a correlation between the states with higher *Characteristic Scores* (and therefore a relatively higher local emphasis on rights) and a reluctance to ratify the Constitution? Despite the fact that we have argued that the key factor in constitutional changes was time and not region, there is still variation in how far each state’s constitution went. Our estimated *Characteristic Score* serves as a proxy for each state’s commitment to the inclusion of enumerated rights and gives us just such a test. Since many of the people involved in the drafting of these state constitutions were also involved in the drafting of the federal constitution and the ratification debates that took place across the states, it is a reasonable place to investigate.

We should recognize at the outset that this is not a question that can be answered with an abundance of data since we are limited to the eleven states that held ratification votes previous to the formation of the government and also drafted new constitutions prior to the ratification debate (Rhode Island and Connecticut continued operating their governments based on past practice and their colonial charters rather than drafting new written constitutions at this point). However, the correlation between our estimates of constitution characteristics and the margin of the final ratification vote in each state’s convention is relatively high (-0.56). The negative correlation indicates that states with higher *Characteristic Scores* (which relate to a greater number of enumerated rights within the document) had smaller margins in favor of adopting the federal constitution. Figure A7 plots this relationship.

As can be seen in the figure, the correlation is strong, although we emphasize that the data are sparse. States with the higher *Characteristic Scores* had narrower margins in debate, $p = 0.07$. Though we would hesitate to make too much of this single event, it is a striking pattern. The traditional story told about ratification (?) is that it was the political forces of delay that caused those in favor of ratification trouble. However, there is no correlation between length of time between the federal convention and the margin of victory for the pro-ratification side in a state, $p = 0.334$. In a model where the ratification margin is regressed on the two variables (time and our *Characteristic Score*) the *Characteristic Score* retains a negative coefficient with a slightly larger p -value ($p = 0.11$). The coefficient remains essentially unchanged from the model that uses only the *Characteristic Score*. A likelihood ratio test comparing the difference between the two coefficients yields a p -value of 0.90 indicating that the two models are not different, suggesting that time is not contributing to the model.³ Taking these limited data at face value, the evidence is more strongly in favor of a state’s commitment to rights being a predictor of the margin of victory in the different state convention votes over the adoption of the Constitution than it is for the traditional story of a delay in time. Furthermore, the relationship aligns with the stated concerns of those who opposed adoption that we describe above. Again, we see that rights and a culture of rights protection were central to this founding moment.

³We again add caution regarding regression analysis with only eight or nine degrees of freedom.

Estimates by Ratification Margin
 $r = -0.56$

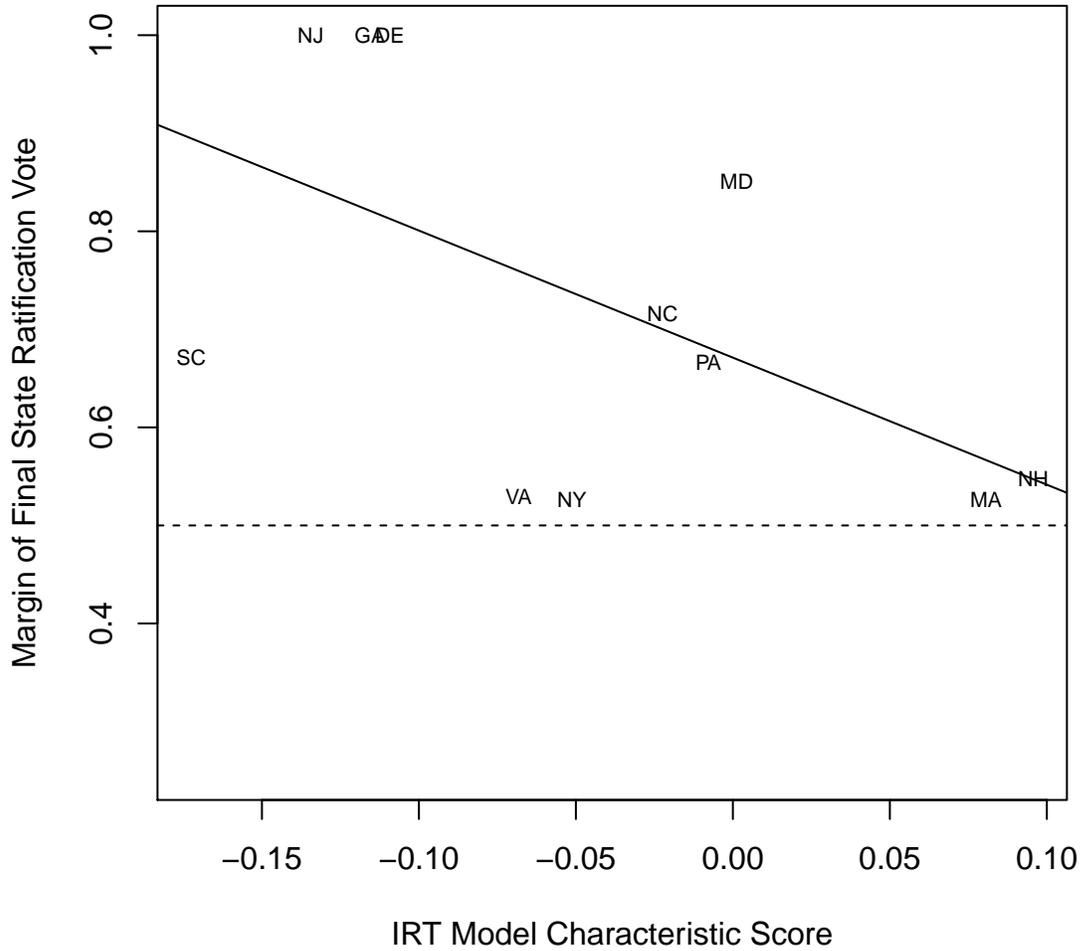


Figure A7: Margin of the final ratification vote in state conventions by the estimates of the state constitutions' *Characteristic Score*. The solid line shows a regression line and the dashed line shows the margin necessary to “pass” the Constitution in state conventions. Since Connecticut and Rhode Island did not have new constitutions at this point in time (though they would subsequently) they are omitted from this plot.

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