

The Pennsylvania State University
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**AMERICAN POLITICS IN PERSPECTIVE:
THE LIMITATIONS OF STATIC CONSTITUTIONS AND STATIC CONTENT**

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by
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Abstract

Why has the United States become one of the most polarized and unequal countries in the democratic world? I argue that the American constitutional model is no longer compatible with American society. Large, diverse republics generally need more flexible institutions that are geared toward consensus building rather than majority rule to remain free and stable. Over the last half century, the American electorate has become more diverse than its institutions can handle. Americans are now gasping for a multiparty system and other updates that are not viable under the current framework. The equal representation of states in the Senate, majoritarian elections, and outdated amendment process have enabled economic inequality and polarization to rise by blocking routine maintenance to the nation's democratic institutions and economic strategies. American democracy is now struggling not in spite of the Constitution, but because of it. A constitutional convention may be necessary to address these challenges in the long run.

Adding to the difficulty of constitutional reform, political misinformation has been getting more sophisticated—misleading charts often go viral, reaching millions of people—and paywalled PDFs are no match for modern media. Embracing dynamic data visualizations, videos, and interactive articles would help researchers advocate for policies that could strengthen American democracy. To illustrate this point, each chapter of this dissertation features an interactive data app showing how political institutions affect a variety of outcomes. I also shared animated charts adapted from these figures on social media and reflected on the experience. The dissertation as a whole is designed to inform the public and contribute to the academic literature at the same time.

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Preface to the Print Edition

One of the central arguments of this dissertation is that academic research would benefit from embracing modern media formats such as interactive data visualizations and online publications, discussed at length in Chapter 2. To demonstrate this point, the web version of this dissertation features interactive visualizations, videos of animated graphs, collapsed appendices throughout the text, buttons that translate old quotes into more modern language, and other interactive content that cannot be adequately displayed in a PDF.

At the same time, providing printable versions of interactive publications is important for preserving the material long into the future and accommodating readers who prefer reading hard copies. This print version captures as much of the interactive content from the online version as possible. It includes screenshots of interactive figures so that they can still be represented, referenced in the text, and linked in the list of figures. Appendices are displayed as collapsible boxes throughout the text in the web version but are all displayed after the final chapter in the print version. To keep the text consistent, references to “the appendix below” are kept in the print version even though they are not immediately below the corresponding text.

The primary advancements of this work relate to data visualization and theoretical development. Many of the empirical analyses and discussions in this dissertation are light, so they may be updated in the future. To read the most up-to-date edition of this work, see the web version. Each previous version is posted along with a description of the updates made each time.

**The web version of this dissertation (the preferred version) is available at
nmorse.com/dissertation**

1 Introduction

IT WAS SEPTEMBER 1787, just four years after the end of the American Revolution. The United States, a mere infant on the global stage, was wobbling toward failure at an alarming rate. Riots were breaking out around the country, states were fighting each other, and the federal government could barely keep the country together. Whatever respect it had—from its own people and from around the world—was drying up. The union was on the brink of collapse.

A convention of around 50 delegates had been debating solutions for months, desperate to save the union from recolonization by the British. Early on, the delegates had agreed that their current constitution, known as the Articles of Confederation, was riddled with problems so deep that they needed to scrap it altogether and start from scratch. Over the summer, they hashed out details of a completely new document that today we refer to simply as the Constitution.

Benjamin Franklin, probably the most respected delegate at the convention, carefully planned his closing remarks for the final day of debate. At 81, his health was too fragile to stand up and speak, so he handed his draft to a colleague to read on his behalf (Rossiter 1952). In this brief but powerful speech, Franklin (1787) admitted that he didn't particularly care for this constitution. He had a whole range of problems with it, but he thought it best to keep them to himself.

I confess that there are several parts of this constitution which I do not at present approve, but I am not sure I shall never approve them. ... The opinions I have had of its errors, I sacrifice to the public good. I have never whispered a syllable of them abroad. Within these walls they were born, and here they shall die. If every one of us in returning to our Constituents were to report the objections he has had to it, and endeavor to gain partizans in support of them, we might prevent its being generally received, and thereby lose all the salutary effects and great advantages resulting naturally in our favor among foreign Nations as well as among ourselves, from our real or apparent unanimity.

Franklin believed the delegates didn't have much of a choice. The Constitution would at least *delay* a slide back into authoritarianism—better than nothing.

In these sentiments, Sir, I agree to this Constitution with all its faults, if

they are such; because I think a general Government necessary for us, and there is no form of Government but what may be a blessing to the people if well administered, and believe farther that this is likely to be well administered for a course of years, and can only end in Despotism, as other forms have done before it, when the people shall become so corrupted as to need despotic Government, being incapable of any other. I doubt too whether any other Convention we can obtain, may be able to make a better Constitution. ... From such an assembly can a perfect production be expected?

Even if there was time to debate the draft more (which there wasn't), none of these delegates really knew how to make it any better. This experiment, a bold venture into an ancient system of government, was the first of its kind in thousands of years. If this new constitution failed, no one really knew what to try next. The founders thought their first attempt would work, but it didn't. This new document—a patchwork of guesses and compromises—was their only hope to stabilize the union. Some might even argue that democracy itself was at stake; if this experiment failed, perhaps no one would have attempted it again for ages to come.

The draft passed, launching the American Experiment 2.0 by 1789. It still stands to this day as the foundational document of the US, the oldest of its kind in the world.¹ The remarkable endurance of the Constitution through the centuries is a source of great pride for Americans. Many see its apparent immortality as a sign of its merit; it's lasted this long, so it must be well designed. The United States is the most powerful country in the world, so the Constitution must be doing something right. Indeed, if survival and power were the only goals, the Constitution was spectacularly successful. Yet few, if any, of the founders expressed a desire for the Constitution to last this long. Its very first sentence lays out far more than that:

We the People of the United States, in Order to form a more perfect Union, establish Justice, insure domestic Tranquility, provide for the common defense, promote the general Welfare, and secure the Blessings of Liberty to ourselves and our Posterity, do ordain and establish this Constitution for the United States of America.

Neither longevity nor dominance was ever a goal of the Constitution.² In fact, after

¹The Magna Carta (1215) is a much older foundational document, but scholars disagree on whether it counts as a constitution (Radin 1947). It is more similar to a bill of rights than a modern constitution that lays out the institutional structure and processes for a political system. The structures and processes that it did enumerate related to powers of the king, barons, and clergy, which now have little to no relevance in the United Kingdom's political system; nearly all of the Magna Carta's provisions were repealed in the nineteenth century (Blick 2015). For these reasons, the Magna Carta is a fundamentally different type of document than most other constitutions from the last two centuries.

²One could argue that the phrase "secure the Blessings of Liberty to ourselves and our Posterity" im-

enduring the reign of the British Empire, the founders fought for quite the opposite. America was built not on a lust for global power and wealth, but on a modest longing for individual freedom. It was established on the notion that living in a fair system is more important than keeping the old one alive. At the very least, most of the founders recognized that any political system is bound to someday run its course and decay beyond repair. The question was not *if* the Constitution would fail, but *when*. After all, it would be pretty far-fetched to convince oneself that a constitution is destined to endure for all eternity; at some point it will end. As you may recall, Franklin predicted that the Constitution would be “well administered for a course of years, and can only end in Despotism.” Thomas Jefferson (1789a) warned that all constitutions are prone to corruption at some point. To be safe, he argued, all constitutions should only last 19 years.³

[N]o society can make a perpetual constitution, or even a perpetual law. The earth belongs always to the living generation. ... Every constitution, then, and every law, naturally expires at the end of 19 years. If it be enforced longer, it is an act of force and not of right.

Jefferson believed that a permanent constitution with an indefinite timeline was morally wrong as it would infringe on future generations’ right to self-govern. Furthermore, future generations cannot depend on amendments alone to govern freely, no matter how flexible or “living” a constitution is.⁴ Without a mechanism to periodically reset the system, previously unforeseen forms of corruption and demagoguery can become solidified. Each generation has the natural right to form its own institutions so it can stamp out legacies of oppression, debts, and mistakes of the past. By Jefferson’s standards, the Constitution “naturally expired” in 1808, making it 11 times overdue for a full reevaluation.

The system Americans live in today is not their own. It does not belong to the living

plies that the Constitution was intended to live as long as possible, as “posterity” refers to all generations into an indefinite future. But this phrase is more specific than simply calling for the the Constitution to last long; it calls for the Constitution to last long *in good health*. The performance of the Constitution was more important than its longevity.

³19 years is a odd number. Jefferson laid out some complicated math for how he came up with that figure, which is discussed in Chapter 5.

⁴In Jefferson’s words: “It may be said that the succeeding generation exercising in fact the power of repeal, this leaves them as free as if the constitution or law had been expressly limited to 19 years only. ... But the power of repeal is not an equivalent. It might be indeed if every form of government were so perfectly contrived that the will of the majority could always be obtained fairly and without impediment. But this is true of no form. The people cannot assemble themselves; their representation is unequal and vicious. Various checks are opposed to every legislative proposition. Factions get possession of the public councils. Bribery corrupts them. Personal interests lead them astray from the general interests of their constituents; and other impediments arise so as to prove to every practical man that a law of limited duration is much more manageable than one which needs a repeal.”

generations. It belongs to the past. More specifically, it belongs to a select few of a generation from long ago. The Constitution was crafted exclusively by wealthy white men, most of whom owned slaves and practiced law. They were what John Adams (1813) called the “natural aristocracy,” an elite class that considered itself to be the only class fit enough to hold power. These “natural aristocrats” only wanted democracy among themselves, which is why the right to vote was never mentioned in the Constitution until the 15th Amendment was ratified in 1870.

Even today, the right to vote apparently only extends to choosing leaders, not to choosing the system. Not once in the history of the nation have “the People” ever been asked if they consent to their own social contract. The last time Americans had a serious conversation about the design of the Constitution was the 1700s. Even then, the only people who had a say in it were wealthy white male politicians elected by other wealthy white men. Few constitutions still in existence were installed through such openly autocratic means; most republics and US states require their constitutions to pass a public vote (Anckar 2014; Ballotpedia 2023c). It’s no surprise, then, that the “natural aristocracy” always finds its way to the top. The government has never truly been *of* the people or *for* the people because it was never *by* the people.

If you ask people whether they think the US needs a new constitution, nearly all will say no (Reports 2017). Yet ask them about their confidence in specific institutions—Congress, the presidency, the parties, elections—and most will express disapproval across the board (Gallup 2023; Montanaro 2018; Reinhart 2020). Public trust in the political system is at record lows, approval of politicians is abysmally low, and three of the last five presidents were elected by less than half of the nation for their first term (Pew Research Center 2023).⁵ Two-thirds of Americans are unhappy with the two-party system (Drutman, Galston, and Lindberg 2021). Barely anyone actually likes how politics work in the US. If people have faith in a foundational document but not in the system it lays out, then that faith is little more than blind faith.

From a young age, Americans are taught that the Constitution is a brilliant document, perhaps the most finely crafted of its kind, and it is the one thing that holds them all together. As far as constitutions go, it’s about as good as it gets. If even this constitution cannot prevent corruption, then nothing can. Political problems in the US therefore must originate from external forces: political parties, the media, big tech, big banks, big business, social movements, you name it. Corruption happens not because the government is poorly designed, but because economic or cultural elites rigged an otherwise sound system. Even the harshest critics of American society call for overhauling the economic system rather than overhauling the political system.

⁵Bill Clinton received 43% of the popular vote in 1992, George W. Bush received 48% in 2000, Barack Obama received 53% in 2008, Donald Trump received 46% in 2016, and Joe Biden received 51% in 2020 (Encyclopaedia Britannica 2023).

But if a constitution cannot be expected to prevent external forces from corrupting its institutions, then what is the point of a constitution? How can a constitution escape blame for abuses of power when its sole purpose is to prevent abuses of power? This mindset—this mythology of a strong, immortal constitution that just needs a little slack right now—is not healthy. It blinds Americans from seeing where the roots of inequality in American society lie. Some of the deepest roots have been hiding in plain sight for centuries, written in clear ink on the one document Americans thought they could trust.

1.1 American politics from a comparative perspective

To understand not just the state of American politics but also why it operates the way it does, it helps to zoom out and look at the rest of the world. Gathering data on every country in the world is often not feasible and not necessary since many countries have vastly different histories and dynamics that are not directly comparable to each other. Therefore, the graphs and models in this dissertation typically focus on developed democracies—wealthy, industrialized, and generally free states. I often employ a sample of the 38 member countries of the Organisation for Economic Co-operation and Development (OECD). This group of countries is a roughly full slate of the world's developed democracies, so the OECD is often used as a sample in comparative politics research for making appropriate comparisons between the US and similar countries (Lane, McKay, and Newton 1996).

Among these countries, the US tends to rank in the middle or near the bottom on most economic and political outcomes. The app in Figure 3.8 displays 12 different measures of variables relating to democracy, inequality, stability, and standard of living. The outcome that the US performs the best at is foreign influence: only 13 countries in the OECD have less foreign influence than the US. The only other variable on which the US scores in the top half of the OECD is the Human Development Index from the United Nations Development Programme (UNDP). This is a widely used indicator of standard of living. The US scores near the bottom on democracy, peace, income inequality, and poverty. Below is a full list of the US's rankings on these indicators as of 2022, out of the 38 OECD nations:

- **14th** most foreign influence (the External Intervention Indicator from the Fund for Peace's Fragile States Index)
- **18th** highest standard of living (the UNDP's Human Development Index)
- **22nd** highest economic freedom (the Heritage Foundation's Index of Economic Freedom)
- **24th** strongest rule of law (the World Justice Project's Rule of Law Index)
- **27th** strongest protections of civil liberties (Freedom House's civil liberties

score)

- **28th** highest in democracy (V-Dem's Liberal Democracy Index)
- **28th** highest in life expectancy (the UNDP)
- **31st** highest on safety and security (the Societal Safety and Security component of Vision of Humanity's Global Peace Index)
- **33rd** most peaceful (Vision of Humanity's Global Peace Index)
- **33rd** most stable (the Fund for Peace's Fragile States Index)
- **34th** highest income inequality (the income share of the top 1% from the World Inequality Database)
- **36th** highest poverty rate (the OECD)

One important outcome missing from this list is polarization. Comparing levels of polarization across different countries is difficult because polarization looks different in each country, but researchers have offered several approaches. Boxell, Gentzkow, and Shapiro (2022) gathered survey data from 12 democracies and measured *affective polarization*, the degree to which people dislike other political groups. They found that the US was the most polarized country in this sample and that polarization in the US was rising three times more quickly than any of the other countries. Stanig (2011) measured polarization slightly differently with survey data and found similar results. Studies of online polarization are consistent as well: Urman (2019) analyzed Twitter followings in 16 democracies and found that Twitter users in the US were among the least likely to follow politicians from other parties. From what we can tell, the US is one of the most polarized and most rapidly polarizing developed democracies in the world.

Outcomes such as income inequality are more straightforward when comparing countries. The US has the 5th highest Gini index in the OECD and the 4th highest income share of the top 1% of earners. The only developed democracies with more unequal economies are Bulgaria, Turkey, Mexico, and Costa Rica. Globally, the income distribution of the US is right around average, as the World Inequality Database shows. When looking at the income share of the top 1% of earners, the US has roughly the same level of income inequality as South Africa, India, most of the Middle East, and much of Latin America. The political and economic environments of the United States now resemble less stable countries more than peer nations.

1.1.1 How institutionalized inequality is overlooked

In the United States, economic inequality and political polarization have closely followed each other for at least the past century. McCarty, Poole, and Rosenthal (2006) first identified the connection, demonstrating that income inequality and congressional partisanship have closely followed each other in a self-reinforcing “dance” over the twentieth century. Although they offered explanations for both directions

of causality, most scholarship in American political economy puts greater emphasis on inequality as the cause and polarization as the consequence (Barber and McCarty 2015; Garand 2010). However, ample evidence from the last decade casts doubt on this assumption (Dettrey and Campbell 2013; Gelman, Kenworthy, and Su 2010; Kwon 2014). Most notably, trends in polarization usually *precede* parallel trends in income inequality—a key detail that is often overlooked. Specifically, polarization in the Senate tends to precede polarization in the House, which has moved almost simultaneously with income inequality since they began to rise in the latter half of the twentieth century. This pattern challenges the notion that economic inequality is causing polarization.

In my master’s thesis (Morse 2021), I took a closer look at this relationship using vector autoregressions and error correction models. I employed several different measures of congressional polarization, including party homogeneity and a composite index derived from a dimension reduction algorithm. I found that income inequality has much stronger responses to congressional polarization than vice versa, and that the response of polarization to changes in income inequality is negative: polarization in Congress appears to cool down, not heat up, when income inequality rises. Overall, the results show that it is unlikely that the rising levels of income inequality in the U.S. over the last half century have caused the rising levels of congressional polarization. Rather, patterns in the income distribution tend to mirror patterns in the congressional ideological distribution of 10 years prior, suggesting that polarization is more of a cause than an effect of economic inequality.

Why has the precedence of polarization over inequality gone overlooked? I argue that two issues are at play. First, it makes more sense for economic processes to cause political processes. General theories of political economy tend to characterize political environments as mere reflections of economic environments. Modernization theory, for example, posits that economic development is usually a precursor for democratization (Boix 2003; Lipset 1959). Likewise, many economists stress that economic freedom is a prerequisite for political freedom (M. Friedman 1962), and political scientists stress that economic inequality reinforces political inequality (Gilens 2012).

As for the link between economic inequality and political polarization, comparative politics research suggests that inequality generally *does* cause polarization around the world. Sometimes the two processes are directly related (Gunderson 2021; Winkler 2019), and sometimes they are inversely related (Fenzl 2018; Iversen and Soskice 2015). Regardless, most countries experience changes to the income distribution before changes to their political environment. It would make sense, then, for the United States to follow the same pattern. For these reasons, American political economy scholarship is naturally biased toward evidence of the more intuitive direction of causality.

Although researcher bias can be minimized by rigorous adherence to the scientific method, all science is still easily vulnerable to bias. The second issue causing researchers to overlook the link between ideology and inequality in the United States is that this model is particularly prone to measurement bias, more than most. The appearance of the relationship between political polarization and economic inequality is highly dependent on measurement choices, visualization configurations, and model specifications, such that foundational choices by researchers can lead to entirely different results.

Consider the range of conflicting implications that arise when comparing a small sample of possible measures, shown in Figure 1.1. The first two columns of panels measure polarization in the House and Senate with the difference between the two parties' mean DW-Nominate ideal points, referred to here as *party distance*. The third column uses a composite index I developed for my master's thesis, referred to here as the *polarization index*.⁶ The rows of panels correspond to two different approaches to measuring income inequality, the Gini index and the income share of the top 1% of earners.

When using the Gini index, the series are more highly correlated, and polarization appears to lag behind income inequality by a few years. Researchers may be inclined to employ the Gini index because of these patterns. However, the income shares of the top 1% are a more appropriate metric for this model. The Gini index is more sensitive to the center of the income distribution than to the tails, so it often skews the degree of overall inequality (A. B. Atkinson, Piketty, and Saez 2011). Income concentration at the top is a more reliable metric of the imbalance of economic resources.⁷

Turning to the choice of polarization metrics, the distance between the parties is the standard measure used in congressional behavior research, so it is used in most research on the link between polarization and inequality. However, polarization is typically defined in terms of two dimensions: the distance between the parties *and* the homogeneity within each party. Omitting an entire dimension of polarization can create an incomplete picture of the latent concept and an inaccurate estimate of its relationship with other processes. The polarization index in the final column in Figure 1.1 combines party distance and party homogeneity into a single measure smooths the data, making the two series more parallel than in any other configuration.

Another issue relating to the choice of polarization metrics is whether to focus the

⁶The index combines party distance (the difference between the mean ideal points of the two parties) and party homogeneity (the pooled standard deviation of each party's ideal points) using forecastable component analysis (ForeCA), a variant of principal component analysis which reduces multivariate time series into fewer components (Goerg 2013).

⁷For a more thorough explanation of why income inequality is better measured with top income shares than with the Gini index, see the World Inequality Report (Alvaredo et al. 2018).

Polarization and inequality metrics

Comparing 6 different configurations of measures

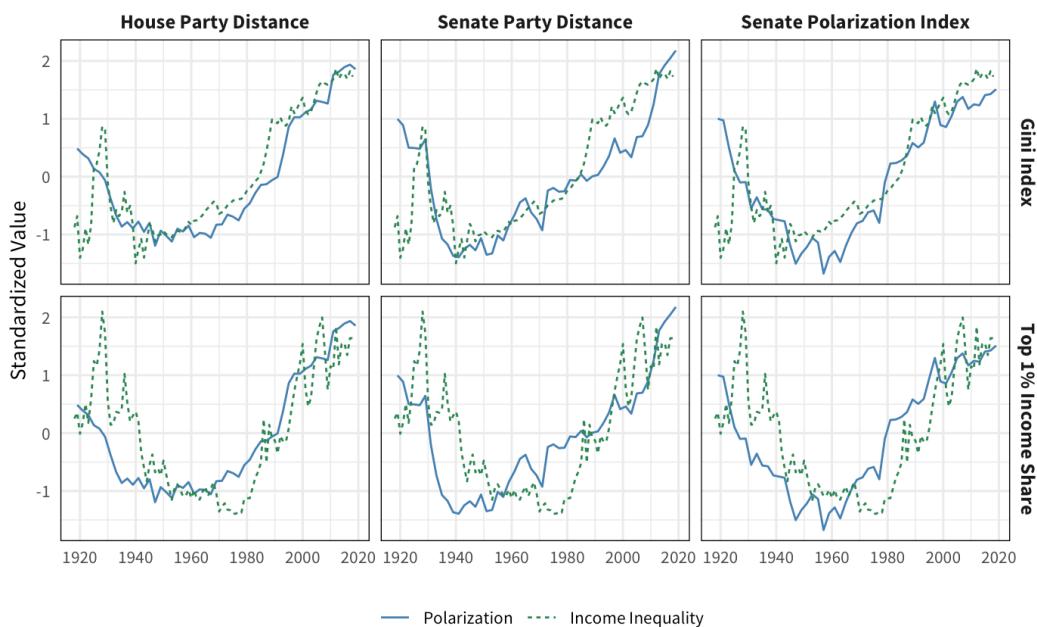


Figure 1.1: Congressional polarization and income inequality in the United States, 1919-2019

analysis on the House, the Senate, or both chambers equally. Scholarship tends to focus more on polarization in the House; researchers regressing income inequality on polarization often estimate models for each chamber separately and decide *ex post* to focus their analysis on the House because it produces better fitting models (e.g., Duca and Saving 2016).⁸ The better fit is likely a result of the near-contemporaneous movement of House polarization and income inequality. In my master’s thesis, I argue that their movement is *too* contemporaneous for one to be causing the other; they are more likely both responding to another force at a similar rate. The results suggest that polarization in the Senate is likely this force driving both House polarization and income inequality. Once again, robustness checks and exploratory data visualization with a broader range of measures help make this clear.

While writing my master’s thesis, I explored the measures and issues discussed in the previous section by producing interactive charts, animated graphs, and an interactive online appendix with regression tables. Figure 1.2 displays the 8 individual series from Figure 1.1 in a single-panel interactive chart that lets the reader toggle which series to display. The measures with the most theoretical support have been set to display by default, and readers can easily check other configurations.

Interactive graphs serve a dual purpose: they make information easier to understand while simultaneously allowing for more information to be conveyed. Compared to the static chart, this interactive chart is more readable, user-friendly, and aesthetically pleasing, making it more accessible to lay readers. The menu button in the upper-right corner of the graph lets the user download the data, making it more transparent and reproducible for other researchers. This one example only begins to unravel the whole world of advantages of employing more modern visualization techniques that cannot fit in static publications. This dissertation explores many more questions about American politics through the lens of interactive media. Rich data visualizations are a powerful tool for understanding how and why the United States got where it is today and what can be done.

1.2 Is the US Constitution compatible with today’s society?

The US Constitution was one of the first of its kind, and nearly 1,000 national constitutions have been adopted since it was written according to data from the Elkins, Ginsburg, and Melton (2005).⁹ Two general constitutional models have emerged: *ma-*

⁸Theoretically, researchers may justify focusing on the House because it has more frequent opportunity for turnover and is more sensitive to mass political preferences. In practice, though, the Senate tends to polarize *before* the House (Morse 2021), likely due to its apportionment and filibuster practices (F. E. Lee and Oppenheimer 1999).

⁹Constitutions vary greatly from country to country. Elkins, Ginsburg, and Melton (2009, 49) define a *constitution* as a document or set of documents that fit one or more of the following criteria: “(1) are

The link between ideology and inequality

Polarization indices and income inequality metrics

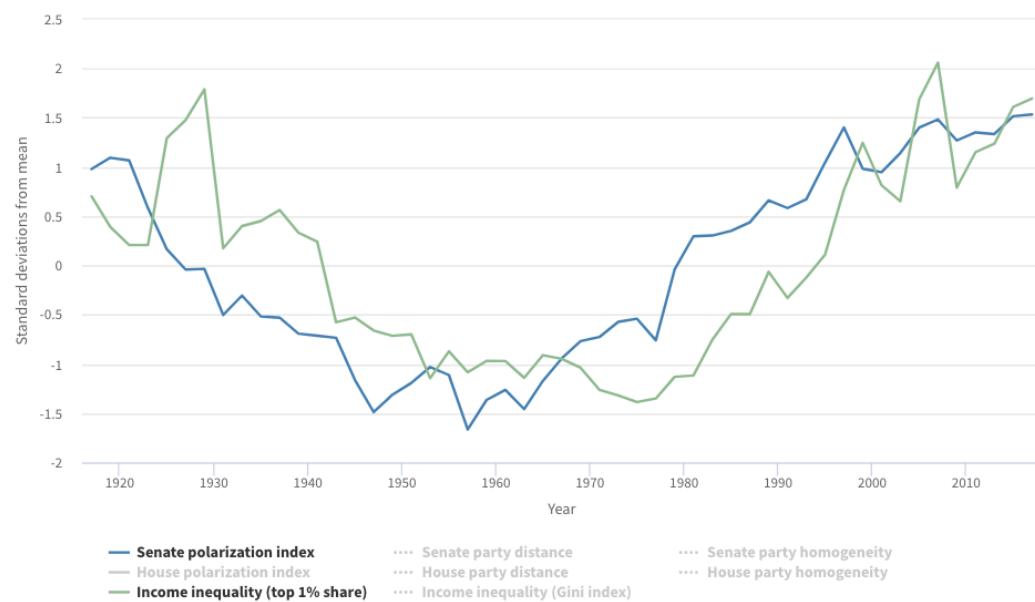


Figure 1.2: Congressional polarization and income inequality in the United States, 1919-2019 (screenshot)

majoritarian and *consensus* democracies.¹⁰ The US Constitution, the prime example of a majoritarian system, was once the dominant model worldwide. Over the last century, though, the American model has greatly lost its influence. Some scholars even argue that the US Constitution is now used more as an anti-model—an example of what *not* to do—because of its poor track record.

While constitutional courts around the world once cited the US Constitution and Supreme Court cases as precedents, they now tend to mention these more to distance themselves from the American model (Klug 2000). Law and Versteeg (2012) document the growing differences between the US Constitution and current mainstream constitutions. They note that a commonly cited reason for the declining influence of the US Constitution is that the US is “increasingly out of sync with an evolving global consensus on issues of human rights” (767). Another possible reason is that the bulk of countries that have democratized in the last several decades were in the former Soviet Bloc, so their constitutions were influenced more by parliamentary countries in Europe than by majoritarian countries in the Americas due to their proximity.

Perhaps the main reason the American model has declined is that newer models tend to perform more effectively. Countries with constitutions that are geared more toward the consensus model of democracy tend to have more political parties, less polarization, less economic inequality, better quality governance, and higher public satisfaction with the political system (Anderson and Guillory 1997; Bernaerts, Blanckaert, and Caluwaerts 2022; Birchfield and Crepaz 1998; Lijphart 2017; Riker 1982). These are general trends with plenty of exceptions. Furthermore, many studies only establish correlation, not causation, but they lay out a clear reason why the consensus model leads to better outcomes: it prevents any party from gaining too much power, whereas majoritarian systems can easily be controlled by a single party.

The key feature that determines whether a country’s constitution is more majoritarian or more consensus-based is its electoral system. Majoritarian systems use *plurality elections* (also known as winner-take-all elections or first-past-the-post voting), which usually give rise to two-party systems except in countries that are more geographically divided. Most majoritarian countries are presidential systems, but

identified explicitly as the *Constitution*, *Fundamental Law*, or *Basic Law* of a country; OR (2) contain explicit provisions that establish the documents as the *highest* law, either through entrenchment or limits on future law; OR (3) define the basic pattern of authority by establishing or suspending an executive branch of government.” These same researchers compiled a full dataset of national constitutions that fit this description from 1789 through the present (Elkins, Ginsburg, and Melton 2005).

¹⁰Consensus democracies are also known as *consociational* or *consensual* democracies. The majoritarian model is also known as the *Westminster* model. Most majoritarian democracies are presidential systems and most consensus democracies are parliamentary systems, but these concepts do not overlap entirely. For example, the UK is parliamentary but has a majoritarian system overall, and Brazil is presidential but has a consensus system.

many are parliamentary. Consensus systems use *proportional representation*, where seats are divided up among the parties proportional to how many votes they receive. These countries almost always have multiparty systems. In the majoritarian model, two parties go back and forth holding power. The threat of the other party gaining power in the next election encourages the governing party to moderate its policies and respect people's rights. In the consensus model, power is shared and diluted across several parties. Since no party is in the majority, two or more parties have to compromise on cabinet positions and policy agendas.

The most famous critique of American-style majoritarian systems comes from Juan Linz (1990), who argues that gridlock between the legislature and executive leads to presidencies gaining too much power, and that parliamentary systems bring more stability and more effective checks on power. Arend Lijphart's work (1977, 1984, 2017) mostly corroborates Linz's argument. Some scholars argue this is merely a spurious correlation. Most scholars agree that the majoritarian model can work in the right circumstances, especially in societies that are small and not very diverse. If a country has just one or two main social, ethnic, or ideological groups, then the majoritarian model tends to be stable and effective. But if a country is more diverse, the electoral institutions must be structured in a way that lets each group have their fair share of power. Majoritarian systems concentrate more power in the hands of a single group, whereas consensus systems encourage groups to cooperate and share power. Lijphart (1977) finds that "majority rule and democracy are incompatible" in societies that have deep social and ethnic divisions.

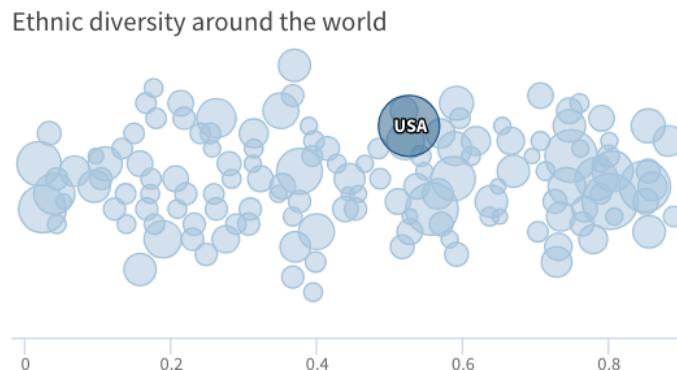


Figure 1.3: Historical index of ethnic fractionalization as of 2013 (Drazanova 2019)

The US is a relatively diverse country in many respects (see Figure 1.3). Globally, it is just above average in terms of ethnic diversity, at a similar level to Brazil, Mexico, and Turkey. It's hard to say how diverse the US is ideologically because the two-party system constrains mainstream ideologies to a single dimension. In recent years, the parties have been facing more gridlock internally as the establishment fac-

tions within each party struggle to maintain their grip on power over the growing populist factions, which is a sign that each party is becoming more diverse than they can handle. In most countries with the social and ideological diversity of the US, majoritarian constitutional systems tend not to be very stable. Why, then, has the US remained stable for so long?

Until the early 1900s, voting rights in the US were limited to less than 40% of the adult population, mostly white men. There was diversity within this group, but nowhere near as much diversity as there is now that women, people of color, indigenous people, lower income people, and young adults can vote, on top of the fact that there are many more ideologies than were even conceivable when the Constitution was written. With a relatively small and homogeneous electorate, there was usually only one dividing line on political issues. First it was the Federalists vs. the Anti-Federalists, then Andrew Jackson brought a more populist vs. establishment divide, then the North-South divide became center-stage as tensions escalated into the Civil War, and a more working-class vs. business-class divide became salient in the late nineteenth century.

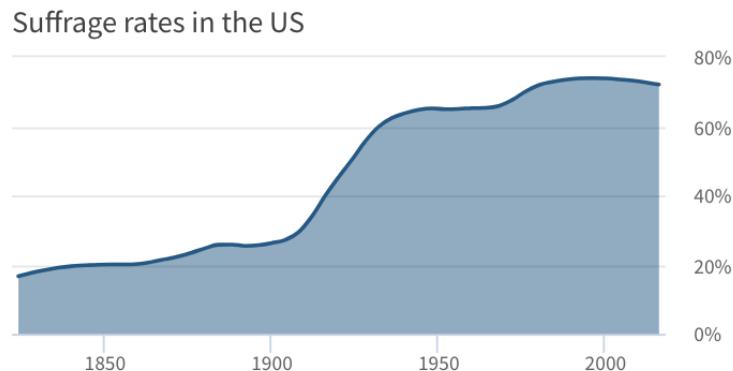


Figure 1.4: Rough estimates of the percent of the total population with voting rights

As more groups were brought into the electorate over the twentieth century (see Figure 1.4), it became harder to incorporate everyone in a two-party system. By the 1970s, more people than ever could vote, immigration was bringing in more minorities, and the rising conservative movement was bringing more ideological diversity within white voters. The US was solidly in the territory where majoritarian institutions start to struggle. When a majoritarian system reaches this situation, political actors can take it in two directions: either undo the changes that have brought it to this point (by restricting voting rights, curbing immigration, or ramping up propaganda to manufacture consent with the status quo) or accept the change and adopt systems that give everyone a seat at the table.

There were signs that the majoritarian system was stressed even in the 1970s—political polarization started rising, voter turnout started declining, elections became more monetized, and economic inequality started deepening—but it had yet to reach a breaking point until Donald Trump’s rise in 2016. The country is now in a critical moment of its history. It can either reevaluate the foundational elements of its political system or let them continue to deteriorate.

1.2.1 The three tyrannies that plague constitutions

Constitutions face three main challenges throughout their tenure. The first issue, *tyranny of the majority*, was coined by Alexis de Tocqueville (1899). Institutions run by majority rule can easily invade on the rights of the majority. The Framers of the Constitution were keenly aware of this challenge long before de Tocqueville wrote about it, and they filled the Constitution with measures they hoped would prevent it. Chapter 3 of this dissertation posits that these measures cease to work in a two-party system. The hallmark of the Constitution’s design—the separation of powers into three independent branches, each with mechanisms to push back on the others’ abuses of power—only works in the context of a multiparty system. For the Constitution to work effectively, it would need to prescribe electoral institutions geared toward multiparty systems such as multi-member districts with proportional representation.

The second challenge is referred to here as the *tyranny of the minority*, echoing de Tocqueville. Scholars and commentators have used this phrase in recent years to describe the situation where a small fraction of the population has undue influence over politics. I argue in Chapter 4 that the Senate enables minority rule in the US. The inequitable representation of the Senate leads to less personal and economic freedom for society. Over time, any groups that happen to be overrepresented can skew policy in their favor, building up a snowball effect of increasingly unfair outcomes. People naturally use this advantage to gain more freedom for themselves at the expense of others’ freedom.

Finally, the most silent challenge constitutions face is the *tyranny of the dead*, when institutions and laws from long ago become so cemented that the present generations cannot self-govern effectively. I borrowed this phrase from a conservative columnist who praised this feature of the Constitution, writing that “constitutionalism—which is ancient wisdom rendered into legal code—is the tyranny of the dead, the ultimate reach of the past into the future” (Krauthammer 2018). Chapter 5 explores the rigidity of the Constitution through a more critical lens. I argue that entrenched constitutions are at higher risk for democratic backsliding, economic inequality, and polarization. When constitutions remain largely unchanged for long periods of time, the public sees the political system in general as unchangeable, and voters lose motivation to stay engaged in politics. This, in turn, signals to elites that they face lower costs for

skewing economic policy in their favor or letting elite infighting polarize the political environment.

Taken together, these three aspects of the American political system reinforce a polarized two-party system dominated by elites who answer to a minority of the population. Much of the polarization, democratic backsliding, and rising inequality of recent decades have been occurring not in *spite* of the Constitution, but *because* of it. Admittedly, this is a bold claim that requires extensive evidence. To help make the case, this dissertation features interactive visualizations and data apps which offer far more power than text and simple charts alone. Before getting into the substance of the argument, I lay out why using dynamic media is so important for these kinds of conversations in Chapter 2. It is hard to convey the weaknesses of the static, unchanging US Constitution with static, unchanging graphs. As this dissertation shows, the twenty-first century demands dynamic content and dynamic constitutions.

1.3 Advancements made by this work

Throughout this dissertation, several contributions are made not just to the field of political science, but to academia at large and the public. It establishes guidelines for optimizing data visualizations for screens rather than print, synthesizes literature from American politics and comparative politics regarding constitutional design, develops novel theories explaining how the Constitution affects polarization and inequality, shows that the Constitution is so unique that many of its idiosyncrasies are not reflected in comparative analyses of state-level and national-level institutions, and provides a comprehensive critique of the design of the Constitution.

1.3.1 Contributions to the academy

While Edward Tufte (2001) and others have offered a wealth of knowledge on the best practices for visualizing data in general, most fields have not yet developed clear norms for presenting data in interactive and animated formats. These more modern methods open up new dimensions of design choices in a relatively uncharted territory for academia. Chapter 2 proposes some foundational standards that researchers in any field can follow when producing digital media to visualize their work. It provides design principles and methods for creating interactive graphs, adding animation to graphs, sharing graphs on social media, and producing web-based publications.

The dissertation itself exemplifies the power of interactivity by incorporating features that cannot fit in PDFs or printed media. It includes built-in replication code, translate buttons for quotes, collapsible appendices, and powerful apps visualizing

data. One could fill books describing all the information packed into apps such as the Constitutionater. Even then, written text does not do justice for the enormous amount of data available today. Interactive visualizations are much more efficient, engaging, and effective at communicating ideas. Just as American political institutions would benefit from being more dynamic, so too would the content produced by researchers. Static content and constitutions hold back progress at a time when progress is imperative.

1.3.2 Contributions to political science

This dissertation begins to unpack how the Constitution shapes political and economic inequality. Chapter 4 presents a novel theory outlining the causal mechanisms through which the apportionment of the Senate creates asymmetric polarization and enables economic inequality to rise. Although intuitive, this theory has not been clearly stated or studied. Researchers have analyzed the effects of the Senate's apportionment on democratic representation and the effects of the Senate's filibuster rule on polarization and inequality, but not as much work has been done on how the Senate's apportionment in particular affects polarization and inequality. Part of the reason research is limited in this area is that the Senate does not offer enough data to exploit. I expanded my study to investigate whether similar causal mechanisms are operating in state legislatures and could not find evidence of these patterns, suggesting that a more qualitative investigation of the Senate would be useful for future research.

Second, I propose a reinterpretation of Madisonian theories of constitutional design. Most research overlooks the idea that the Framers of the US Constitution built the document on the assumption that the US would naturally develop a multiparty system (although they did not use this vocabulary). Chapter 3 then discusses the implications of this assumption on the overall institutional design, which has yet to be fully explored by historians and political scientists.

Third, I find in Chapter 5 that no existing theory is able to predict a constitution's ideal lifespan after which democratic backsliding can be expected. Figures such as Jefferson's universal 19-year standard and more individualized life expectancies estimated by survival analysis models and more advanced algorithms do not appear to be meaningful. Each constitution's life cycle is unique and cannot be adequately explained with large-N analyses. I built an app that accounts for a country's geographic, cultural, political, and economic environment to predict an optimal constitutional design to maximize its endurance and performance. This app can help reformers, researchers, and the public explore how constitutional choices affect a variety of outcomes in different contexts.

More broadly, this dissertation offers the most comprehensive critique of the US Constitution in the political science literature. Most critical research focuses on individual features of the document, but the field has not yet developed a general theory explaining how the Constitution as a whole has contributed to the recent waves of polarization, inequality, and authoritarianism. This theory is difficult to test empirically, and I have only begun to search for evidence of the theory's implications quantitatively. The null results on my analyses suggest that different methodologies are needed to gain a fuller understanding of how the Constitution affects these outcomes. The overall theory that the Constitution is no longer fit for American society is well-grounded in comparative politics scholarship, but the magnitude of the Constitution's effects is still an open question.

1.3.3 Contributions to the public discourse

Throughout this work, I push back on many popular beliefs regarding American political institutions. The most prominent reforms that have been proposed to strengthen American democracy—ranked-choice voting, term limits on Congress, open primaries, campaign finance reform, and abolishing the Electoral College, to name a few—are mere bandaids that often cause more problems than they solve. In the long run, larger-scale reforms such as proportional representation and limitations on presidential power will be needed to restore a healthy, sustainable political order in the United States.

This dissertation calls for Americans to take a closer look at their foundational document. Legal scholars such as Sanford Levinson (2006) have made similar calls, but to my knowledge no work has extensively critiqued the document's construction through the lens of comparative politics scholarship. Chapters 3 through 5 of this dissertation document evidence that the Constitution was built around theories that have been thoroughly refuted by political science research. Chapter 6 offers a thorough yet concise critique of the Constitution's design and recommends a path to changing it. The interactive data apps and videos throughout the work help show how and why democracy is breaking down in the US. Putting American politics in perspective by displaying the effects of institutional models from around the world is an important step toward building a better system.

2 Presenting Research in the Twenty-First Century

AMERICANS' TRUST IN SCIENTISTS has been slowly declining for decades, and the COVID-19 pandemic only accelerated this decline.¹ Out of all the academic disciplines, political science is naturally one of the most politicized—if not *the* most politicized—so it faces serious challenges at influencing public opinion. At the same time, the field's knowledge is more valuable than ever now that democracy is so fragile.

It can be tempting to pin the blame of the disconnect between public opinion and science on the public: people only trust what they want to hear, so when science started saying things they didn't like, they simply stopped trusting it. That is part of why the public has stopped listening to scientists, but it's not the whole story. The main reason people have lost trust in science is that science hasn't made itself easy to be trusted. Most scientific research is not designed to be read by the public; it costs money to access and is difficult for ordinary people to understand.

Some time ago, science didn't necessarily *need* to be accessible to the public. If most people had faith that scientists were fair and honest authorities of the truth, then scientists didn't really need to directly communicate their findings to the public. They could use language that only their colleagues, journalists, policymakers, and other stakeholders understand, and then those groups would pass on their findings to the public (Peters 2013). Nowadays, though, society is too polarized and science is too politicized to rely on this model. The public is more skeptical of information it hears in the media, and a large fraction has lost faith in science and the media altogether.

To this day, scientists usually struggle to explain their research with language and visuals that anyone can understand. Journalists are trained in this art, but unless they themselves have advanced degrees in the fields they report on, they can easily misinterpret research or take it out of context. News articles about science often report on a single study without really minding how it fits in with the rest of the literature, which can give readers the wrong idea about the state of scientific knowledge on the

¹See Kennedy, Tyson, and Funk (2022) and Roundtable on Public Interfaces of the Life Sciences et al. (2015).

subject. Readers seeking to verify a news article's reporting could try to find the original study or an academic literature review, but chances are they either won't be able to access it or won't be able to understand it. At that point, it's hard to take experts at their word when there's so much more compelling content saying not to.

Amid this information crisis, scholars in every field have been engaging more directly with the public and publishing research in more accessible outlets. Open-access journals and science blogs have risen dramatically in the last couple decades. Political scientists pump out public-facing content through a variety of mediums including academic blogs (such as *Good Authority*, formerly *The Monkey Cage*), opinion pieces on news websites, podcasts (such as *Democracy Works*), and social media accounts. But they could just be preaching to the choir on these platforms. Political science research rarely seems to have much of an effect on public opinion even with the field's outreach efforts.

Consider the issue of term limits. In the 1990s and 2000s, many states started limiting the number of terms their legislators could serve, which led to a wave of research examining the effects of these reforms. Dozens of studies investigated a wide variety of outcomes with a wide variety of research designs. An unexpected pattern emerged nearly every time: term limits bring little benefit and cause serious side effects. When states pass term limits, politicians tend to become more loyal to their parties, elites hold stronger influence over policy, voter turnout decreases, and polarization deepens. (See the appendix at the end of this section for a brief literature review.) One of the only redeeming qualities is that term limits may lead to more diverse representation, but some research has found that they don't. The vast majority of the literature suggests that term limits cause more problems than they solve. Research on this matter has mostly stalled in the last decade simply because there is not much left to study about it.

While political science has reached a general consensus on term limits, the public has nearly reached a consensus as well—in the opposite direction. By most accounts, more than 80% of Americans favor term limits on Congress (Kull 2023; McLaughlin and Associates 2021). Most people probably haven't even heard about the research on term limits. This issue represents an extreme example of the discipline's struggles to inform public opinion, but the problem rings true throughout nearly every issue domain. Open primaries are another hot topic on which popular attitudes are divorced from the literature, as Lee Drutman notes on X. Even people who are receptive to political scientists' commentary may hold many beliefs that diverge from academic consensus not because they don't trust it but because they are unaware of it.

This chapter suggests that much of the disconnect between public opinion and academic scholarship is due to the fact that academia has not yet embraced modern norms for communicating information. Academic publications are designed to be

printed, while most other industries now design their content primarily for screens. Journalists, think tanks, interest groups, politicians, and influencers are putting out rich, dynamic visualizations along with interactive editorials and captivating videos that pop with animated graphics, all of which help them *show*, not just *tell*, lessons from data. Meanwhile, most of the output from academic research is still in the form of PDFs and charts designed to fit in PDFs. The very people who should be at the cutting edge of telling stories with data are being held back by conventions from the 1900s.

Data visualizations flourished on social media during the COVID-19 pandemic and have become center-stage in the public discourse. In Section 2.1, I document several misleading visualizations that have gone viral and argue that scientists need to go viral as well to combat misinformation. Comments and articles debunking an inaccurate chart are no match for the original post. I show how interactive and animated visualizations enable authors to tailor their content to the public and their academic community simultaneously. Section 2.2 reviews several methods for producing these charts in R, with careful attention to making them accessible to both lay and expert readers. To demonstrate how researchers can use visualizations to engage with the public on social media, I posted a series of animated graphs on TikTok, which I reflect on in Section 2.3. Next, Section 2.4 explores other avenues for publishing fully interactive publications and outlines the strengths and weaknesses of this approach. The final section explores how academics can modernize their fields' data visualization practices to help spread reliable, eye-catching content among the public.

2.1 A graph is worth 10,000 words

In September 2023, the TikTok user @thebeautyofdata posted an animated chart that quickly went viral. The chart shows median rent prices skyrocketing over the last four decades while household incomes only rose slowly. At the beginning of the video, the chart is zoomed into the late 1980s, and it zooms out over the course of a minute to show the staggering divergence by the 2020s. The slow reveal of the climbing lines creates a sense of mystery that entices the viewer to keep watching. As it plays, viewers are treated to a club remix of a 2005 pop song encouraging them to dance freely. The chart could have been displayed as a simple static graph, but the animation adds a whole new dimension while the music adds energy. It's attention-grabbing and powerful, garnering the video more than 10 million views and nearly a million likes within a few weeks of posting—and that's just the original post. It went viral on other accounts and other platforms as well, so it's hard to know how many

people it reached.²

There's just one problem: the chart paints a completely misleading picture. Many economists pointed out that the household income data were adjusted for inflation while the rent data were not, despite the chart's claim that both were adjusted. Plus, the rent data are based on the 40th percentile of rents, not the median, although these are probably correlated.³ When fixing the graph, one can see that rents and incomes have risen together at a similar rate. On X (formerly Twitter), where several users shared the video and reached almost as big of an audience as the original video on TikTok, some of the posts are flagged with community notes explaining the issue.⁴ TikTok gives no indication that the video is misleading, and experts' replies are drowned out in the comments section. The original video and re-posts on TikTok have altogether received around 70 times as many views as the response videos pointing out the error (the most popular of which is shown in Figure 2.1). See the appendix below for details of this estimate.

A few years earlier, a similar (but not as extreme) controversy arose when journalist David Leonhardt posted an animated chart on Twitter based on an interactive visualization he published in the *New York Times*. The chart, which went viral on many platforms, shows that the tax system was significantly more progressive in the 1950s and that the richest earners now pay a lower percent of their income than the poorest earners. To Leonhardt's credit, the chart has exemplary design and uses data from a reputable source: acclaimed economists Emmanuel Saez and Gabriel Zucman. However, a heated debate had already been ensuing within economics over whether their measures are valid, and many experts argue that the data and the chart are inaccurate (Breunig 2019).

²At least one re-post of the video on TikTok got several million *more* views than the original. Eight months before this video was posted, another user posted a very similar video which also went viral, reaching 1.5 million views.

³The methodology behind the measures used in this video appears to come from a real estate blog post from May 2022 with a very similar graph. The graphs use the Department of Housing and Urban Development's Fair Market Rents, which the department says are "estimates of 40th percentile gross rents for standard quality units within a metropolitan area or nonmetropolitan county." The department's datasets split up these estimates by number of bedrooms from 0 to 4. The blog post reports that the author took the median of each area's fair market rents and then took the median of those for the whole country. These statistics were not weighted by population at either level. This measure more accurately represents the 40th percentile of rents for apartments with two bedrooms in the median metropolitan area, which is correlated with the national median rent price but is likely biased. I recreated the graph in the TikTok video and confirmed that this is the measure it used.

⁴Even an X post with the video that had only a few likes and less than 100 views had a community note. In addition, many top comments on the two most popular X posts also pointed out the error. On TikTok, I could not find any comments on the original video or the popular re-post pointing out the error. There could have been some comments deeper down than I could dig (there were thousands of comments), but these comments would not have been widely seen.

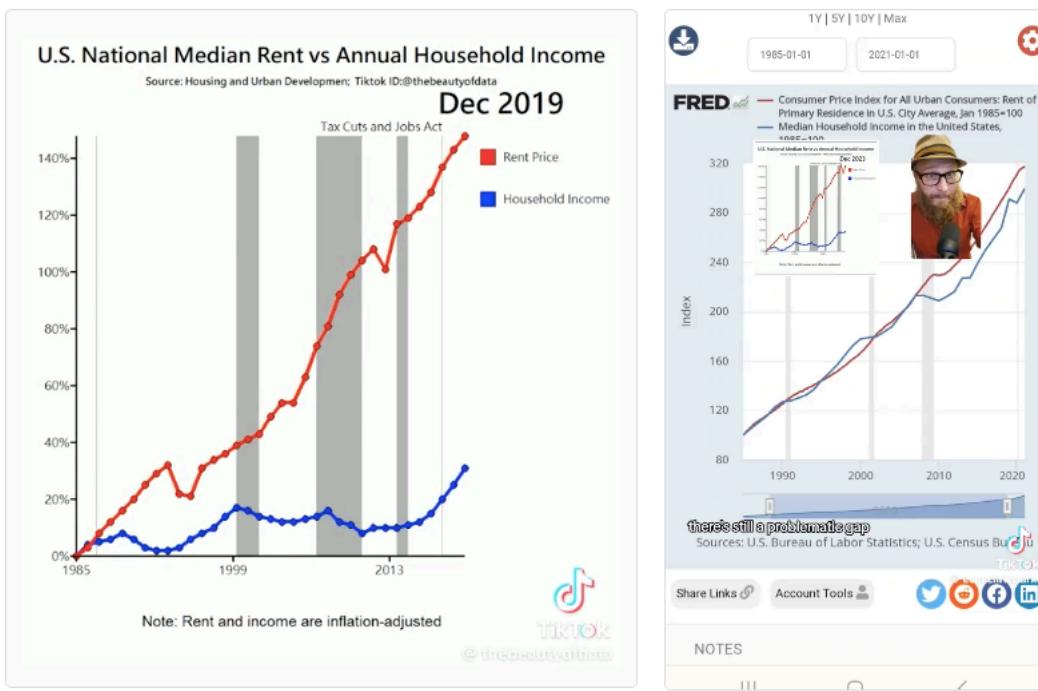


Figure 2.1: A TikTok video posted by @thebeautyofdata and a response by @econchrisclarke (screenshot)

Many people seeing this graph might assume that it shows the official tax rates at each bracket, but it actually shows estimates of *effective* tax rates—taxes paid out of each household's entire income, not just their taxable income. Saez and Zucman (2019) argue that wealthy Americans have been evading taxes more in recent years, so they adjusted high-income tax data to include their estimates of unreported income. This could make high earners' effective tax rates appear lower than they really are. For poorer households, though, Saez and Zucman did not count most government assistance as income, which inflates their effective tax rates and makes these estimates inconsistent with the estimates for higher incomes. When using less subjective measures based on reported incomes, the tax rates appear much more linear.

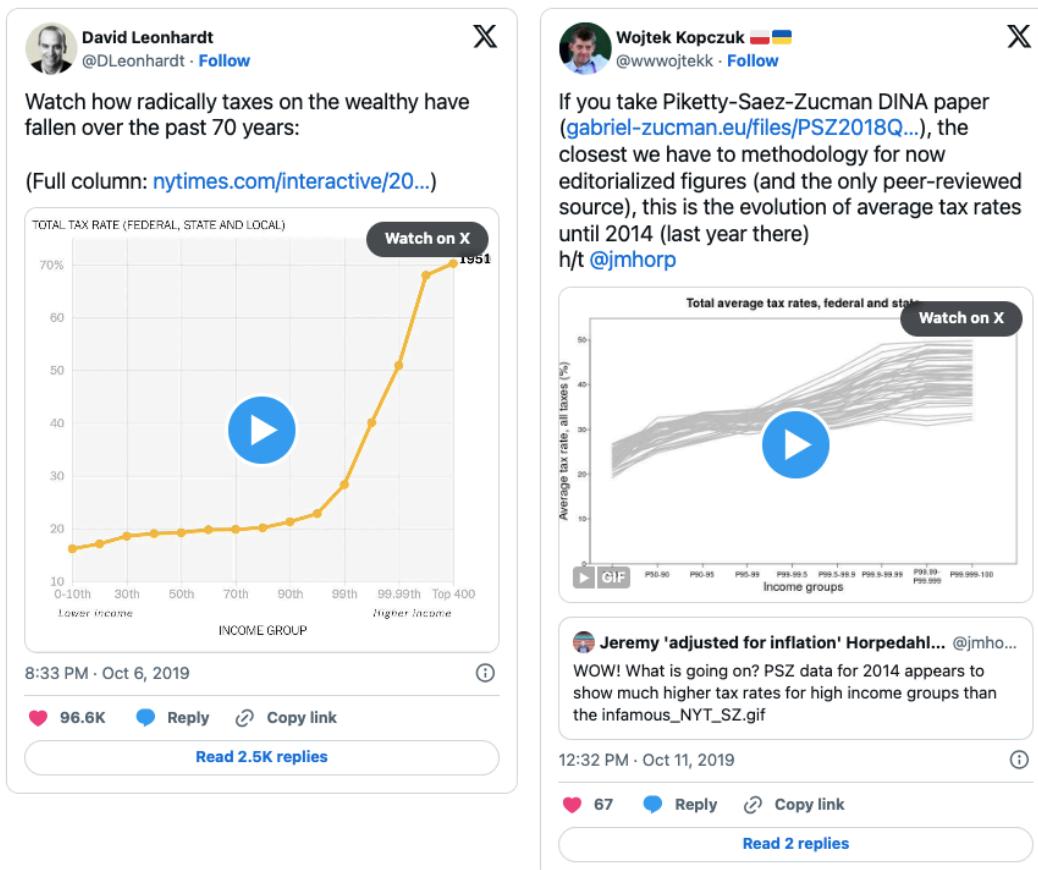


Figure 2.2: A tweet by @DLeonhardt and a response by @wwwojtekk (screenshot)

Maybe tax evasion should be counted, or maybe it shouldn't be—I'm not an economist—and regardless, these charts could end up influencing people's attitudes on economic policy in a positive direction. But if even experts don't agree on the

accuracy of a chart's data, then anyone seeing it needs to know that. Leonhardt's chart doesn't mention that it uses effective tax rates accounting for tax evasion (or perhaps that's what "total tax rate" means, but most people wouldn't know that), nor does the chart give any indication that the jury is still out on whether this is the right way to measure this concept. Without context, the chart gives the impression that it represents objective facts, when it may be based on an outlier study that is not representative of the state of the literature.

These episodes reflect a common trend in the age of social media: a single data visualization can influence millions of people much more easily than a blog post, a journal article, or even an entire literature. At present, scientists are generally not the ones making viral visualizations. They're still playing catch-up while influencers spread amateur personal research and journalists misrepresent academic research. Once a misleading chart goes viral, responses usually only reach a small subset of the people who have seen it. Experts should still make an effort to debunk misinformation, but they also need a more proactive strategy for spreading accurate information in the first place.

2.1.1 What the pandemic taught us about data visualizations

During the COVID-19 pandemic, data visualizations became the primary ammunition in the information war between medical experts and skeptics. Dashboards made by researchers, journalists, and government agencies (such as the ones linked below) went viral, and many screenshots from those dashboards went viral as well. The interactivity of these visualizations turned out to be a double-edged sword: while they provided enormous amounts of information that helped experts convey problems and solutions, they could also be configured to give misleading conclusions that appear to be backed by science.

A team of researchers at MIT led by Crystal Lee (2021) collected tweets with COVID-related visualizations from more than 400,000 users. In addition to reporting their findings in a journal article, they set up a public-facing interactive article with a data dashboard displaying many of the tweets from their sample. Their analysis found that opponents of public health measures were "prolific and skilled purveyors of data visualizations" (2021, 15), often making charts that were "indistinguishable" from charts made by professionals (D. Ackerman 2021). Science skeptics value personal validation of information over blindly accepting scientific charts. When skeptics saw a graph they didn't trust, they would often use the same dashboard or data to make their own versions suggesting very different conclusions.

Figure 2.3 shows an example of this. Charts like the first one were widely shared by supporters of public health measures because they showed that European countries,

which had tighter restrictions, were much more effectively containing the spread of the virus. The second one is a user's original work attempting to show that European countries were not any better off than the US.⁵ The discrepancy between the graphs appears to be the result of different definitions of Europe, as the second user counted the UK, Russia, and other non-EU countries.⁶ These countries had higher infection rates than most EU countries, probably because their public health measures were more similar to those of the US.⁷

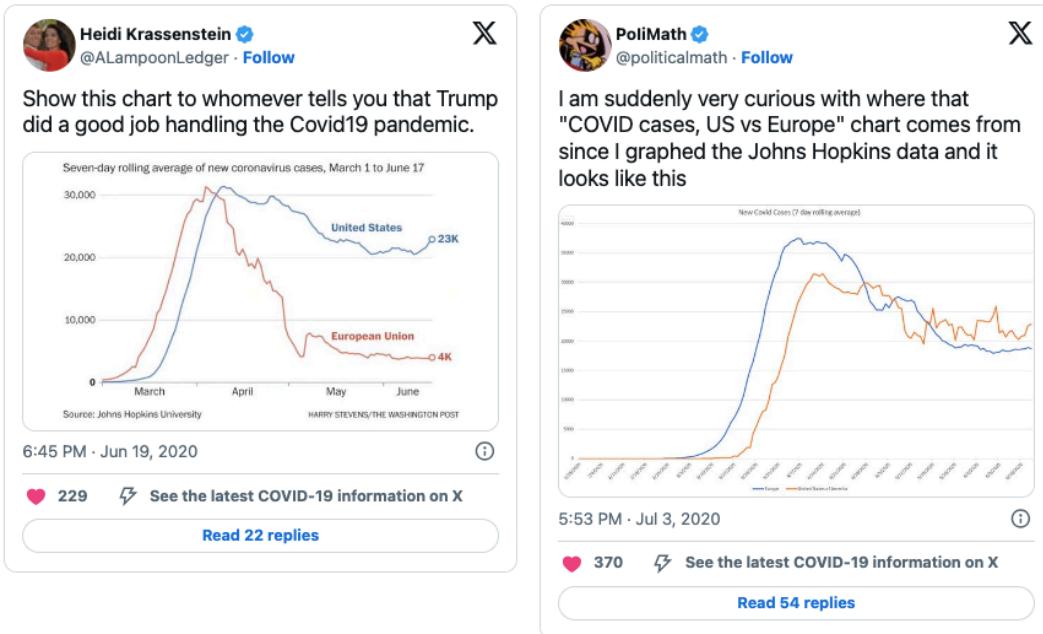


Figure 2.3: Tweets with charts about COVID-19 cases (screenshot)

Although the rise of misleading amateur research presents new challenges for scientists, there is a silver lining: demand is higher than ever for data-driven content on social media. The key, though, is that science skeptics do not want to simply *consume*

⁵Note that the simple design of this user's chart is not representative of all skeptics' charts. This chart was chosen as an example because of its relevance to the first chart. Many skeptics' charts were very professional in appearance, whereas this one appears to have been made in Microsoft Excel using the default formatting and minimal attention to design principles. Nevertheless, in some circles charts like these were likely trusted more than professional charts because they were clearly made by independent observers rather than biased journalists or scientists.

⁶Additionally, the line graphs are smoother in the first chart, so it appears the second user charted the raw number of new cases each day rather than a 7-day rolling average as the title claims.

⁷Furthermore, the charts both show the *number* of cases, not a per-capita rate (even though the European Union has 100 million more people than the US, not even counting the UK or Russia), so adding more countries naturally increases the case count.

this content. They want to *produce* it themselves, discuss it, critique it, replicate it, and verify it—all elements of the traditional peer review process—and they only trust this process if they can do it themselves. As Lee and her team write (2021, 15):

While academic science is traditionally a system for producing knowledge within a laboratory, validating it through peer review, and sharing results within subsidiary communities, anti-maskers reject this hierarchical social model. They espouse a vision of science that is radically egalitarian and individualist. This study forces us to see that coronavirus skeptics champion science as a personal practice that prizes rationality and autonomy; for them, it is *not* a body of knowledge certified by an institution of experts.

A whole new ecosystem of science is developing, almost completely cutoff from mainstream science. It is democratic, open to anyone, and transparent. Its knowledge base is housed on social media platforms rather than in journals and books. The primary products of its work are data visualizations rather than written publications. It has a peer review process of sorts that relies on public comments and community moderators rather than anonymous reviewers and elite editors. In theory, this egalitarian model of science has many admirable qualities which could resolve a fair amount of issues that academics themselves have raised with the status quo of academia.

The problem is that most of the people in this ecosystem have no idea what they're talking about. They don't realize how uninformed they are because they only trust information they can verify themselves, and most scientific research is too advanced for untrained observers to verify. When outsiders try to fact-check misinformation in this ecosystem by citing mainstream science and using technical language, people in this ecosystem often become even more convinced of their beliefs (Nyhan, Reifler, and Ubel 2013; Reinero et al. 2023).

The MIT researchers offer two suggestions for combating misinformation in this ecosystem. The first is that researchers should “grapple with the social and political dimensions of visualizations at the *beginning*, rather than the end, of projects” (2021, 15). In other words, producing effective data visualizations for public consumption should be a higher priority in academic research. Second, researchers need to be clear about the uncertainty of their findings. All of science is built on an understanding that its knowledge is never certain, but scientists sometimes exaggerate their confidence in a claim or simply fail to note that it could be wrong. In sum, the team argues (2021, 15):

Convincing anti-maskers to support public health measures in the age of COVID-19 will require more than “better” visualizations, data literacy campaigns, or increased public access to data. Rather, it requires a sus-

tained engagement with the social world of visualizations and the people who make or interpret them.

These lessons apply to much more than COVID-19 issues. The pandemic cultivated this emerging ecosystem of amateur science, but it isn't going away. The MIT team's comment that "better" visualizations are not enough to combat misinformation should not be taken to mean that sharing visualizations is a futile endeavor for academics; on the contrary, the study suggests that it may be necessary but not sufficient to change minds in this ecosystem. The only way to reach people in the ecosystem is to infiltrate it and play the game their way. References to well-known scientists or paywalled jargony articles or academic consensus mean very little to them; they want practical graphs, raw data, plain language, dialogue in the comments, and openness to their critiques.

While 10,000-word journal articles are quintessential tools for sharing knowledge among academics, data visualizations are the main mediums for sharing knowledge with lay audiences. The latter is arguably more important now than the former since misinformation is engulfing the public discourse. A well-designed graph posted on social media can have a far bigger impact on public opinion, policy, and society than a long-winded publication that may only be read by a handful of academics who already agree with the author.

2.1.2 Advantages of dynamic visualizations

Academic researchers are not faced with a binary choice of catering their content to either academia or the public. The widely used COVID-19 dashboards by Johns Hopkins and other institutions are prime examples of content that serves both academics and lay users at the same time. As I argue in this section, interactive and animated data visualizations are particularly powerful for communicating information to many different audiences simultaneously.

But first, let's clarify some definitions. A *data visualization* is any figure that displays data graphically. Most visualizations published in academic research are *static*—they are still images that do not change. Static visualizations can fit into PDFs and are printer-friendly. Online outlets can also publish visualizations that are *dynamic*, meaning they can change over time or when a user hovers on it, clicks on it, or provides some other kind of input. Videos and animations could be considered interactive because users can play, pause, or advance to a certain point, but in this dissertation *interactive* refers only to content with more direct interactivity. I use the word *dynamic* as an umbrella term referring to both interactive and animated content. Figure 2.4 lays out a simple way of conceptualizing several types of visualizations.

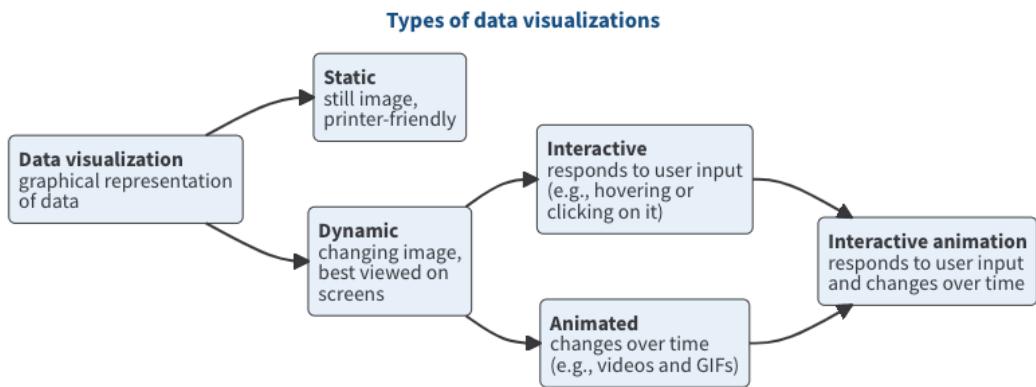


Figure 2.4: A typology of data visualizations based on how they respond to user input and time

Below, I identify six main benefits that dynamic visualizations have over static, printer-friendly charts. The first three generally describe how dynamic charts help researchers convey information to the public while the last three relate more to researchers conveying information among themselves.

Accessibility. An interactive chart can convey however much information a reader wants to get out of it. A layperson can glance at the default configuration and learn something from it; a person with moderate expertise can try out different configurations to learn general patterns; an expert can look more closely at the numbers to discover complex patterns. While static charts often have to be designed for a more limited target audience, interactive charts are more flexible for a wider range of readers.

Readability. Dynamic charts can include many features that make them easier to read than static graphs. Because dynamic charts are designed to be read on screens rather than in print, they can use more color to distinguish series (as opposed to line dashing or shapes). In addition, interactive charts can help readers inspect individual data points by providing more information when hovering over them and showing special gridlines that follow the mouse. These charts can also let readers hide or isolate individual series, zoom in to a shorter timespan, change the text size, swap the color scheme, and expand the chart to a larger size.

Effectiveness. Graphics that are optimized for screens by making use of colors, interactivity, and animations are more aesthetically pleasing, which helps them capture the attention of a wider audience. Studies have found that people pay more attention to aesthetically pleasing visualizations, understand the information more accurately, and are more easily persuaded compared to less engaging visualizations.

(Cawthon and Moere 2007; Pandey et al. 2014).

Methodological support. Data visualization is an important component of exploratory data analysis; researchers must understand the distributions and relationships among their variables in order to make the appropriate choices for modeling the data. For large datasets, it is sometimes easier to build an interactive data dashboard that can quickly generate charts rather than painstakingly creating a series of individual charts. Hullman and Gelman (2021) argue that interactive exploratory visualizations are not only useful but essential for certain tasks like Bayesian analysis.

Reproducibility. Replication data can be easily downloaded from interactive charts. Most of the interactive charts in this dissertation have a menu button in the upper-right corner which includes several options for downloading or viewing the raw data. Accessing the data for a particular graph takes many more steps when it is only available in a data repository or an author's website. Plus, the tooltip boxes that appear as a reader hovers over a graph also display data values for quick investigation. In static figures, data labels can be displayed above each point, but this clutters the graph.

Transparency. Alternative measures for each concept in a graph can be included and hidden by default, letting readers examine robustness without the need for cluttered plots, multiple plots, or extensive appendices. This allows readers to critically examine the author's choice of measures with the click of a button. The quick access to the data discussed in the previous paragraph makes the research even more transparent by reducing the steps needed to examine replication data.

Interactivity lets authors pack an order of magnitude more information in a chart compared to a static chart while making it accessible to an order of magnitude more readers. It broadens the audience that can read it, displays the information more effectively, and encourages researchers to be more open and clear about how they conducted their analysis. Likewise, animation adds energy and visual appeal to a chart, making it much more powerful.

2.2 Designing dynamic data visualizations

Researchers have many tools for creating dynamic graphs without needing technical skills beyond their basic training. For R users, adding interactivity or animation to a static graph is often as simple as adding a single line of code. In addition, programs such as Tableau have user-friendly interfaces for creating interactive visualizations. This section reviews R packages for producing interactive and animated visualizations. The focus is on R because many researchers already use R for data manage-

ment, statistical analysis, and visualization. Two of the libraries discussed here also have sister libraries in other languages such as Python and JavaScript.

2.2.1 Interactive figures with `plotly` and `highcharter`

The two most common and powerful interactive graphing packages in R are `plotly` and `highcharter`. `Plotly` is a suite of libraries that produce interactive visualizations in various languages. `Highcharts` is a similar library based in JavaScript, and an independent developer created `highcharter` to translate R code into JavaScript code for `Highcharts`. In general, `plotly` is easier to use but `highcharter` plots are more customizable and elegant. For most uses, I recommend using `plotly` due to its simplicity, but most of the interactive figures in this dissertation are produced with `highcharter`.

Both packages are user-friendly for anyone familiar with `ggplot2`, a widely used R package for data visualizations. `plotly` can turn any plot made with `ggplot2` into an interactive chart with a single line of code. Users simply create a chart with `ggplot()` and then call the object in the `ggplotly()` function. While `highcharter` cannot convert `ggplot2` graphs, the syntax is intuitive for users already familiar with `ggplot2`. Examples of code and charts produced by each of these packages are in Figure 2.5. The first tab shows a static chart produced in `ggplot2`, the second tab converts this into an interactive `plotly` chart, and the third tab produces an interactive `highcharter` chart.

Adding interactivity to a graph introduces a different set of design choices than you may be used to when making printable graphs. Below are several design principles that I followed when producing these charts and the other figures of this dissertation.

1. **Display information about each observation in tooltips.** A *tooltip* is a box that appears when a user hovers over something. In the examples above, the tooltips display the country, continent, population, and values of the independent and dependent variables. The static graph only shows the country abbreviation next to each point. Data labels like these are useful for static graphs, but they are not needed on interactive graphs as tooltips hold more information with less clutter.
2. **Keep it simple by default.** Complicated graphs can be daunting for some readers, so sticking with a minimalist design can make a graph more accessible to a wider audience. Luckily, interactivity allows for the best of both worlds, as unnecessary details and features can be hidden by default and displayed only when the user hovers or clicks on the graph. For example, the `highcharter` graph in Figure 2.5 does not have vertical gridlines and instead displays a vertical line (called a *crosshair*) wherever the mouse is hovering. The main function

Instability and freedom in the OECD, 2022

Countries that are more stable tend to be more economically free.

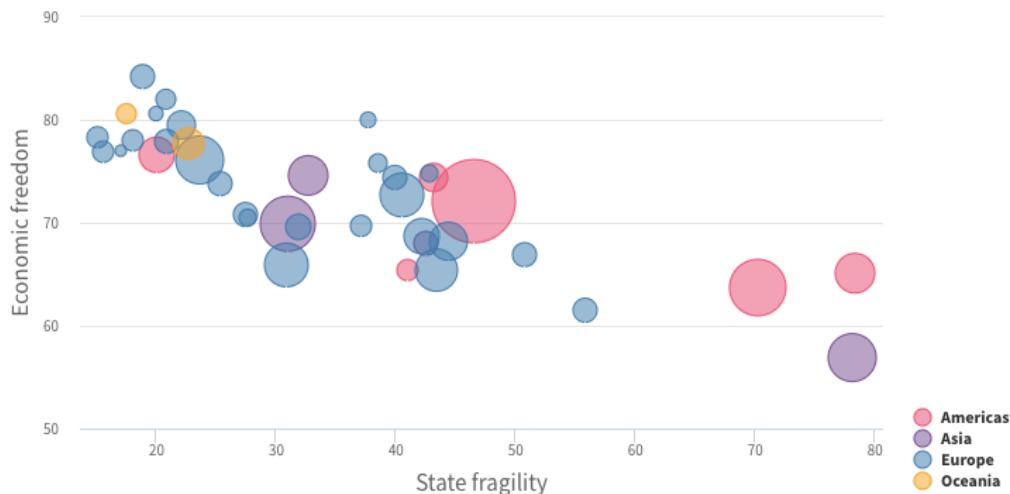


Figure 2.5: Example of a chart made with `highcharter` (screenshot)

of gridlines is to help the reader identify the value of each point along the axes. On interactive graphs, this is handled by tooltips and crosshairs, negating the need to complicate the graph with extra lines.

3. **Label variables with latent concepts and define their specific measures in tooltips.** Most concepts in social science research are not directly observable, so we often use more directly measurable indicators to approximate abstract concepts. The specific metric is usually less important to lay readers and more important to scholars. In line with the previous principles of keeping graphs simple by default, the latent concept represented by each variable can be displayed in axis titles and legends, and users wanting more information about how the variable is measured can read the tooltip or caption.
4. **Avoid technical language and details in larger text.** People usually read larger text first and smaller text last, and they also tend to pay more attention to the larger text (Rello, Pielot, and Marcos 2016). When the title of a graph uses language that ordinary people don't understand, it sends the message that they won't be able to understand the graph itself, so they don't even bother. When the title makes sense, people are more likely to pay attention to the rest of the graph.⁸ Experts are going to read the fine print anyway, so there's no need to

⁸One method for writing text that lay readers can understand is to summarize the key takeaway of

make the more prominent text confusing to lay readers. (The code for each chart in Figure 2.5 has examples of adjusting font sizes.)

The general idea is to design the default configuration of a chart for public consumption and leave more advanced details to tooltips, hidden elements, and captions. That way, a chart can be clear to both lay readers and scholars for their respective needs.

2.2.2 Interactive apps with shiny

While `plotly` and `highcharter` let users manipulate charts in many ways, more advanced interactivity requires packages such as `shiny`. A `shiny` web app can run R code in real time and update the output based on user input. The package has functions to add fields such as dropdown menus, textboxes, number sliders, checkboxes, and buttons. The author can then program graphs, tables, models, or other objects to respond accordingly. To clarify, `shiny` is not a data visualization package; it can be used in tandem with other packages like `highcharter` to create visualizations that can respond to more complex input. Common uses include data dashboards, teaching tools, statistical programs, and even boring games. Building `shiny` apps can be complicated, so check out the documentation or help books before getting started.

The example in the second tab above updates the graph to show the country and measure selected by the user. It starts off with a long dataset at the country-year level with several different variables measuring democracy. It then automatically subsets the data to observations from the selected country and changes the *y*-axis variable to the selected measure. When a user clicks the “Random country” button, it runs a random number generator to pick a different country and then subsets the data to that country. This is a fairly simple example of a `shiny` app, but as mentioned before, the package is so powerful that people have used it to develop fully functional software that runs in a browser.

One challenge with using `shiny` apps is that they cannot be rendered directly in a full document produced in RStudio like most other graphics. They need a special kind of server that can run R code remotely. By far the most common outlet for hosting `shiny` apps is shinyapps.io, which users can upload apps to directly from RStudio. Apps can then be embedded into R Markdown or Quarto documents using iframes.

the graph in a short sentence, similar to a news headline. This headline could serve as the chart title, a subtitle, or another prominent text box, as is done in the graphs in Figure 2.5 and Figure 3.8. Headlines are more interesting and more informative than the robotic-sounding titles that often appear on charts. This not only helps the public understand the graph, but it also helps experts get a quick idea of its content when skimming through a publication.

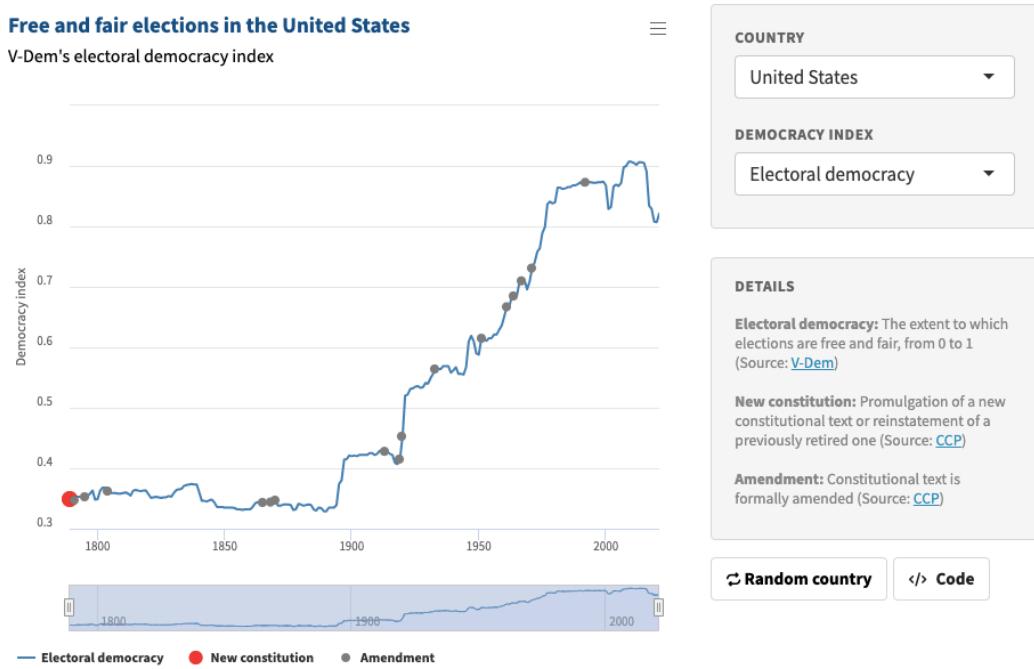


Figure 2.6: Example of a shiny app (screenshot)

2.2.3 Animated figures with `ganimate`

Another tool in the modern toolkit is animated visualizations, which are especially useful for time series cross-sectional data. On most graphs with longitudinal data, time is represented by the x -axis. Line graphs are not as useful for data with many cases at many points in time. For example, suppose we wanted to visualize the ideology of each member in Congress over time. If we must use a static graph, we have a few options:

1. Aggregate the data into summary measures and plot them in a line graph (such as the first tab in Figure 2.7). We lose a lot of information with this approach, but the graph is simple and may be all that we need.
2. Show each member's ideology as an individual series in a single plot or a grid of small panels each with a single line graph. Figures like this can be large and complicated but can help quickly compare different series.
3. Plot cross-sections of the data at one or more key time points (such as the second tab in Figure 2.7). This is useful for multidimensional data with relatively constant distributions over time. If the distributions change significantly over time, though, a cross-sectional graph's utility is limited.

Static graphs are generally limited to showing two dimensions, either time and a single variable or two variables at one point in time. Animation adds another dimension to a graph, letting it display many variables at many points in time. The third tab of Figure 2.7 shows a graph (borrowed from my master's thesis) exemplifies the multidimensionality of animations.

An example of an animated plot. This figure, taken from Figure 2 of my master's thesis (Morse 2021), shows the ideological distributions of members of the House and the Senate based on roll-call voting. Each dot represents a member of Congress. The x -axis is dimension 1 of Poole and Rosenthal's (2017) DW-NOMINATE ideal points, which generally covers issues of socioeconomic welfare; the y -axis is dimension 2, which generally covers civil rights issues. Members representing states in the South are shown as pink regardless of party affiliation, whereas the dividing lines were only based on party affiliation. The slopes for the dividing lines were computed using linear discriminant analysis, which finds the boundary line that maximizes the separation between the two parties. In most browsers, you can right-click on the graphic and click "Show controls" to enable the pause button and progress bar. Data source: Voteview (Lewis et al. 2021).

Animated graphs are simple to make in R for `ggplot2` users.⁹ Similar to how

⁹The packages `plotly` and `highcharter` can also animate interactive graphs, but these are more difficult to produce.

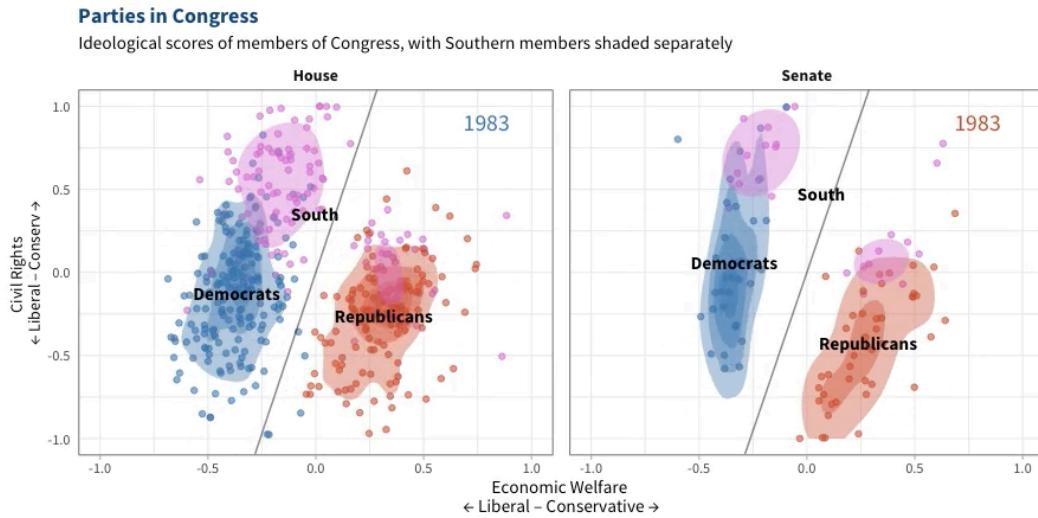


Figure 2.7: Example of an animated plot (screenshot)

plotly can turn a static ggplot2 graph into an interactive graph, the package gganimate can turn a static ggplot2 graph into an animated graph. To start off, users can create a static graph (like the one in the second tab of Figure 2.7) that plots the whole dataset all at once. This will usually be cluttered, so it may be useful to subset the data to a single point in time until this code is satisfactory. Then, gganimate functions can be added to the plot just like any other ggplot2 function. The function `transition_time()` specifies the name of the variable containing the time points, and other functions like `ease_aes()` and `enter_grow()` define which types of transitions should be used to make the graph move smoothly. By default, these functions produce a GIF, but video files can also be rendered using the `animate()` function. Finally, if we upload the animation to TikTok and set it to some sick beats, we could have a viral video on our hands.

Animation can be used in a wide variety of situations. An animated bar graph with bars growing, shrinking, and reordering as the chart loops through time is often a more user-friendly display of time-series cross-sectional data than a large grid of small panels with individual line graphs. Animated histograms and density plots can show how an entire distribution moves over time better than a single line graph plotting the mean and error bars. As the viral TikTok discussed in Section 2.1 shows, charts that don't even *need* to be animated can benefit from animation. A static graph becomes much more interesting when it is slowly revealed over time.

2.2.4 Getting help with the Visualization Assistant for R

AI bots such as ChatGPT and Bing Chat have become popular resources for coding assistance, but they often struggle with advanced tasks. In November 2023, OpenAI announced that users can now build custom versions of ChatGPT that are fine-tuned for specific purposes. I created the Visualization Assistant for R, a GPT that specializes in producing animated and interactive graphs. The assistant can write code from scratch, modify code, find errors, and give the user a step-by-step guide for a specific task. I fed it advice from my own experience as well as vignettes and tutorials for `ggplot2`, `ggridge`, `plotly`, `highcharter`, and `shiny`. I also had it complete many tasks and uploaded transcripts of its successful responses to its knowledge base. Note that the bulk of the assistant's ability is already built-in to ChatGPT, and I simply provided it with extra instructions, resources, and examples that improve the base model. This GPT is public and free for ChatGPT Plus members, although ChatGPT Plus requires a subscription.

Some examples of the uses for the bot are shown below on the right alongside the same prompts to ChatGPT Classic on the left. Both of these examples asked the bot to complete four main tasks: (1) add animation to a static `ggplot2` graph, (2) make the original graph interactive, (3) try a different approach for making it interactive, and (4) change the design of the interactive graph. ChatGPT Classic struggled with all of these tasks except the second one, which was the simplest to complete. With the other tasks, it often gave incorrect information and produced code with errors. I went back and forth with it to get it to correct itself, and many times I had to directly tell it what it was doing wrong (which defeats the whole point of using ChatGPT as a coding resource). Meanwhile, the Visualization Assistant for R completed each of these tasks correctly and efficiently on the first try.

Going forward, custom GPTs like this one would be a useful resource for methodologists to help other researchers learn how to use tools they have developed. Custom AI bots combine the strengths of large language models—providing information and assistance tailored to each person's needs—while minimizing the weaknesses. Part of the reason AI bots struggle with advanced tasks in academic research is that most peer-reviewed publications are paywalled and were likely excluded from training data. Custom AI bots open the door to more advanced coding assistance. For example, when researchers develop a new statistical model, they often publish an article introducing the model and offering some applications, and they also release a package that can implement the model in R or another program. Nowadays, they could train a custom GPT on these materials within a few minutes, enabling users to generate personalized tutorials that are easier to navigate than methodological articles and more accurate than general AI bots.¹⁰

¹⁰Custom GPTs also seem to strengthen the base ChatGPT model too. Before building the Visualization

ChatGPT Classic

To create an animated version of your `ggplot2` graph with the specifications you described, you can use the `ggridge` package in R. This package allows for the creation of animations with `ggplot2` objects. I'll guide you through the steps, but please note that I can't execute the code myself.

First, you'll need to install the necessary packages if you haven't already:

▶ **CODE**

```
library(ggridge)
```

Then, you can use the following script to create your animated plot:

▶ **CODE**

```
ggplot(data, aes(x = year, y = value)) +
  geom_ggridge() +
  transition_reveal(year) +
  labs(title = "Democracy in three countries, {frame_time}")
```

This script will create a line plot where lines are gradually revealed over time. The `transition_reveal(year)` function handles the animation of the lines, revealing them as time progresses. The title is dynamically updated to display the current year with `{frame_time}`. The x-axis will automatically adjust to show the relevant years as the animation progresses.

Please adjust `nframes`, `width`, `height`, and other `animate` parameters to suit your preferences for the animation's speed and size. Additionally, if you encounter any issues with package compatibility or versioning, ensure you have the latest versions installed.

Visualization Assistant for R

To animate your `ggplot2` graph so that the lines are revealed slowly over time, while keeping the y-axis fixed and allowing the x-axis to zoom out, you can use the `ggridge` package in R. The `transition_reveal()` function is suitable for this purpose. Also, to display the year being shown at any given time in the title, you can use the `{frame_along}` special variable with `labs()`.

Here's how you can modify your code:

▶ **CODE**

```
library(ggridge)
ggplot(data, aes(x = year, y = value)) +
  geom_ggridge() +
  transition_reveal(year) +
  labs(title = "Democracy in three countries, {frame_along}")
```

This code will generate an animated plot where the lines for each country are revealed over time. The `{frame_along}` variable in the title will be replaced with the current year being displayed. The `nframes` parameter in the `animate()` function can be adjusted to change the smoothness and speed of the animation. Additionally, the `view_follow(fixed_y=TRUE)` function is used to keep the y-axis fixed while allowing the x-axis to adjust as needed.

Figure 2.8: Parallel conversations with ChatGPT Classic and the Visualization Assistant for R (screenshot)

2.3 Sharing visualizations on social media

Inspired by the viral TikTok video discussed in Section 2.1, I started posting animated charts in a similar style on TikTok. Some videos were adapted from figures in this dissertation, and others use the same underlying data as a figure but in a different type of graph. The data sources, measurement choices, and other important details are discussed on a documentation webpage linked in my bio, along with the code used to produce the graphs. After uploading a video to TikTok, users can select a song to play in the background. This avoids copyright issues and encourages the app's algorithm to show the video to more people. Below are selected videos from my TikTok account. Altogether these videos have received around 30,000 views and more than 700 likes, which is low for TikTok but not bad for the beginning stages of an account.

I generally picked trending songs to play in the background and tried to line up the music with the motion of the graph in some way. In the “Map of parties in American history,” rapper 310babii chants “left, right” for some reason, which conveniently mirrors the parties’ movement to the left and right in the chart. The rapper then starts repeating the phrase “fuck it up” as tensions escalate toward the Civil War, which indeed fucked things up. After the war, he returns to his “left, right” chant as the parties return to their normal patterns. In other videos, I made the graph dance to the music. The bar graphs showing rankings of countries over time are good examples of this. The bars move around and then pause with each beat (to the extent possible).¹¹ In the “Free and fair elections” line graph, a small ensemble gently sets the tone as the US and Sweden gradually democratize until a full orchestra chimes in just as democracy spikes in the two countries from a wave of reforms in the early 1900s. It’s not clear how much these musical choices increased the videos’ engagement, but they likely helped at least a little.

Posting these videos on TikTok served as an exploratory field experiment of sorts. My goal was to both share information from my research and also learn how to design data visualizations for mass consumption. The videos with the farthest reach to date

Assistant for R, I gave ChatGPT a similar prompt as Task 3 in Figure 2.8 —give me a different approach to making an interactive graph in R besides `ggplotly()` in `plotly`—and it tried a different function in `plotly` and then a package called `dygraphs`. Later, after I started building the Visualization Assistant, I generated the ChatGPT Classic conversation shown in Figure 2.8. It now suggests using `highcharter` and mentions that “Highcharter charts are often more visually appealing” than `plotly` charts. This is a personal opinion of mine that I mentioned in my instructions for the Visualization Assistant. I am not aware of any other sources explicitly stating this, so ChatGPT Classic may already be learning from my custom GPT. While ChatGPT Classic still struggles more than the Visualization Assistant when it comes to coding, it will likely become more powerful as more people use either version for help with these tasks.

¹¹The graphs are slightly off-tempo because setting them to the exact pace was taking too much trial-and-error for it to be practical. I also suspect that either the songs or the animations do not keep exactly constant paces.

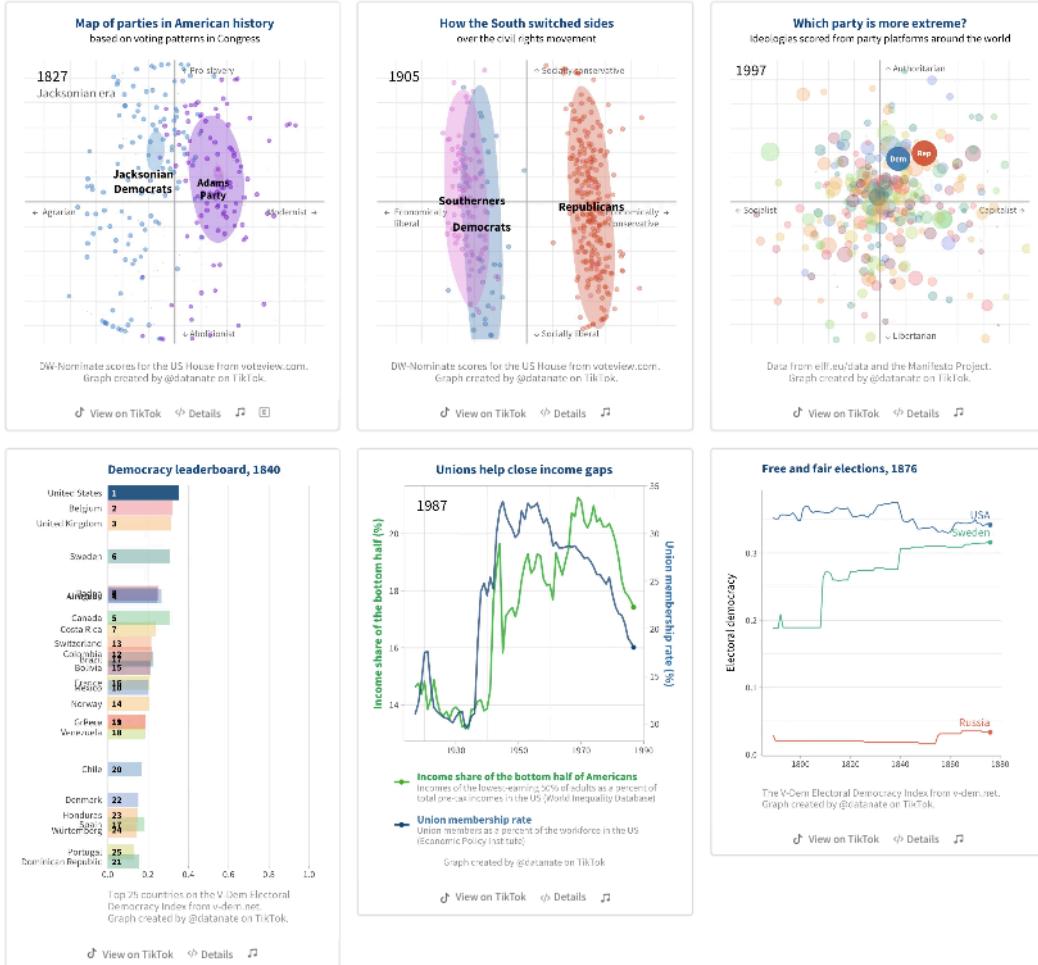


Figure 2.9: Animated charts posted on TikTok (screenshot)

are “How the South switched sides” and the “Which party is more extreme?” graph. The comments on these videos were mostly negative—which was expected given the political nature of the content. Some comments simply disagreed with the chart or offered unhelpful critiques, but other comments were useful. Below, I outline several points that I gathered from these comments and the experience as a whole.

1. **Avoid using words with different meanings in everyday and scholarly contexts.** In “How the South switched sides,” I labeled the horizontal axis with the word *liberal* to mean *left-wing*, following a more colloquial definition of the word. Several commenters implied that I must be an amateur for not knowing what that term means. Technically, *liberalism* is a family of ideologies centered around capitalism and democracy, which both parties in the US generally fall under. Even so, American politics scholarship often employs the word *liberal* as a synonym for *left-wing* and recognizes it as a valid definition in the US context. In recent decades, though, as frustrations with capitalism have risen, many *left-wing* Americans have dissociated from the word *liberal*. The more formal definition is becoming recognized more by the public. Many leftists didn’t trust the graph because they didn’t agree with the terminology. Right-wingers didn’t seem to trust the graph either because they didn’t agree with the substance. It would have been better to label the axis with “economically left” and “right” so that more people could trust it.
2. **Don’t post graphs that require thorough explanation to understand.** Another issue with the “How the South switched sides” chart is that it appears to be a political compass, but DW-Nominate scores do not map on directly to a standard political compass with an economic left-right axis and a socially authoritarian-libertarian axis. The second dimension, graphed along the vertical axis, is particularly difficult to understand as it changes meaning and importance over time. Many commenters dismissed the graph’s credibility because they expected the Democratic Party to be in the lower left quadrant and the Republican Party to be in the upper right quadrant. On a global scale, as other commenters pointed out, both parties would be in or near the upper right quadrant, more like the graph in the “Which party is more extreme?” video. Although I gave several indicators that this is not a standard political compass, I should have made this clearer. If I really could not find a way to efficiently explain what DW-Nominate scores represent to a lay audience, then perhaps this graph should not have been posted on a platform geared toward mass consumption.
3. **Understand that some people won’t trust your content no matter what you do.** The “Which party is more extreme?” graph shows the ideological positions of major parties around the world, which were estimated with an algorithm that scanned party documents and identified patterns with minimal (but not zero)

human bias. The subtitle was an attempt to summarize this, but it is not quite adequate. Commenters seemed to think that the ideological scores for each party were subjective ratings from someone's personal judgment. Perhaps I should have worked harder to make the methodology clearer, but I doubt it would have made a difference. Most skeptics likely began with the assumption that the data were inaccurate because they did not conform to their preexisting beliefs, and then they came up with a critique. If I made the methodology clearer, it simply would have changed the critiques people gave, not their opinions. And that's okay—videos do not need universal praise to be valuable.

4. **Embrace controversy.** Videos that are more controversial tend to reach more people since they invite more engagement from both critics and supporters. My most controversial video, not surprisingly, was the “Which party is more extreme?” graph. I intentionally titled it with a sensational question to grab people’s attention. The graph shows much more than just the relative extremity of the two major parties in the US, but framing the video around this question encouraged viewers to comment if they disagreed with the main idea of the graph. As long as people are furiously debating a video in the comments, the app’s algorithm will continue to show it to more viewers, helping it reach more people who do find value in it. By inviting controversy with a buzzworthy headline, my video has already gained nearly 14 times as many views as the journal webpage with the boring *Political Analysis* article introducing the methodology for the dataset used in the graph (Elff 2013).
5. **But maybe don’t embrace controversy when first starting an account.** TikTok briefly took down the “Which party is more extreme?” video at one point, presumably because several viewers reported the video for misinformation. These viewers probably just disagreed with the graph and didn’t want to believe that the methodology was sound. The app reinstated the video after I noted in an appeal that the data come from peer-reviewed studies cited in both the graph and the documentation webpage linked in my bio.¹² Engagement on the next posts plummeted. I suspect that TikTok’s algorithm penalized my account for posting videos with reports of misinformation even though the moderators ultimately approved the main video in question. The dispute over this video likely would not have hurt my account so much if I already had a large following and many videos. Because it was only my third video, 33% of my posts at the time were flagged for misinformation (as far as I know). It’s hard to come back from that, so I may have already reached a dead end with this account.

¹²TikTok often automatically removes videos that have been reported by multiple users, which human moderators can reverse upon appeal. I respect this practice and don’t mind that my video was initially taken down. Misinformation spreads faster than human moderators can stop it, and TikTok takes a reasonable (although insufficient) approach at combatting this to some degree.

In hindsight, I did not fully embrace two of the key suggestions made by C. Lee et al. (2021) for sharing visualizations on social media. First, I didn't engage with the audience enough. I only occasionally responded to comments—mostly to answer clarification questions—since I had neither the time nor the energy to get into back-and-forth debates with random people on the Internet. I also did not reply to other users' videos with my own response videos, known as “stiching” on TikTok, which is a common method for debunking misinformation. These practices, while tedious at times, are necessary for immersing oneself in the online information ecosystem (and for building a following). Second, my videos didn't give any indication of uncertainty. In many cases, I could have included error bars on graphs or clarified in the caption that the metrics shown are rough estimates and not to be taken as precise or objective. I hope that my experience provides lessons on what to do and what not to do when posting visualizations on social media.

2.4 The power of interactive publications

Posting visualizations on social media platforms is the most direct way to share research to the public, but most platforms can only handle static images or videos of animated charts. To harness the full power of an interactive visualization, it has to be displayed in a webpage or app of some sort. A growing number of academic books (especially textbooks and methods guides) are now being published as interactive websites instead of or in addition to print versions. For example, one of the most popular resources for learning R, *R for Data Science*, is available as both a print textbook and a free web version produced by Hadley Wickham and his colleagues (2023) in RStudio.¹³ Web versions of print publications offer a number of advantages that are outlined in this section. However, they still don't usually stray far from their print versions to keep their content consistent, so most of their visualizations are static.

Academics are only beginning to explore the possibilities of fully interactive content that is free of printability constraints. In January 2024, a team of political scientists at Harvard released an “interactive methods non-textbook” which takes the power of interactive publications to a new level (Ayers et al. 2024). Called 2K1-in-Silico, this hands-on web app lets users simulate data and examine how methodological choices affect results. It demonstrates that understanding the data-generating process of a phenomenon is critical for properly specifying a model. To learn the same lessons without this tool, students would generally need at least intermediate programming skills so they can run these simulations themselves or they'd have to read lengthy written material that may not resonate as effectively with them.

¹³The first edition was produced with R Markdown and a package called bookdown (Wickham and Groleman 2017).

The app reminds me of a more elementary visualization titled “Hack Your Way To Scientific Glory,” which appeared in a FiveThirtyEight piece by Christie Aschwanden and Ritchie King (2015). The interactive graphic shows lay readers how easy it is for researchers to engage in “p-hacking,” the practice of deliberately configuring a model to produce a desired result. Users can play around with different ways of measuring political power and economic performance until a regression model reports that the party in power has a statistically significant effect on the economy. The catch, of course, is that the model can suggest that Democrats are better for the economy *or* Republicans are better for the economy *or* neither one does better, depending on the user’s choices. Again, the alternatives for demonstrating this point are to either describe it with words (which is not as compelling) or use a hands-on exercise that requires more technical expertise than the target audience has. These resources represent the state of the art of pedagogy, and they are only possible with interactive technology.

Most researchers already have the tools needed to produce interactive documents. RStudio, the most common software interface for R, comes with two built-in programs that can easily produce HTML files. The first is R Markdown. In RStudio, users can click the new document button in the upper-left corner and select either “R Notebook” or “R Markdown...” to begin. After writing text and code to produce figures or tables, clicking the “Knit” button will convert the file into an HTML webpage. Quarto is the next-generation version of R Markdown, offering more built-in features, user-friendly syntax, and the ability to run Python code in addition to R code. Just like R Markdown documents, a Quarto document can be created from the new document menu (as long as RStudio is up to date), and an HTML webpage is produced by clicking the “Render” button. These webpages can then be published to the internet on free platforms such as RPubs, Quarto Pub, or GitHub Pages. This way, authors can self-publish interactive articles or post online companions for print publications without the need for web development skills.

2.4.1 Advantages of interactive documents

I define an *interactive document* as a webpage or another format that can hold dynamic content, in contrast to a *static document* such as a printed publication or PDF. I use the term *interactive publication* to refer to an interactive document that is formally published or self-published as its final form. Interactive documents include R Markdown notebooks, HTML working papers, digital books such as this dissertation, data dashboards, web apps, blog posts, and web versions of journal articles. Interactive documents offer many benefits over static publications.

Accessibility. Webpages can include many features that make them easier to read and more accessible to a wider audience:

- Text can be easily translated to easier reading levels or other languages by browser extensions or buttons included in the page.
- Many webpages also include buttons for adjusting the text size, font, and color scheme to help readers with visual impairments.
- Modern webpages are usually responsive to screen size, so they can fit phones and tablets without the need for back-and-forth horizontal scrolling.
- Webpages can include interactive graphics, which lets them harness all the accessibility benefits mentioned in Section 2.1.2 as well.

Interactivity. Webpages often feature many interactive tools that aid the reader’s experience, including:

- The table of contents can include links that jump the user straight to any section.
- Links can be included throughout the document, too, which jump the reader to figures (such as Figure 1.2) or sections (such as Section 2.1.2).
- Webpages produced in R Markdown and Quarto are automatically set so that the reader can read a footnote upon hovering over its superscript number in the text,¹⁴ and full citations can be viewed by hovering or clicking on in-text citations (Wickham, Çetinkaya-Rundel, and Groleman 2023). Cited sources can then be viewed with a simple click.
- Collapsible blocks can display supplementary content directly in the article rather than in appendices to minimize disruption to the flow of reading.
- Dynamic visualizations such as interactive and animated charts bring all the advantages discussed in Section 2.1.2.

Reproducibility. HTML documents can include built-in replication code throughout the text. Authors can leave code hidden by default and enable readers to show any chunk of code by clicking a button.¹⁵ Code chunks can be placed wherever they are relevant—data preparation when the data sources are introduced, model fitting when the methods are described, and any coding for visualizations by each figure. Following this practice, any working paper with built-in code is a pedagogical resource with applied examples of methods that would interest many readers. A reader who is curious about which function an author used to achieve a task or how the author customized a plot can simply expand the relevant code chunk rather than obtaining separate replication files, which may not be publicly available or neatly laid out.

Transparency. Including collapsed replication code within interactive working papers and publications greatly increases the chances that the code will be seen by others. That, in turn, makes it easier for readers to spot errors, discourages

¹⁴An example of a footnote.

¹⁵This functionality is known as *code folding*, and it is easy to implement in Rmarkdown, Quarto, and similar programs.

p-hacking, encourages authors to keep their code user-friendly, and therefore improves accountability. Furthermore, web-based working papers can include interactive charts, bringing all the same transparency benefits discussed in Section 2.1.2.

Customizability. Authors often produce PDF versions of their working papers with LaTeX, which can be frustrating to learn for beginners. While programs like R Markdown and Quarto can generate PDFs using LaTeX and webpages using HTML and CSS, any advanced formatting beyond the default settings does require some basic knowledge of the respective markup languages. Simple tasks such as adjusting the font size of captions or the spacing between lines are clean and straightforward with CSS, whereas they often require packages with odd names and syntax in LaTeX. Reference guides are also much more common and user-friendly for HTML and CSS—a Google search for “html tutorial” returns 8 billion results while a search for “latex tutorial” returns a mere 43 million. Webpages are more powerful *and* easier to customize than LaTeX-generated PDFs.

Versatility. Webpages can be printed, but PDFs cannot be interactive. The fact that PDFs can only hold static content while webpages can hold both static and interactive content speaks further to the utility of interactive documents. Webpages can be printed and saved as PDFs, but PDFs cannot be turned into interactive webpages. Admittedly, the formatting of a webpage often becomes messed up when printed: content is sometimes cut off, the font size can be so large that a small article feels like a novel when printed, the font size can be too small to read, and in general it’s not a pleasant experience reading a printed webpage. To get around this, authors can include a properly formatted PDF version linked on a webpage.

2.4.2 Limitations of interactive documents

One of the clearest limitations of using interactive media to present academic scholarship is that it is not as permanent as print media. A variety of issues can arise that researchers must take into account when producing dynamic visualizations and publications.

Discontinued software. Interactive content is built on technology that is not guaranteed to work in the future. Adobe Flash Player, for example, was once a nearly universal plugin that powered games, animations, and other content for hundreds of millions of users. Despite its ubiquity in the 2000s, the software was retired in 2020, rendering all Flash content unusable unless it was manually converted to a newer format (Fiadotau 2020). Nowadays, the programming language JavaScript powers interactive content on 99% of the Internet—including the interactive graphs in this dissertation—but it could face a similar downfall in the future. Douglas Crockford, a

prominent programmer who helped develop and popularize JavaScript, has warned that websites should stop using it and shift to more efficient languages. JavaScript content would probably still work long after it loses popularity because it isn't proprietary software like Flash, but it could still run into problems eventually. Any software or package powering interactive content could someday become obsolete no matter how widely used it is, whereas static images and documents could last forever.

Lack of peer reviewed outlets for interactive content. Journals and book publishers usually only accept printable material, so dynamic content must be hosted on platforms where it is not subject to peer review.¹⁶ Authors could place dynamic content into an online appendix accompanying a print article, but supplementary material is not always verified by reviewers and is rarely accessed by readers. Publishing content in mass media outlets or personal websites could give the impression that it is not rigorous enough to pass peer review. These challenges make it difficult for dynamic media to gain legitimacy and attention from scientific communities.

Uncertain future of websites and platforms. Hosting content online rather than in print presents several challenges: first, even if the software powering the interactive content is supported far into the future, the website on which the material is hosted could be taken down anytime. Second, the individual page or document could be removed. Third, the URL could change, making it difficult for readers of the print article to access the online material. Unavailability of online supplementary materials is a common problem across disciplines, and over-reliance on it could make scientific research more difficult to access (Evangelou, Trikalinos, and Ioannidis 2005; Gertler and Bullock 2017; Schaffer and Jackson 2004; Williams 2016).

Lack of accountability over modifications after publication. Material hosted on a third-party website can be edited by the author without proper documentation. Authors could manipulate their work without updating the date of last modification to erase evidence of errors.¹⁷ Even if an author modifies online material with good intentions, failure to include previous versions or at least indicate that the material has been modified can confuse readers who are reading a publication that references an earlier version of the online material.¹⁸ Situations like these could erode trust both

¹⁶The only outlet I could find that peer reviews dynamic media is the Journal of Visualized Experiments, an e-journal that publishes videos rather than articles, but it does not accept any other media such as interactive graphs or dynamic webpages.

¹⁷Consider a scenario where an author posts a bar graph with a misleading scale in an online appendix. The graph gives the appearance that there is a much greater distance between the two bars than there really is. After critics on social media point out the problematic scale, the author updates the appendix with a corrected graph. However, the appendix keeps the original date and has no indication that it has been modified. The author then accuses their critics of doctoring screenshots of the graph for the sake of discrediting the author.

¹⁸Imagine that an author posts a set of regression models in an online appendix, one of which another author references in a later article. After these articles are published, the author re-fits the models with slightly different data and finds consistent results for their variables of interest, so they update

within the scientific community and between it and the public.

2.4.3 Recommendations for publishing interactive documents

The limitations discussed here do not mean scholars should avoid using interactive content and online materials; rather, these issues point to the need for careful adherence to responsible standards. I recommend the following practices for online academic media:

- 1. Interactive content should be used primarily for shorter-term goals such as influencing public opinion, informing policymakers, and pedagogy.** Because of their limited shelf life, interactive figures are not the place to store information for centuries to come. They should be geared toward communicating information to readers for the next 10 to 20 years.¹⁹ Studies that could have long-term implications can still be presented with interactive content, but they may need to be paired with companion pieces in print journals to preserve their findings far into the future.
- 2. If possible, post a PDF version of interactive publications.** Many people prefer to read hard copies, especially for books or articles they want to read closely. Webpages can be printed, but their formatting can be messed up when printing. Providing PDF versions encourages a wider audience of people to read an article. If a document has interactive content that cannot be fairly represented by a static image, the PDF version could have a summary and link to the online version as a placeholder.
- 3. Documentation for interactive media should be stored in a PDF.** If a document is so interactive that a PDF version wouldn't make sense, it may be useful to at least describe the content, methodology, and data sources in a PDF (or another format with a longer life expectancy as the software powering the interactive content). This way, the content could be replicated if it ever becomes lost or broken beyond repair.
- 4. Online content should be hosted on established repositories or personal websites.** A 2017 study found that a majority of all links to supplementary materials published in the *American Political Science Review* between 2000 and 2013 were now broken (Gertler and Bullock 2017). Contrary to what one may

their online appendix. However, the estimates for the variables cited in the later article have reversed from positive to negative. The online appendix has no indication of modification, so future readers are confused and assume that the second author misinterpreted the results.

¹⁹The 10-year benchmark was chosen because Adobe Flash Player was retired around 10 years after the first major sign that it was on the decline. Flash was steadily rising with no end in sight until Steve Jobs published a letter criticizing it in 2010, which Fiadotau (2020) called the “beginning of the end” for Flash. 10 years later, Adobe discontinued support for Flash.

expect, links to institutional websites were *more* likely to be broken than links to personal websites (even when hosted on institutional servers). Perhaps this is because each author is more protective of their own content than is the staff for institutions where they may not even work anymore. Wherever online materials are hosted, authors should strive to make sure the link will work for at least 10 years, ideally more.

5. **Use virtual environments when producing content with programming languages.** Virtual environments store the current versions of all the packages used to produce a project so that authors can produce exact replications of their past work even if the packages have changed. R users can use the `renv` package to create virtual environments.
6. **Authors should inspect their content at least once a year.** Interactive content can change in appearance or even stop working as software, packages, and other dependencies are updated or retired. Issues can compound over time to the point where the content is not salvageable. Routine maintenance helps authors catch issues early on so their content can last longer into the future.
7. **All modifications to online content should be dated.** To avoid the issues mentioned earlier, any online material—appendices, digital working papers, visualizations—should clearly indicate the date it was last modified. Ideally, previous versions should be accessible too.

Interactive media may not last forever, but it is not supposed to. It helps convey information for the near future. However, by following the steps listed here, authors can minimize the risks and maximize the lifespan of their interactive content.

2.5 Conclusion

Data visualizations are the most promising means through which academics can connect with wider audiences. Social science knowledge has been growing more complex, but the media with which social scientists visualize data have remained static (literally). Now more than ever, scholars need to catch up and embrace modern data visualization methods, yet they have very little incentive to do so. Most figures in academic work have to be static so they can fit in physical books even though most readers access these publications digitally. Although journal articles (and many books) are now posted online as both PDFs and interactive webpages, the content on the web version generally has to match the content in the PDF and print version. Hence, while web versions of print publications are technically interactive documents, their content is still constrained by what can fit in a static document. Granted, PDFs are useful for printing hard copies and preserving scholarship long into the future. But

forcing peer-reviewed content to be static and printer-friendly comes with a large opportunity cost. This chapter only scratches the surface of the advantages to using more modern media. Interactivity enables scholars to make their research more accessible to more people, easier to understand, more effective at changing people's minds, more transparent, and more informative than static content.

Valuing data visualizations as products in and of themselves opens the door to even more opportunity for growth. Many research programs would benefit from treating static peer-reviewed publications as a means to an end—an intermediary step where scholars hash out nuanced debates among themselves and document methodological details that most people don't need to know—and treating visualizations, web-pages, and social media posts as the final products. While researchers often take the initiative to post visualizations on public platforms anyway, they often struggle to design and discuss them effectively. They also tend to engage in these activities as a hobby or afterthought—motivated by an altruistic sense of duty to spread information or a personal desire for social media followers—since they don't necessarily get much of a payoff from this work in their careers. Traditional publications still hold far more weight on their CVs, which discourages researchers from putting significant effort into content that's more accessible and engaging to the public.

Luckily, as this chapter has shown, sharing knowledge with dynamic visualizations takes less effort than one might expect. It takes just a few minutes to learn how to turn a simple plot into an interactive one, and AI tools such as the Visualization Assistant for R make this process even easier. Researchers can independently post visualizations related to their work on social media platforms, personal websites, online repositories like RPubs, and news outlets. Working papers can also be circulated as HTML files instead of (or in addition to) PDFs so they can include dynamic media. Any figures from these manuscripts that cannot be included in the official publication can be posted in interactive webpages that serve as online appendices in lieu of PDFs. Anytime researchers introduce a new dataset, they can post interactive dashboards in addition to raw data files, a practice that is already fairly standard for datasets hosted by large institutions.

Even with the ease and utility of producing dynamic media, researchers may still feel that it brings a low return on investment careerwise. Going forward, academic departments and organizations could offer more institutional incentives for publishing in non-traditional formats. They could place a greater weight on this content and social media presence when reviewing applicants for career advancements. PhD programs could provide more training on designing quality visualizations and engaging with the public. These practices don't just benefit the public; they could also help address some of the challenges that academic disciplines are facing internally. Graduate students and early-career academics often struggle to find novel research questions (or old questions worth revisiting with more novel methods). On top of the fact

that most of the low-hanging fruit has already been picked by now, more people than ever are publishing academic research. Young researchers often find themselves in a dilemma where they can only study either extremely specific topics that they may not find particularly interesting or big-picture topics on which they lack the experience needed to make a credible contribution to the literature. Now that there's such a pressing need for content that carefully summarizes high-level research with simple language and visuals, a role best served by academics, producing novel research does not need to be as high of a priority anymore. Repackaging existing research for wider audiences is valuable too.

Likewise, academic publishers could gradually shift toward accepting more interactive content. Webpages could serve as the primary versions of articles while PDFs and print copies serve as secondary versions. Or, instead of releasing web and print formats of the same content, journals could encourage authors to split their projects into two separate components that are both peer reviewed: an interactive webpage with visualizations and key findings (similar to the Visual Summary on the homepage of this dissertation) and a static article with documentation of the theory, data, and methods used to produce the content on the webpage. Under the traditional model of academic publishing which has dominated the industry since the rise of the Internet, content that appears in print is the main component of a study while online materials are supplementary. Nowadays, it makes more sense to flip this around.

Given the lack of institutional incentives for scholars to prioritize modern media formats, the erosion of public trust in science is understandable. There are of course many more reasons why academia has lost its legitimacy in some people's eyes, but data visualizations hold the key to restoring this legitimacy. They help experts show, not tell, their knowledge without relying on appeals to authority or references to inaccessible research. Yet academics have only begun to embrace the power of data visualizations in public discourse. Videos and interactive graphs are getting people's attention while static content is not. These media are the most powerful tools at researchers' disposal for communicating ideas among themselves and to the public. One might even say that researchers don't really have a choice if they want the public to listen to them; this is how people learn about data now. A whole new ecosystem of amateur science has developed on social media, centered around misleading data visualizations. People want this kind of content, and they need it from the best sources. Science can either adapt or continue falling out of relevance. Misinformation is going viral everywhere now, and it can't be fought with paywalled PDFs.

3 Tyranny of the Majority

NO THIRD-PARTY CANDIDATE has ever won a presidential election in the United States... right? This is a common assumption made by pundits, scholars, and the public (Abramson et al. 1995; Collins 2023). But minor party candidates actually have won the presidency. The last time it happened was one of the most famous elections in American politics: the election of 1860. The two major parties of the 1850s—the Democrats and the Whigs—were torn apart over the issue of slavery, allowing a small party to swoop into power.¹ That party was, of course, the Republican Party. As this new party rose, some Whigs joined it, some formed a short-lived third party, and others went to the Democratic Party (Holt 1999). Soon some Democrats switched to the Republican Party as well. A new two-party system settled into place almost as soon as the old one had fallen.

Americans often forget that Abraham Lincoln was a minor party candidate because his party has been one of the two major parties ever since then. Recognizing that Lincoln was a minor party candidate is important because his election demonstrates that when a new party rises up in American politics, it doesn't create a multiparty system; it just creates a different two-party system. Most Americans would prefer to have more parties, but they generally want that to happen organically (Drutman, Galston, and Lindberg 2021). There is a romance to the idea that if a third party could just crack the code—with strong leadership, appealing candidates, ample funding, good messaging, and a unifying ideology—then it would become a viable political force alongside the two major parties. More parties could then follow suit, creating a multiparty system.

However, if a third party gained steam today and started winning elections, it would not be a third party for long. The weaker of the two major parties would die out, and the electorate would sort itself back into two camps as it did in the 1860s. Many third-party movements (e.g., the Forward Party) do advocate for reforms that they argue will make the environment more conducive to third parties, such as ranked-choice voting and open primaries. On their own, these reforms are not strong enough to create a multiparty democracy, as I show in this chapter. Some centrist third-party movements (e.g., No Labels) are not necessarily against a system dominated by two parties; they primarily aim to serve as bipartisan mediators keeping the two major

¹The Whigs had died out by 1860, but many Whigs formed a new party, the Constitutional Union Party. The Democrats were the only major party in 1860.

parties in check. Regardless of their aims, most third parties are largely unsuccessful at their goals because they do not touch the root of the problem: the US uses an election format that naturally incentivizes voters to group themselves into two polarized sides. Without structural form, there is little to no chance of sustaining more than two parties and avoiding the challenges of bipolar politics.

Are two-party systems always a bad thing? Not necessarily, but the US Constitution was not designed to handle a two-party system, as I argue in Section 3.1. I revisit writings of the Framers of the Constitution and illustrate that they designed the Constitution with the assumption that the United States would develop a multiparty system. With this in mind, I then argue that the hallmark of the Constitution's design—the separation of powers into three independent branches, each with mechanisms to push back on the others' abuses of power—only works in the context of a multiparty system. In Section 3.2 I discuss how winner-take-all elections give rise to two-party systems, which paralyzes the Constitution's checks and balances. I then explore why ranked-choice voting is not sufficient for breaking the two-party. Section 3.3 then reviews the literature on proportional representation, an election system that many scholars argue is needed in the US to revitalize American democracy. The effects of multiparty systems and proportional representation are then explored using an interactive app that displays a many different predictors and outcomes among developed democracies.

3.1 The Constitution was not designed for a two-party system

The Framers of the Constitution had never seen political parties before—not under the Articles of Confederation, not in the colonial governments, not in the European parliaments, not in indigenous nations.² They figured people would form allegiances and factions, but they could only guess how these group dynamics would work. The term *political party* had not yet been solidified in the eighteenth century, so *faction* and *party* were often used interchangeably (Hoadley 1980). James Madison (1788a) defined a *faction* as such:

By a faction, I understand a number of citizens, whether amounting to a majority or a minority of the whole, who are united and actuated by some common impulse of passion, or of interest, adversed to the rights of other citizens, or to the permanent and aggregate interests of the community.

²Grinde Jr and Johansen (1991) argue that the Iroquois Confederacy had substantial influence on the Constitution, although their claims are disputed (Levy 1996). It seems plausible that Iroquois nations influenced the Framers to some degree or least *could* have influenced them if Iroquois nations had something like political parties.

One could argue that political parties are not *necessarily* factions by Madison's definition because not all parties are against other people's rights or the greater good. But a party that truly represents the long-term public interests for everyone and doesn't seek to limit any rights at all could only be considered perfect, and I am skeptical that any perfect parties exist. Virtually all parties are by nature more interested in protecting their own constituents' rights above others and gaining political power over advancing permanent national interests. Therefore, a typical political party is at least a type of faction, if not the same concept that Madison and his colleagues referred to when discussing factions.

Throughout the *Federalist Papers*, a collection of essays defending the design of the Constitution, Madison and Alexander Hamilton were both wary of the dangers of factions and mindful of their inevitability. In *Federalist 10*, Madison (1788a) argued that factions really only presented a problem when a single faction controlled a majority of a government:

If a faction consists of less than a majority, relief is supplied by the republican principle, which enables the majority to defeat its sinister views by regular vote. It may clog the administration, it may convulse the society; but it will be unable to execute and mask its violence under the forms of the Constitution. When a majority is included in a faction, the form of popular government, on the other hand, enables it to sacrifice to its ruling passion or interest both the public good and the rights of other citizens.

The main idea of Madison's essay is that no faction should ever hold a majority of the power in a state. Madison likely would have seen the very existence of a majority party in Congress as a threat to liberty.

3.1.1 Madison's theory of creating multiparty democracy

How can factions be prevented from gaining a majority? Madison offered two solutions. First, he argued that a republic—which today we would call a representative democracy—offered more safeguards against a tyranny of the majority than a direct democracy. Second, he argued that larger republics were safer from majority factions. Madison seemed comfortable that the United States was too large for it to even be possible for a single faction to hold a majority of the power in the federal government.

The smaller the society, the fewer probably will be the distinct parties and interests composing it; the fewer the distinct parties and interests, the more frequently will a majority be found of the same party ... Extend the sphere, and you take in a greater variety of parties and interests; you make

it less probable that a majority of the whole will have a common motive to invade the rights of other citizens ... Hence, it clearly appears, that the same advantage which a republic has over a democracy, in controlling the effects of faction, is enjoyed by a large over a small republic,—is enjoyed by the Union over the States composing it.

Madison figured that smaller polities like states may end up being dominated by a majority party or faction, but the United States was so large and diverse that the federal level would surely have a wider variety of parties, each representing a minority. To summarize, Madison theorized that two key conditions were needed to ensure a multi-faction or multiparty democracy: a representative government and a large population. Now that many countries have been experimenting with democracy for centuries, we can test this theory fairly easily by comparing party systems in representative democracies of various sizes.³ I focus on two implications of this theory:

- *Madisonian hypothesis 1:* Larger countries (by population) tend to have more parties in their national legislatures than smaller countries.
- *Madisonian hypothesis 2:* Larger countries are less likely to have majority parties in their national legislature than smaller countries.

I explore these hypotheses using a sample of 36 OECD countries, which are generally considered to be developed representative democracies.⁴ Figure 3.1(A) shows the population and number of number of parties in each OECD country, and Figure 3.1(B) displays the seat shares of the largest party in each country.

Neither of the Madisonian hypotheses on the relationship between population and party systems is supported. As the first panel shows, there is no clear correlation between population and number of parties. In fact, the correlation is negative ($r = -0.31$), although it is not statistically significant. The largest country in the sample (the US) has only two parties, and the smallest country (Iceland) has seven. If there is a relationship, it is in the opposite direction as Madison expected: larger countries appear to be more likely to have two-party systems than smaller countries.

Turning to the second panel, there is a somewhat clearer relationship ($r = 0.32$), also not statistically significant), but it is again in the opposite direction as Madison's theory implies. Only two countries in the bottom half of the sample by population have a majority party, whereas seven of the countries in the top half have majority parties. Smaller countries are more likely to have smaller parties, and larger countries are more likely to have parties that hold a majority or close to a majority of the

³While it would be helpful to compare representative democracies and direct democracies (or as Madison calls them, republics and democracies), no major countries are direct democracies.

⁴The OECD now has 38 members, but the last two countries to join (Colombia and Costa Rica) were admitted in mid-2020 and 2021. Since the data used here are from 2020, these two countries were excluded from the analysis.

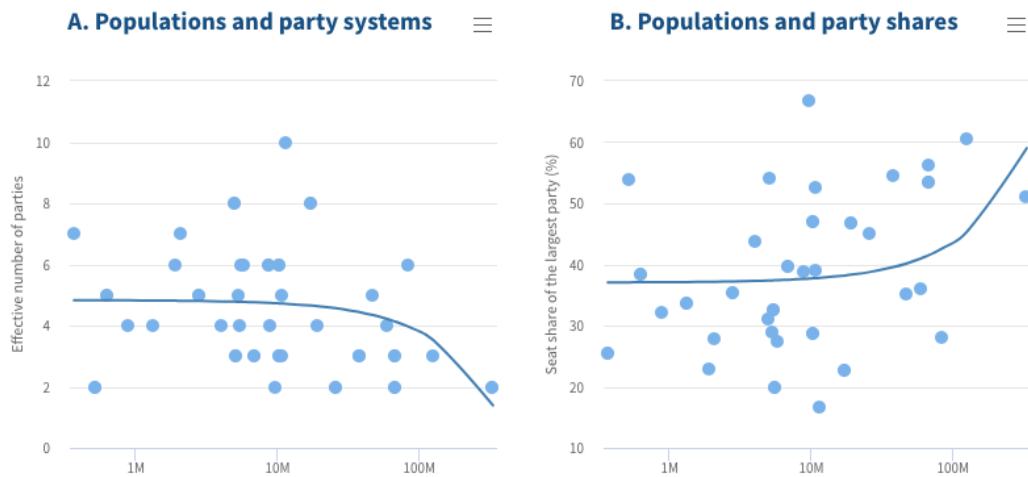


Figure 3.1: Populations and party systems in the OECD

seats in the legislature.

Madison envisioned the United States as a multi-faction or multiparty democracy, but his theory of what conditions were needed to create this had never been tested. As it turns out, the strongest predictor of whether a single party can control a legislature is not the population of a country; it is the format of its electoral systems. This will be discussed at length in Section 3.2. For now, the point is that James Madison, the chief architect of the Constitution, assumed that the United States would develop a multiparty system naturally, without the need for any institutional rules to reinforce this.

Madison's *Federalist 10* is one of the only writings from the Framers offering a theory on the causes of majority factions.⁵ Assuming Madison's views were shared by his colleagues, the Framers of the Constitution designed the whole political system thinking there would be more than just two parties (if there were any at all). If the Constitution had been written with today's knowledge, the Framers likely would have either enumerated electoral rules that encourage more parties or fundamentally changed the calculus of the checks and balances to better suit a two-party system.

⁵The Anti-Federalists critiqued Madison's theory on the grounds that a large, diverse republic is not practical as it would be too divided, but they did not directly address what conditions would lead to majority factions or multiparty systems (Cato 1787).

3.1.2 Montesquieu's theory of separation of powers

Elsewhere in the *Federalist Papers*, Madison and Hamilton suggest that splitting up the powers of the government into three independent branches would be another safeguard against a single faction holding power. The separation of powers into different branches seems normal to Americans today, but it was revolutionary in the 1700s. Colonial governments and European parliaments had no clear division between legislative and executive roles. Separating these powers had only been suggested by theorists such as Montesquieu, but it had yet to be put into practice (Bellamy 1996; Madison 1788b). Montesquieu introduced the idea in *The Spirit of Laws* (1748), which Madison later referenced in *Federalist* 47 (1788b):

When the legislative and executive powers are united in the same person, or in the same body of magistrates, there can be no liberty; because apprehensions may arise, lest the same monarch or senate should enact tyrannical laws, to execute them in a tyrannical manner. Again, there is no liberty if the judiciary power be not separated from the legislative and executive. Were it joined with the legislative, the life and liberty of the subject would be exposed to arbitrary controul; for the judge would be then the legislator. Were it joined to the executive power, the judge might behave with violence and oppression.

Montesquieu's theory was grounded in moral arguments, logical deduction, and speculation, since no data existed yet showing how separating these powers would work in the real world. Nowadays, there is libraries' worth of data and research on this theory. We can break the theory down into two main pieces:

- *Montesquieu hypothesis 1:* Countries with independent judiciaries are more likely to be free, democratic, and stable than countries where the executive and/or legislative branch has more power over the judicial branch.
- *Montesquieu hypothesis 2:* Parliamentary systems (where the executive branch answers to the legislature) are more likely to be autocratic and infringe on personal liberties than presidential systems (where the legislature and executive branch are independent).

The first hypothesis has plenty of support; separating the judicial branch from the legislative and executive branches is an important safeguard against tyranny (Berggren and Gutmann 2020; Gibler and Randazzo 2011; Schedler, Diamond, and Plattner 1999). But there is little empirical support for the claim that legislative and executive branches need to be independent from each other. In fact, the data suggest the opposite. Presidential systems are around twice as likely to be autocracies than parliamentary countries (Lijphart 2017; Linz 1990). On average, countries where the legislature is more directly involved in the executive branch

score twice as high on measures of democracy and civil liberties as countries that strictly separate the legislative and executive branches.⁶

Stronger legislatures tend to bring stronger democracy

V-Dem democracy scores by form of government, 2020

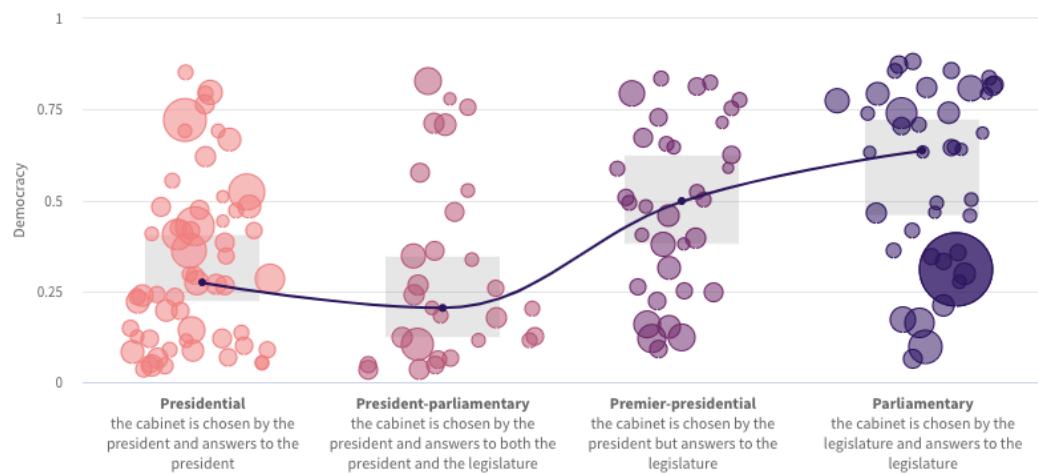


Figure 3.2: Political outcomes in four forms of government (screenshot)

The US is one of the only countries in history to effectively separate powers into three independent branches for a long period of time (Linz 1990). When the legislature and executive are strictly separate, the executive naturally becomes more powerful. Legislatures are slow and limited; they usually have hundreds of members who must deliberate and compromise with each other, and they are often split into two chambers which must both agree on policy. Meanwhile, executive branches that are run by a single person such as a president have a much easier time playing politics to achieve their goals (W. P. Marshall 2008). As a result, presidencies tend to gain more and more power over time regardless of their constitutional checks on power, usually to the point where the country is either unstable or autocratic (Burkhardt 2017; Crenson and Ginsberg 2007; Linz 1990). The US has simply been slower than most other presidential systems to reach this point. In parliamentary systems, the executive only gains power if the legislature grants it, so they tend not to experience this continuous executive expansion.

⁶Among democratic countries, there is no clear difference between presidential and parliamentary systems on measures of democratic performance. This can be seen in Figure 3.8 , which only shows countries that are generally considered to be democracies. Presidential democracies score higher than parliamentary democracies on some measures (such as Freedom House's civil liberties score), and they score lower on other measures (such as V-Dem's liberal democracy index). However, among all the countries in the world, presidential systems are more than twice as likely to be autocracies.

The separation of legislative and executive powers is not an inherently bad idea. Some scholars argue that the presidential model only *appears* to be more easily corrupted because most of the countries that have implemented it (especially in Latin America) were already unstable before adopting it (Cheibub, Elkins, and Ginsburg 2011; Mainwaring and Shugart 1997). Furthermore, the metrics in Figure 3.2 are spread out widely within each form of government, showing that this distinction is not very meaningful toward any of these outcomes (Cheibub and Limongi 2002). We at least know that the second Montesquieu hypothesis has very little support, if any. Separating the executive and legislative powers does not seem to matter. It is rarely an effective safeguard against tyranny on its own and *possibly* enables tyranny. Even if this model is a solid idea in theory, in practice most countries that have successfully prevented tyrannical leaders had to violate Montesquieu's principle of independent branches and give their legislature more power over the executive with either a semi-presidential system or a full parliamentary system.

3.1.3 How two-party systems affect the separation of powers

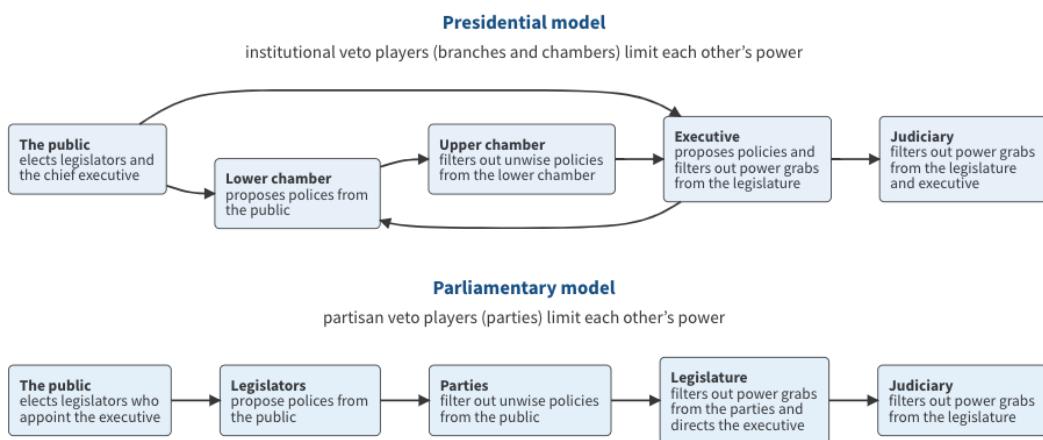
The idea of three independent branches was the basis of a more modern political science concept, veto players. First proposed by George Tsebelis (1995), a *veto player* is any institution that must agree to a policy for it to be implemented, whether it be a body like the Senate or a single person like the president (Ganghof 2003; Tsebelis 1995). In the United States, the word “veto” typically only refers to presidential vetoes, but the word more broadly means “block.” In that sense, any institution that can block change is a veto player. The concept of veto players creates a framework that allows for comparisons of power dynamics across countries with different political structures. In parliamentary systems, the executive branch is subordinate to the legislative branch, not independent from it, so these countries rely on a different model of checks and balances.

Presidential systems rely more on *institutional* veto players (separate branches and offices built into the constitution) while parliamentary systems rely on *partisan* veto players (political parties) as obstacles to policy change. The US, for example, has three or four institutional veto players, depending on whether the judiciary is counted.⁷ The legislative branch has two bodies that can block change (the House

⁷Courts are often excluded from counts of veto players (Tsebelis 2002). Judges do not directly participate in the formation or execution of policy. They also don't really *block* change; they *undo* change that has already been made. Even in the long run, courts do not have to consent to every single policy change; they only make a ruling when a legal challenge arises. Plus, court systems can be complicated. It's not clear whether to count the entire judiciary as a unitary veto player or several.

In this chapter, I usually regard the judiciary as a veto player in the US federal government. This way, the concept of separation of powers among independent branches maps more closely onto the veto player framework.

and Senate), the president can veto legislation, and the Supreme Court can overturn legislation. Meanwhile, parliamentary systems tend not to have as many built-in institutional obstacles to change, so political parties are the main centers of power (Tsebelis 1999). Because parliaments tend to have multiple parties, the government is run by a coalition of parties. In general, if one of the parties in the majority coalition does not agree to a policy change, the coalition fails to garner enough votes. Thus, parties act as veto players in these systems. To summarize, in presidential systems, the three branches of government serve as the veto players—Independent centers of power that hold each other accountable—whereas political parties take on this role in parliamentary systems. Figure 3.3 lays out one way of conceptualizing these two models.



Both of these models attempt to solve two fundamental problems facing any democracy, which Madison and Hamilton discussed extensively in the *Federalist Papers*. First, the more dangerous popular impulses from the public have to be filtered out somehow. Direct democracy is not practical on a large scale anyway since policy decisions take too much time and information for them to be left entirely to voters. A group of responsible elected officials must govern on the public's behalf. This creates the second problem: these officials altogether have extraordinary power at their disposal, so their power has to be dispersed into competing groups of some kind to prevent them from working together to accumulate power.⁸ The presiden-

⁸Landemore (2020) argues for an alternative model of representative democracy, *open democracy*, which is governed by juries of randomly selected citizens rather than elected offices. This is closer to ancient models of democracy. It also would avoid the second problem that representative democracies face. Adopting open democracy would take a much larger paradigm shift than shifting to a

tial model *imposes* these divisions within the constitution and enumerates specific procedures for pushing back on each other's power, whereas the parliamentary model lets these groups and their dynamics evolve organically.

Before political parties existed, it made sense to force these divisions of power into existence by creating several institutional veto players. Even if officials formed factions to collude for power, these factions would likely all be contained to a single branch or body, so they wouldn't usually collude across branches. Members of the House may have different alliances than members of the Senate; even if House and Senate factions were united, they would be very different from the schools of thought among judges and any cliques in the executive cabinet. Having completely different roles, the three branches would each develop their own faction systems (if at all), without any common thread to unite across the branches. That way, the branches can hold each other accountable since they have no interbranch loyalties. They operate as three independent power centers in a constant tug-of-war that prevents any of them from gaining too much power.

Political parties change the nature of the branches. They unite officials of all three branches toward common goals. The primary cleavage dividing power shifts from the branches to the parties, and the parties effectively become the veto players. The branches may be the *de jure* veto players, but the parties often act as *de facto* veto players. A simple way to illustrate this point is to consider two sets of competing hypotheses. If the three branches are the primary institutions around which the constitutional checks and balances maintain an equilibrium of power, then we would expect to see the patterns identified in the second column of Table 3.1 below. If political parties have taken on this role, then we would expect to see the patterns in the third column. The fourth column presents some insights from the literature.

Table 3.1: Theories of dominant veto players

	If branches are the veto players...	If parties are the veto players...	Results from the literature
Legislature	Clear evidence of a scandal is a stronger predictor of whether an official survives impeachment than the size of their party in the legislature.	Party affiliation is a stronger predictor of legislators' votes on impeachment than clear evidence of a scandal.	Parties dominate: presidents are more likely to survive impeachment when their parties are larger (Kim 2013).

presidential model, which is this dissertation's main recommendation, so it would probably be more difficult to pass. While I agree with Landemore that open democracy would be the smarter route, this dissertation focuses on reforming electoral institutions in the meantime. It assumes that open democracy is not viable for the foreseeable future.

	If branches are the veto players...	If parties are the veto players...	Results from the literature
Executive	Presidents veto bills passed by their own party just as much as they veto bills passed by the opposition party.	Presidents veto bills passed by the opposition party significantly more than bills passed by their own party.	Parties dominate: presidents veto bills more when their party does not control Congress (Copeland 1983).
Judiciary	Legal precedent is a stronger predictor of judges' decisions than the party of the president who appointed them.	The party of the president who appointed a judge is a stronger predictor of their decisions than legal precedent.	Parties dominate: the party of the president who appointed a judge and their voting history are stronger predictors of their decisions than any indicator of legal precedent (Gibson 1978).

As one would expect, this very brief review suggests that partisan veto players are far more important for understanding American political behavior than institutional veto players. In the US, politicians tend to use constitutional checks and balances to constrain the other party, not to constrain other branches. When only two parties hold power in the federal government, the executive branch is by nature always controlled by one party, the House and the Senate are each controlled by one party except in the case of a tie or substantial independent representation, and the courts usually lean toward one party or the other.⁹ This means that at any given time, a single party usually controls two or more of the institutional veto players. From time to time, a single party in the US controls all three branches.¹⁰ When this happens, the powers of the branches are no longer separate; they are all controlled by or favorable to a single faction.

This does not mean political parties are the problem; the issue is that the system of checks and balances ignores their existence. Parties are natural, inevitable, and adaptable to changing environments, whereas the institutions and procedures laid out in the Constitution are arbitrary and entrenched. Parties can be very useful in

⁹Judges are technically nonpartisan, but they are appointed by partisan presidents, confirmed by a partisan Senate, and often vote along partisan lines. No other trait among judges is a stronger predictor of their decisions than the party of the president who appointed them. It may be even easier for a group to gain power by appointing officials with a clear track record aligned with their interests to lifetime positions rather than by winning elections organically. We can think of judges not as active party agents, but as assets for the parties.

¹⁰The word “control” is used loosely here for the judicial branch. In this chapter, I say that a party “controls” a court as a short-form way of saying that the party appointed a majority of the judges on the court.

a constitutional system designed with them in mind. They help organize both the public and elites into groups that altogether create a stable equilibrium of power at any given point in time without the need for amendments. But the US Constitution was not designed with a two-party system in mind. Its checks and balances among branches grind to halt when those branches become dominated by two adversarial groups that learn to use these checks as political tools to advance their own agendas rather than as accountability tools to limit abuses of power.

3.2 Plurality voting in pluralistic societies

What James Madison didn't know—and couldn't have known—is that the electoral method used by the United States, known as *plurality voting* (also called winner-takes-all elections, first-past-the-post voting, or majoritarian elections), tends to give rise to two-party systems regardless of population or diversity (unless people are spread out in a very specific way). Nearly every election in the US has a single winner, most of whom must have the support of more than half of their constituents. Under this arrangement, people naturally group themselves into two camps to maximize the chance that a candidate relatively close to their interests wins the election. These organizations soon solidify as the winning side seeks to maintain its power and the losing side needs a united front so it can win in the future. No faction or social group has any incentive to split off from these coalitions and form a third one, as it would most likely lose its seats.

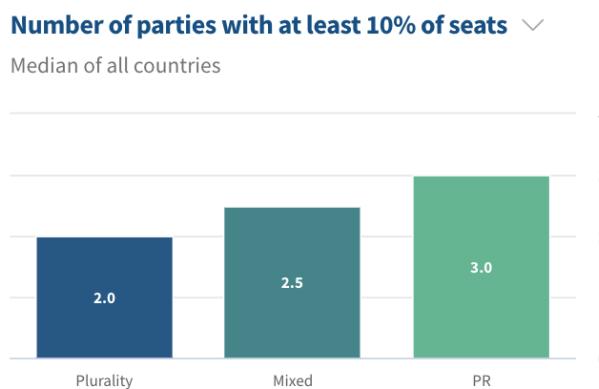


Figure 3.4: Number of parties by electoral system (screenshot)

3.2.1 Two-party systems and lopsided multiparty systems

Around the world, only three major countries have multiparty systems despite using plurality voting: India, the United Kingdom, and Canada. In these countries, at least one region is culturally distinct from the rest of the population. In the United Kingdom, most of the parliamentary seats for Scotland and Northern Ireland are held by small Celtic parties (the Scottish National Party, the Democratic Unionist Party, Sinn Féin, and others).¹¹ Likewise, the Bloc Québécois represents most of Quebec in the Canadian Parliament. Most other Canadians and Brits are split between two major parties. India has many more regional parties representing ethnic minorities that each dominate a particular area of the country. In general, a minor party really only has a chance at winning any seats under plurality voting if it is the predominant group in part of the country because each district can only be represented by a single person (Riker 1982).¹² For the national political arena to be a multiparty system, these majority-minority areas must be fairly common in the country.¹³

This US does not meet these conditions because its geo-political divisions are more urban-rural than regional (Rodden 2019). As of 2022, a minority group at the national level makes up a majority of the population in just over 11% of congressional districts.¹⁴ Plus, only one state is not majority white (Hawaii, although it doesn't have a

¹¹In the most recent general election (2019), the Scottish National Party won nearly three-fourths of Scotland's seats in the House of Commons despite receiving less than half the votes. Altogether, more than 43% of Scots voted for one of the two major parties of the UK (the Conservatives and Labour), yet these parties won only 10% of the seats from Scotland. Even though plurality voting can help empower regional parties, it does not necessarily lead to fair representation of the voters in those regions. This system is prone to *gerrymandering*, or purposely carving out districts to favor a particular party or outcome.

¹²I also suspect that countries that democratized quickly are more likely to have multiparty systems because a more diverse range of people could vote when their party systems formed. When the US first developed a two-party system, only affluent white men could vote. There was diversity within this group, but nowhere near as much as there would have been if people of color, indigenous people, lower income people, and women could vote. By the time these groups were enfranchised, the two-party system had already entrenched itself in the political landscape. Perhaps countries with universal suffrage prior to the adoption of winner-take-all elections are better able to sustain multiparty systems than those that enfranchised groups gradually.

¹³In theory, a country that doesn't meet these conditions could possibly move into position after a large-scale population shift or a major crisis that creates a new political rift. In the US, the two-party system would likely only fragment if a major crisis ends up dividing Americans geographically rather than ideologically on a key issue. For example, climate change could cause coastal conservatives to shift into a green conservative party, economic collapse could give rise to populist parties in working class districts, or immigration influxes could fuel nationalist parties in border regions. Aside from electoral reform toward proportional representation, major social pressures like these are usually the only forces that can increase the number of parties in countries with plurality elections (Cheibub et al. 2022; W. R. Clark and Golder 2006).

¹⁴Nearly one-third of districts in the House (136 out 435, 31%) are majority-minority districts by race and ethnicity (Ballotpedia). However, a single minority group makes up a majority of the population

majority group), so minority representation is even more difficult in the Senate. Even if 50 to 100 districts had both the motivation and the momentum to elect representatives from local or ethnic parties, these parties would have no representation in the Senate, the executive branch, or the courts. By sticking with the two-party system, these groups can usually rely on their party to at least protect their rights, even if they don't have much leverage within this party to advance their policy goals. Splitting off from the two-party system would leave them with neither leverage nor protection of their rights. For these reasons, forming a third party is usually either impossible or unsafe for minority groups in the US.

Plurality voting can also produce multiparty systems when a country is divided from region to region by ideology, not just by race or ethnicity. Throughout US history, the South has dissociated itself from the two-party system more than any other region (Key 1949). In the mid-nineteenth century, Southern members of Congress voted as an independent bloc even though they were Democrats on paper. The region briefly supported a third-party presidential run by Alabama politician George Wallace in 1968, but the movement failed to materialize (Crespi 1971). There was also the Civil War, of course. If the South had not seceded in 1860, it probably would have been downgraded to a weak regional party similar to the Scottish National Party or the Bloc Québécois, creating a multiparty system at the national level. The fact that the South tried to exit the US political arena altogether and started a whole war instead of accepting a status as a third party shows how unattractive the idea of joining a minor party is under the American election system.

Even when the conditions are right for multiparty systems to develop under plurality voting, their environments tend to be lopsided—one large party dominates, while most other parties are small and weak. In the UK and India, the governing party holds a majority of the legislature on its own (as of 2023).¹⁵ In most multiparty systems, no party is large enough to control the legislature, so several parties have to compromise with each other to form a majority coalition. Granted, a party large enough to hold a majority is by nature a coalition of factions that bargain within the party. However, coalition parties like this tend to have different dynamics and effects than similarly sized coalitions of parties. A party brand gives a group a clearer identity, a stronger donor and voter base, a more organized strategy, a more cohesive

in only 50 of these districts (11% of the full House); the rest have no majority group, although whites are usually the plurality.

¹⁵Another important difference between these systems and most other plurality systems is that the UK and India are parliamentary systems, so their chief executive and cabinet are chosen by the legislature. This makes it easier for party leaders to form coalitions and bargain over cabinet seats whenever the party system is not lopsided. However, forming coalitions and ideologically diverse cabinets is still possible in multiparty presidential systems like Brazil. While parliamentarism may facilitate multiparty systems slightly more than presidentialism, the political geographies of the UK and India are the main causes of their multiparty systems.

message, and ultimately more bargaining power than an informal faction within a party or a nonpartisan body (Aldrich 1995). Leadership is more centralized in majority parties than in majority coalitions, making it easier for economic elites to control policy and for political elites to push their agenda (Baldini 2000; Bawn and Rosenbluth 2003; Vowles 2010). Hence, the governing party in a lopsided multiparty system tends to act more like a majority party in a two-party system than a majority coalition in a multiparty system.¹⁶



Figure 3.5: Party composition of the lower chamber of India’s parliament (screen-shot)

The bottom line is that plurality elections encourage at least one side of the electorate (usually both) to consolidate into a single party. This tendency, called Duverger’s law, only became clear as more countries democratized and experimented with constitutions (Riker 1982). Maintaining healthy multiparty competition typically requires proportional representation and multi-member districts, which were developed a century *after* the Constitution was written (Blais, Dobrzynska, and Indridason 2004; M. M. Singer 2012; Taagepera and Grogman 2006). These methods are discussed more in the next section. First, we’ll examine why a more popular reform, which still fits under the family of plurality election systems, does not change the rules of the game enough to achieve the outcomes that proportional representation can bring.

¹⁶Theoretically, a lopsided multiparty system could effectively become a single-party regime fairly easily. In two-party systems, the majority party’s power is constrained by the threat of the other party taking power in the next election. In more balanced multiparty systems, parties are usually constrained by the fact that each one only holds a minority and must compromise with others to achieve any of its goals. Both of these situations force the larger party or parties to limit their power and moderate their policies. In multiparty systems dominated by a majority party, this party has neither a serious threat from the opposition nor any reason to compromise with other parties.

3.2.2 The shortcomings of ranked-choice voting

Of all the electoral reforms that claim to promote multiparty systems, ranked-choice voting (RCV) has gained the most steam in the United States (FairVote 2023). Rather than selecting only one option on a ballot, voters can rank candidates in their preferred order. If a candidate received a majority of the first-choice votes, they win. If no one received a majority, then the candidate with the least amount of first-choice votes is eliminated. Those votes then go toward their supporters' second-choice votes. If anyone has a majority of the remaining first-choice votes and reallocated second-choice votes, then they win. If not, the process is repeated. One by one, candidates are eliminated and their votes are reallocated until someone has a majority.

A wide variety of studies have examined the effects of RCV, with mixed results. As the appendices below discuss, most research finds little to no positive effect on desirable outcomes, and there is evidence of harmful side effects. Crucially, there is very little evidence that RCV substantially benefits third-party candidates or weakens the two-party system. In one of the only studies directly addressing this question, Simmons, Gutierrez, and Transue (2022) conducted a survey experiment asking respondents which presidential candidate they would vote for in the then-upcoming 2020 election. Some respondents were given a standard plurality ballot and others were given an RCV ballot. 3.75% of respondents with the plurality ballot voted for a third-party candidate, whereas 7% of the respondents in the RCV selected a third-party candidate as their first choice. Thus, while RCV can increase third-party support by a few points, this is nowhere near enough to change the outcome of the election.

The survey experiment by Simmons, Gutierrez, and Transue is also limited in external validity, as an experimental simulation may not be representative of real-world elections. To assess the effect of RCV on third parties in practice, I obtained a comprehensive dataset of single-winner RCV elections in the United States from FairVote (2023).¹⁷ After removing party primaries and nonpartisan elections, the dataset includes 272 individual races that used RCV from November 2004 to March 2023.¹⁸ Third-party candidates won seats with RCV in only two municipalities: Burlington, VT (the Vermont Progressive Party) and Minneapolis, MN (one Green Party and one Democratic Socialist). However, these third parties had already won elections in these seats *before* RCV was implemented. In Minneapolis, a member of the Green Party had been in the city council since 2006, three years before it adopted

¹⁷The dataset does not include party affiliations, so I obtained each winning candidate's party affiliation from Ballotpedia, Wikipedia, official government websites, and news articles using a combination of web scraping and manual entry.

¹⁸It was hard to discern whether elections were nonpartisan because many municipal elections are nonpartisan in theory but partisan in practice. I generally counted elections as nonpartisan if I could find evidence that they are officially nonpartisan even if candidates had known affiliations with parties.

RCV. In Burlington, Progressives had been winning seats for years before RCV was implemented, and they actually lost a seat to the Democrats in the first election that used RCV (City of Burlington 2023).

The fact that the only two RCV jurisdictions with third-party representation already had third-party representation suggests that RCV may be more of an effect than a cause of third-party success. I suspect that RCV is the most likely to be adopted in jurisdictions where demand for third parties and independent representation is already high. Ideally, we could evaluate how non-major-party success affects and is affected by RCV adoption using methods such as a differences-in-differences design, but there is not enough data to make valid inference with this approach. According to FairVote (2023), only around 50 jurisdictions have adopted RCV as of 2023. Many of these jurisdictions have nonpartisan elections, and many of the ones with partisan elections do not have accessible election data. Therefore, I take a more qualitative approach by focusing on two cases: Burlington, VT and Alaska. Burlington is the only RCV jurisdiction with a substantial third-party presence, and Alaska is the only state in the country that uses RCV for legislative elections.¹⁹

Burlington. Burlington, VT effectively has its own two-party system dominated by Democrats and Progressives, since Republicans rarely win elections even for wards and districts within the city. As Figure 3.6 shows, Republicans only held one seat on the city council until 2020, whereas Progressives sometimes hold more seats than Democrats. Of interest for the present analysis is how the partisan composition changed after ranked-choice voting was implemented in 2022. Only five elections have occurred since then, and one seat actually flipped from Progressive to Democratic. While this is not enough data to make any conclusions about RCV, it does cast doubt on any claims that Burlington serves as evidence of RCV helping third parties. If anything, it appears to have hurt a local party and reinforced a major national party.

Alaska. Alaska adopted RCV in 2020 for all state and federal elections, and it was first used in 2022. In the years leading up to the adoption of RCV, Alaska's two-party system was already less rigid than in most other states. From 2007 to 2012, the Alaska Senate was one of the only legislatures in the country to be controlled by a bipartisan coalition rather than a majority party (Rosen and Beacon 2022). In 2017, the Alaska House of Representatives became controlled by the Democratic caucus (despite Re-

¹⁹ Aside from Alaska, it is difficult to assess how RCV impacts the electoral chances of candidates unaffiliated with any party because many municipal elections are nonpartisan by law. For example, Utah law states that municipalities may only use RCV for nonpartisan elections (Utah State Legislature 2018). In Utah and other jurisdictions, candidates are often officially nonpartisan even if they have clear ties to political parties. Future research could investigate campaign contribution sources, voting records, and social media statements to determine if RCV affects political compositions in municipalities where political affiliation (or lack thereof) cannot be discerned.

Elections in Burlington, VT

Before and after implementing ranked-choice voting

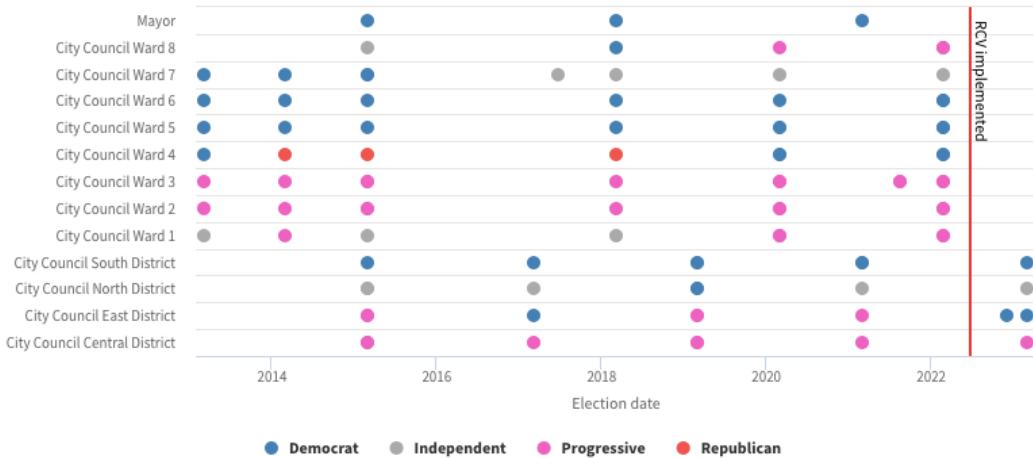


Figure 3.6: Election winners by party for city council and mayoral elections in Burlington, VT (screenshot)

publicans holding a majority of seats) because two independents and three Republicans caucused with the Democrats. Although the House only had two independents in this session, Alaska had the second highest rate of independents or third parties out of any legislature that year.²⁰ In the next session, the House formed a bipartisan coalition just as the Senate had done a few years earlier (Ballotpedia 2023a).

After Alaska implemented RCV, the number of independents in the state house jumped to 6 out of 40 seats (15%). The Alaska House now has the highest rate of non-major-party members out of any state legislature (National Conference of State Legislatures 2023).²¹ This may be due to RCV, but a few points must be considered. First, independents were already on rise in the Alaska House. They held 0% of the seats in 2019, 5% in 2020, and 10% in 2021. It rose to 15% in 2022 with RCV, which is exactly what we would have expected if the trend of the prior three years continued. Second, the average seat share of non-major-party members across all state legislatures more than doubled after the 2022 elections, as Figure 3.7 shows. While it makes sense that

²⁰In 2017, the Alaska House had 2 independents out of 40 seats (5%). The Alabama Senate had 1 (3%), the Iowa Senate had 1 (5%), the Louisiana House had 3 (3%), the Maine House had 2 (1%), the Nevada Senate had 1 (4.8%), the Rhode Island House had 1 (1%), the Vermont House had 13 (9%), the West Virginia House had 1 (1%), and no other legislatures had any independent or third-party legislators other than the Nebraska Legislature, which is nonpartisan (National Conference of State Legislatures 2017).

²¹Once again, the exception is Nevada, which has a nonpartisan legislature.

RCV was at least partially responsible for the record 15% independent seat share in the Alaska House, this figure is in line with trends both within Alaska and nationally. It is easily possible that Alaska would have reached this figure even without RCV.

Independents and third parties in state legislatures



Figure 3.7: Average percent of seats in state legislative chambers held by legislators not affiliated with either major party

One final consideration for the rise of independents in Alaska is that none of the independent legislators are affiliated with a third party. A two-party legislature with a small bloc of independents is not a substitute for a multiparty system. Independent legislators usually fall into two categories: they either function effectively as a member of one of the two major parties, or they are genuinely neutral. Even when multiple neutral legislators are in the same chamber, they are each neutral for different reasons; they are not necessarily aligned by a coherent ideology. Overcoming collective action problems to achieve political goals requires a united group with a clear identity, which is most effectively handled by political parties (Aldrich 1995; Snyder and Ting 2002). Independent legislators unaffiliated with any third party are not a strong enough force to disrupt the political landscape away from a duopoly.

The cases of Alaska and Burlington offer support to the hypothesis that RCV tends to be implemented in jurisdictions that already have higher demand for non-major-party representation than the rest of the country. Although RCV may have boosted independents in the Alaska House, independents were already on the rise there. It takes an unusual political environment to adopt a reform in its early stages, so unusual outcomes can be expected. If we were to wave a wand and force every jurisdiction to adopt RCV, the two-party system may weaken to some degree, but likely not enough to consistently prevent parties from holding majorities or to create a multi-

party democracy. When one also considers the evidence from the appendices that RCV makes voting more difficult, often lowers voter turnout, increases polarization, and decreases many voters' confidence in the election system, it becomes clear that the costs of RCV outweigh any benefits. At the very least, all the time, money, and political momentum that goes into adopting RCV would be better spent on reforms with proven track records of improving these outcomes. One such reform is multi-member districts with proportional representation, which is discussed in the next section.

3.3 Aligning election law with Duverger's law

Most democracies today use *proportional representation* (PR) for some or all of their elections. The basic idea is that each district or state has several seats, usually three to ten, which are elected all at once and then divided up among the parties based on the amount of votes they received. Each voter selects a party rather than individual candidates unless they're voting for an independent. A party that wins, say, 20% of the votes in a district with 10 seats will get two of them. An independent could win a seat in this district if they receive at least 10% of the votes.²² This way, parties and politicians whose supporters are more spread out geographically can still have representation.

By the mid-twentieth century, it became clear that countries with proportional representation tend to have multiparty systems while countries with plurality voting tend to have two-party systems. Maurice Duverger first noted this pattern in *Political Parties: Their Organization and Activity in the Modern State* (Duverger 1954). His observation became known as Duverger's law, and it is now one of the most famous concepts in political science. Over the years, scholars have corroborated this point and extended it with more specific conditions of when it holds true (e.g., Riker 1982; Taagepera and Grogman 2006).

3.3.1 When countries party hard

Do political systems tend to perform better when they have more parties? This seems like a simple question, but it can be daunting to figure out how to even measure performance. Rather than focusing on a single outcome, I built an app displayed in Figure 3.8 below which presents patterns on more than a dozen different metrics among countries in the OECD.

²²Many countries with proportional representation have more independent politicians in office than the US because they only need to appeal to a small fraction of their district, not a majority (Brancati 2008).

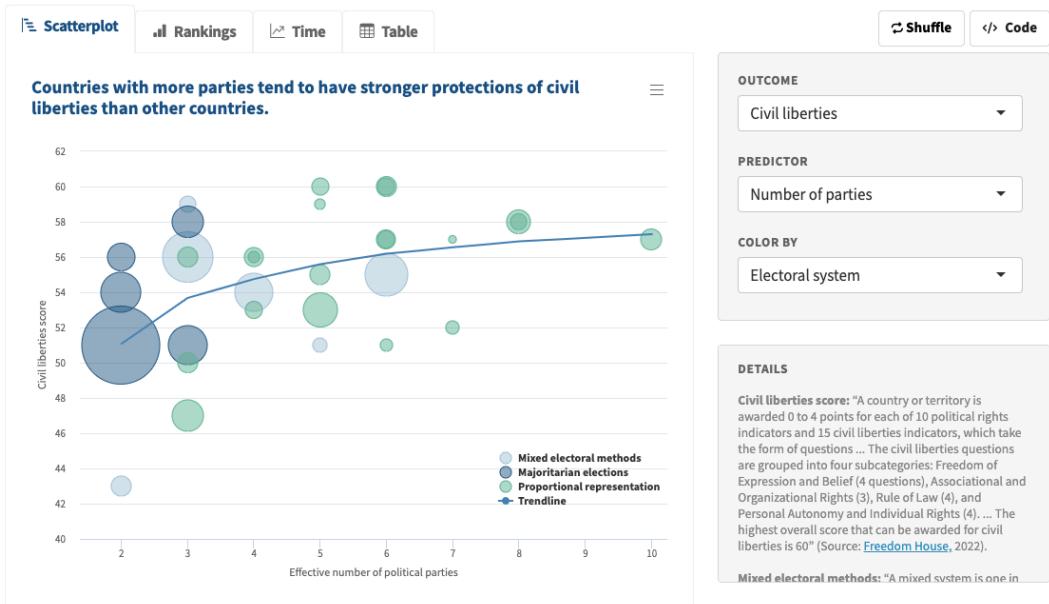


Figure 3.8: App with political and economic patterns in the OECD (screenshot)

To guide the choice of which metrics to include in the app, I revisited the preamble of the US Constitution. After all, this dissertation is primarily an investigation of the US Constitution, and the document directly states which outcomes it was designed to optimize. The preamble lists five main objectives: “establish Justice, insure domestic Tranquility, provide for the common defence, promote the general Welfare, and secure the Blessings of Liberty.”²³ Figure 3.8 includes two to four measures corresponding to each of these objectives. Below, I define each of the five constitutional objectives in more detail and describe the measures in the app. Although the app lets users explore relationships between all of these metrics along with other predictors, below I focus on relationships between the number of parties in a country and each of the outcomes.

Establishing justice. The phrase “establish justice” can be interpreted as the equal application of laws to all people, the absence of corruption, and a healthy mainte-

²³The phrase “in Order to form a more perfect Union,” which appears in the preamble just before this quote, could also be considered an objective of the Constitution. However, it is too abstract to translate it into quantifiable concepts. One could argue that the word “Union” suggests this phrase refers to healthier relationships among the states, but the Framers of the Constitution often used the word “Union” (especially when capitalized) to refer to the nation as a whole, not necessarily in reference to interstate relations. My interpretation is that this phrase essentially means “in order to make the country better.” I consider this phrase to be more of an overarching objective, and the next five phrases elaborate on it with more specific objectives.

nance of order. I measure this concept with Freedom House's civil liberties score and the World Justice Project's Rule of Law Index. These indices account for both *de jure* protections of justice and rule of law as well as the *de facto* state of each country's justice system. According to Figure 3.8, countries with more parties tend to have healthier justice systems than other countries. This trend among OECD countries is corroborated by Lindberg's (2006) study of party systems in Africa, which found that the introduction of multiparty systems accelerated democratization and created a stronger rule of law in many African countries. Outside of Africa, there is not a great deal of research directly examining the effects of party systems on justice systems, so it is not clear whether multiparty systems are more effective at establishing justice or countries that have already established justice tend to develop multiparty systems.

Insuring domestic tranquility. "Domestic tranquility" can be directly translated to "internal peace" or an absence of violence among the citizenry. Low levels of ideological or affective polarization could also be counted as domestic tranquility, although it is difficult to measure polarization in a way that is comparable across different countries. I focused on physical peace using the Institute for Economics and Peace's Global Peacefulness Index (GPI). The GPI measures each country's peacefulness both domestically and abroad, so I also included its societal safety and security index. This is a component factored into the GPI which focuses specifically on domestic peacefulness. In the OECD sample shown in Figure 3.8, there is no discernible link between party systems and peacefulness. This is likely because most OECD nations have not had any significant internal conflicts in recent years.

Around the world, societies divided into two sides are at much greater risk of intense civil conflicts than societies with multiple cleavages (Esteban and Ray 2008; Reynal-Querol 2005). Presidential systems and majoritarian systems are far more likely to break out into civil war than parliamentary systems and countries with proportional representation (Mukherjee 2006; Reynal-Querol 2002). The former tend to have two-party systems, while the latter tend to have multiparty systems. One reason for this is that political actors in proportional systems are used to cooperating with each other democratically since no party is large enough to control the government on its own. Put differently, they have more practice settling disputes peacefully. In majoritarian systems, the two parties alternate full control of the government, and bipartisan cooperation is limited only to issues they can peacefully agree on. They procrastinate on dealing with the more controversial issues until it reaches a breaking point, as the US did until the Civil War.

Providing for the common defense. This term can be interpreted as meaning national security and political stability. To measure stability, I included the Fund for Peace's Fragile States Index. Note that fragility is the inverse of stability, so lower values indicate greater stability. I also included the External Intervention Indicator, a component of the Fragile States Index that measures foreign influence in the nation's

politics, economics, and society. Once again, countries with more parties tend to be more stable and have less foreign influence.

Promoting the general welfare. This is perhaps the most vague piece of the preamble, but I interpret it as referring to a high standard of living. I included four indicators: the UN's Human Development Index, a fairly direct measure of standard of living; life expectancy estimates, which are a robust indicator of overall public health; healthcare expenditures per capita, which indicates healthcare accessibility; and poverty rates, which indicate which fraction of people have a generally poor standard of living.

Securing the blessings of liberty. Liberty is often thought of as synonymous with freedom. I included V-Dem's Liberal Democracy Index, which serves as a proxy for political freedom; the Heritage Foundation's Index of Economic Freedom, which measures both business freedom and individual economic freedom; and the income share of the top 1% from the World Inequality Database. While income inequality is not typically considered to be an indicator of freedom or liberty, higher levels of economic inequality generally mean that only those near the top of the income distribution have true agency over their economic decisions, leaving those at the bottom to have little freedom even if the markets are free in theory. The Index of Economic Freedom is more focused on *de jure* economic freedom, whereas income inequality metrics shed light on how economically free the general population is in practice.

As Figure 3.8 shows, countries with more parties in their national legislatures tend to perform better on nearly every one of these metrics. Many outcomes have no statistically significant relationship with the number of parties, but none of the outcomes have a significant relationship in an undesirable direction.

3.3.2 What would proportional representation look like in the US?

There are two main ways for each party to select their individual candidates under PR. In *closed list proportional representation*, party leaders release lists of nominees in order from their strongest candidates to their backup candidates. If a party wins two seats for a district, its top two highest-ranked nominees win the seats. This makes voting very simple because voters only have to pick a party and don't need to spend time researching individual candidates. Parties could also hold primary elections to choose and order their nominees, but these are not really needed in multiparty systems. Voters have many viable parties to choose from and still be somewhat satisfied, so party leaders have a stronger incentive to pick good quality candidates.

Even so, Americans would probably be resistant to an electoral system where party leaders choose nominees.²⁴ The other major form of PR, *open list proportional representation*, allows voters to pick individual candidates directly, bypassing party leaders entirely. This is a more common form of PR in other countries, such as Germany and France, but it has not gained traction in the United States.

²⁴It wasn't all that long ago when party leaders chose their party's nominees—presidential primaries

sentation, would be more appropriate for the US. This system essentially merges primary elections and general elections into a single election. Voters first select a party or independent candidate (which determines each party's seat share) and then check off candidates within their party that they like (which determines the individual winners for each party's seats). If 40% of voters in a five-seat district pick a particular party's ballot, its two candidates with the most votes are elected.

To picture this system in the US, imagine that states were no longer divided into districts in the House of Representatives, and instead all members represented their states at-large (as senators do). Pennsylvania, for example, is currently divided into 17 districts. Under PR, all 17 representatives could represent the whole state. When Pennsylvanian voters go to the polls, they would get a ballot for the party they want to vote for (similar to primary elections, which would no longer be needed) and would then check off the nominees they like. They could also select a nonpartisan ballot and vote for independent candidates. If 40% of people select the Democrat ballot, around 40% of the seats (7 seats) would go to Democrats. The top 7 Democratic nominees with the most votes would win those seats. If the Libertarian Party gets at least 6% of the ballots, its top candidate would also become a representative. Again, this could only happen under plurality elections if those 6% of voters happen to be concentrated in one single district.

The state could also be split into, say, three large districts with five to six members each instead of one large district with 17 members. Alternatively, the House could keep its current districts but add more representatives to each. If each district had five representatives, the overall size of the House would go from 435 members to 2,175 members. This may sound large, but the US already has very few representatives per capita compared to most countries, and many experts recommend greatly increasing the size of the House anyway (Drutman et al. 2023). The average member of the House represents more than 700,000 people, which makes it difficult for them to be a voice for all of their constituents.

3.3.3 What would a multiparty system look like in the US?

Many commentators have offered predictions of what a multiparty system would look like in the US. For example, Drutman (2021) envisions six parties: progressives, neoliberals, economic populists, moderate conservatives, Trump supporters, and Christian conservatives. These hypothetical parties are ideological rather than identity-based (except arguably the last one or two), but I suspect there will be more ethnic parties than most people would expect. Many marginalized groups

have only been the norm for the last half century—but nowadays primaries are so woven into the political culture that Americans would be skeptical of any move back to closed nomination processes even if it was guaranteed to work.

feel tokened and disillusioned by the major parties, and they don't trust anyone in politics. Once third parties are in play in the US (ie, by adopting proportional representation), a majority of voters in each historically marginalized group may coalesce into a party that promotes the advancement of their community. There could Black, Latino, indigenous, and other smaller parties.

Although Americans are not used to ethnic parties, they are common around the world and are healthy in multiparty systems (Chandra 2005). Koev (2019) finds that minorities tend to form ethnic parties when they meet three conditions: they (a) have a long history in the country, (b) are concentrated in particular regions, and (c) have self-governed in the past. Indigenous peoples certainly fit this definition, but they may be too diverse and too small to maintain a viable national party. Black communities generally meet the criteria: their ancestors have been in the country since before it was founded, they are more concentrated in the South, and they have an extensive history with political organization. The Latino population would likely struggle to maintain a single sustainable party. Some Mexican communities may have an ancestral claim to lands in the Southwest, but most Latinos today are immigrants or descendants of more recent immigrants. They are somewhat concentrated in border regions but have not had much opportunity for political autonomy within the US. For these reasons, a Black party would likely be the strongest ethnic party in a multiparty Congress, an indigenous party may exist but only hold a few seats, and a Latino party would only unite a minority of Latino voters, the rest being split among mainstream ideological parties. Other minorities such as Asian and Middle Eastern communities face a similar problem as indigenous peoples—they are too small to hold much power on their own—but there could be a party built on a coalition of different immigrant communities that have little in common other than their foreign origin.

How would a multiparty system even work with a presidential system? A candidate needs a majority of the votes in the Electoral College to win the presidency, which doesn't seem possible when the voters are split among more than just two parties. Even when a president is chosen, wouldn't they fill the cabinet with members of their own party, which only represents a small fraction of the population? The key is that presidential candidates in multiparty systems negotiate with other parties over cabinet positions and policy agendas in exchange for their support. The cabinet is made up of officials from several different parties, not just the president's party.

Let's say the New Liberal Party represents around 30% of the voters, the Progressive Party represents around 20%, and the Black Union represents around 10%. Altogether these parties make up 60% of the electorate, so they could win the presidency and control Congress if they unite under a coalition. The smaller two parties would agree to vote for the New Liberal Party's presidential candidate as long as they get some of the cabinet seats in the executive branch and some agenda setting power in the legislative branch. For example, since the Progressive Party makes up one-

third of this coalition, they might get around a third of the cabinet seats—maybe at least one of the top positions (e.g., Secretary of State, Treasury Secretary, Attorney General) and several lower cabinet seats. The other two parties would also agree to support many of this party's bills in Congress as long as it supports many of theirs. The details of which policies and positions each party gets would be negotiated by party leaders, but these leaders have to listen to their voters if they don't want to lose the support of their base.

3.4 Conclusion

Comparative politics scholarship suggests that constitutional authors generally choose electoral systems that reflect their existing party systems. In the late nineteenth and early twentieth centuries, many European countries noticed that multiparty systems were already emerging, but they struggled to represent the population fairly because their elections still used plurality voting. These countries then shifted to proportional representation to stabilize and reinforce their diverse political structures. Their adoption of proportional representation was more of an effect than a cause of their multiparty systems (Colomer 2005).

Because most countries' current constitutions were crafted *after* developing political parties, they were able to design electoral systems and accountability mechanisms around their existing party systems. The US is fairly unique in that it still uses a constitution that preceded its party system formation. The Framers of the Constitution could not anticipate how exactly people would organize and what effect these organizations would have on the institutions they designed. Technically, the Constitution neither prescribes plurality voting nor prohibits proportional representation. It does not specify an electoral system at all. But it could, and most healthy constitutions do. The performance of this constitution in particular depends so heavily on the nature of its party system that an omission of specificity is just as powerful as an admission. If the Constitution had been written with today's knowledge, the authors probably would have either enumerated proportional representation to encourage more parties or fundamentally changed the calculus of the checks and balances to better suit a two-party system.

4 Tyranny of the Minority

AS THE LEGEND GOES, George Washington once compared the Senate to a “saucer,” cooling the passions of the House as a saucer does to tea (United States Congress 1993). The Senate was specifically designed to be slower than the House at reacting to polarizing stimuli. Yet the Senate is generally *quicker* to polarize than the House, as I documented in my master’s thesis (Morse 2021). Congress began heating up considerably in the 1990s, when Republicans adopted a more uniform right-wing ideology and won a large wave of seats in both chambers. Many representatives in the House moved up to the Senate, which Theriault and Rohde (2011) found had a significant effect on polarizing the Senate. These scholars and most others generally take this to mean that polarization in the House seeped into the Senate.

This chapter offers a different interpretation of the dynamic between House and Senate polarization. The fact that the Senate became more polarized as more House members moved to the Senate does not mean the House is polarizing the Senate. Republican senators maintained a relatively steady ideological distribution throughout the 1990s; they just grew in number, especially from states that are systematically overrepresented in the Senate but not in the House. The more extreme wing of the party was a much smaller force in the House, but moving to the Senate gave these members a much larger platform. In the modern political environment, the Senate does not cool the passions of the House; it merely amplifies passions that the House keeps in check via equitable representation.

I argue that much of the polarization, democratic breakdown, and rising inequality of the last half century can be traced to the Senate, particularly to its extreme malapportionment.¹ The Senate filibuster has been analyzed extensively by political scientists, but the effects of its malapportionment are more difficult to study empirically and thus have received considerably less attention (F. E. Lee and Oppenheimer 1999). This chapter offers a new approach to tackling this problem. I develop a theory of legislative behavior to explain how partisanship affects economic policy and the income distribution, paying particular attention to how the institutional features of the Senate may shape legislative behavior differently than the House. I then lay out an empirical strategy to investigate the theory.

¹Few would disagree that the design of the Senate affects these processes, but most research substantially underestimates the magnitude of its effect.

The chapter proceeds as follows. Section 4.1 reviews the literature on the causes of political polarization and economic inequality, suggesting that there is more evidence that the flow of causality runs from polarization to inequality despite the common assertion of bi-directional causality or the reverse direction. In Section 4.2, I theorize the specific process through which the design of the Senate simultaneously facilitates polarization and income inequality. I argue that the Senate's malapportionment enables the overrepresented party to move to the right while the underrepresented party stays in the middle—a process called asymmetric polarization—which leads to inequality-exacerbating legislation passing more and inequality-reducing legislation passing less. Section 4.3 then lays out the methodological approaches for measurement and modeling before analyzing the results of the analysis. Lastly, Section 4.4 discusses some potential limitations and implications of this research.

4.1 Existing explanations

Scholars of comparative politics do not yet have a consensus on the link between polarization and income inequality. On the one hand, rising income inequality has been found to *decrease* political polarization due to depressed voter turnout among low-income voters, pushing parties with lower-income bases to moderate their platforms (Fenzl 2018; Iversen and Soskice 2015; Pontusson and Rueda 2008). Other research has found the opposite, that income inequality tends to *increase* polarization by increasing demand for redistributive policies on the left and fueling nativist animosities on the right (Gunderson 2021; Winkler 2019). The contradictory findings throughout comparative literature are likely due to different samples and different conceptualizations of polarization. Income inequality and polarization appear to have a direct relationship under certain conditions and an inverse relationship in others. In the United States, it is clear that polarization and income inequality have a direct relationship (McCarty, Poole, and Rosenthal 2006).

4.1.1 Causes of Political Polarization

Although partisanship in the US has been heating up sharply since the 1990s, it has its roots in the 1950s and 60s. The civil rights movement set off a political realignment where voters sorted themselves into more ideologically distinct parties. As the parties slowly drifted apart over the next several decades, a combination of factors amplified the polarization: demographic patterns, media fragmentation, party centralization, and economic inequality.

Party sorting. By the 1960s, Southern Democrats were shifting into the Republican Party in response to Democrats embracing the civil rights movement (Hethering-

ton 2009). Before this realignment, the Democratic Party had two clear factions: Northern Democrats tended to be economically and racially liberal, while Southern Democrats tended to be economically liberal and racially conservative. Republicans tended to be economically conservative and racially liberal. As overt racial conservatism became less politically viable, the Republican Party's economic conservatism became more appealing to Southerners. Meanwhile, newly enfranchised Black Southerners solidly favored the Democratic Party—the party that pushed for their enfranchisement—which added a sizable left-leaning voting bloc to the party's coalition (Barber and McCarty 2015). Overall, the Republican Party became more consistently conservative while the Democratic Party became more consistently liberal.

Media fragmentation. The rise of cable news led many Americans to self-select into pro-attitudinal media diets, pushing them to the ideological extremes (Boxell, Gentzkow, and Shapiro 2020; Levendusky 2013). Duca and Saving (2016) found that this media fragmentation had a larger effect on polarization than income inequality. Economists have estimated that cable news accounts for two-thirds of the increase in mass polarization over recent decades (Martin and Yurukoglu 2017). Political scientists are more skeptical of the degree to which the media polarized the public (Iyengar et al. 2019). Biased media can only amplify partisanship that already exists, and the rise in polarization began before the rise of cable news.

Economic inequality. Comparatively, polarization and income inequality are more likely to have a direct relationship when economic issues are salient, since voters sort themselves by economic interests (Gunderson 2021). In the United States, partisan identification became increasingly correlated with income as the income distribution became more unequal in the latter half of the twentieth century (McCarty, Poole, and Rosenthal 2006), suggesting that rising income inequality led to polarization. Garand (2010) outlined the mechanism through which this happens in the US:

1. *Income inequality increases.* Exogenous shocks to the income distribution exacerbate inequality.
2. *Mass polarization increases.* Demand for redistribution increases among low-income constituencies and decreases among middle- and high-income constituencies.
3. *Elite polarization increases.* Political parties in Congress diverge to appeal to their respective voter bases.

While Garand finds support for this theory, other scholars are skeptical. Since the civil rights movement, party platforms have become more focused on issues relating to ascriptive traits (e.g., racial equality, gender equality, LGBT rights), so economic issues have relatively *declined* in salience even as income inequality rose (Gerring 1998; McCarty, Poole, and Rosenthal 2006). In separate studies, Gelman, Kenworthy,

and Su (2010) and Dettrey and Campbell (2013) each compared voting preferences across income groups and found no indication that income inequality has caused class-based party sorting. However, Garand's study is more empirically rigorous and widely cited, so his theory is the dominant explanation in the literature (Barber and McCarty 2015).

4.1.2 Causes of Economic Inequality

Economic inequality can be thought of in terms of wealth, income, or other resources. Scholarship in political economy usually focuses on income distributions, likely because income is the easiest to measure with tax records and (presumably) has the most direct effect on political activity. Inequality increases when (a) the rich become richer, (b) the poor become poorer, (c) population growth increases the relative size of the poor, or (d) some combination of these (Allison 1978). Economists, sociologists, and political scientists have offered many explanations for the rising levels of income inequality in the US and abroad, including technological change, globalization, unions, economic policy, elections, and legislative gridlock.

Labor markets and relations. A prominent early explanation in economics for the rise in income inequality was skill-biased technological change: advancements in technology polarized jobs by skill level and education requirements, which polarized incomes (Johnson 1997). Economists now agree that technological change likely contributed to income inequality but is far from sufficient to explain it (Card and DiNardo 2002). Globalization has also been found to contribute by outsourcing jobs, especially from the manufacturing sector (Holzer et al. 2011). Union membership also fell considerably over the course of the twentieth century. Economists and sociologists have found that this decline in union power can account for more than 20% of the increase in income inequality (Kochan and Riordan 2016; Western and Rosenfeld 2011).

Public policy. The real values of the federal minimum wage and state minimum wages have stagnated for decades. Although studying the effects of minimum wages is difficult, there is (limited) evidence that the stagnating minimum wage has indeed increased income inequality (Van Arnum and Naples 2013). Additionally, the US spends less on social welfare programs than any other OECD country, and also has the highest level of inequality out of the OECD countries (Smeeding 2005)—likely not a coincidence, although causality is once again difficult to establish empirically. Finally (and perhaps most importantly), tax codes affect the income distribution. Piketty and Saez (2003) suggest that the decline in progressive taxation was a major factor in the rise of income inequality since the 1980s. In his seminal work, Piketty (2014) more thoroughly shows that progressive taxation and wealth taxation are powerful tools for restraining inequality.

Political institutions. In the United States, the aforementioned policies that can restrain income inequality have broad support among the public and economists (Alvaredo et al. 2018; Page and Jacobs 2009), so the rise in inequality is ultimately a puzzle of why democratic institutions have become ineffective at performing their intended purposes. Bonica et al. (2013) lay out several political roadblocks that have contributed. For starters, both political parties have largely embraced neoliberal economic platforms and are beholden to wealthy campaign contributors. The combination of a two-party system and a relatively unregulated campaign finance system prevents meaningful competition on economic agendas, enabling elites to control economic policy (Bartels 2008; Gilens 2012; Hacker and Pierson 2010). Furthermore, voter participation has declined, especially among low-income voters (probably in part because of the issues just mentioned). The median voter's income is therefore skewed higher than the median American's income (Schlozman, Verba, and Brady 2012). Finally, legislation that can effectively constrain inequality often gets blocked in the Senate because of its filibuster rules, which Enns et al. (2014) find has a large, sustained effect on income inequality.

4.1.3 Linking Polarization and Inequality

When political polarization and economic inequality are discussed together, scholars of American politics often argue that causality runs both ways—that polarization and income inequality are locked in a self-reinforcing feedback loop (e.g., Kelly and Enns 2010). Yet when discussing the causes of each process on its own, political scientists mainly attribute polarization to social and political patterns that are relatively exogenous to economic processes, and economists mainly attribute income inequality to policy patterns that are dependent on political processes. Hence, while bi-directional causality is likely present, the effect of each process on the other is likely far from equal.

Why has the precedence of polarization over inequality gone overlooked? I argue that two issues are at play. First, this relationship is unique to the US; comparative politics research suggests that inequality generally *does* cause polarization around the world. Although the literature has mixed results on whether the processes are directly or inversely correlated, most countries experience changes to the income distribution before changes to their political environment (Gunderson 2021; Winkler 2019). The US is the only country (to my knowledge) where the sequence is reversed, and income patterns tend to lag *behind* polarization patterns.

Second, it makes more sense for economic processes to cause political processes. General theories of political economy tend to characterize political environments as mere reflections of economic environments. Modernization theory, for example, posits that economic development is usually a precursor for democratization (Boix

2003; Lipset 1959). Likewise, many economists stress that economic freedom is a prerequisite for political freedom (M. Friedman 1962), and political scientists stress that economic inequality reinforces political inequality (Gilens 2012).

Third, Americans tend to overestimate the quality of the US Constitution. If the extreme level of economic inequality in the US can mostly be attributed to political polarization, then the root of the political problems facing the US may lie in its political system rather than its economic or cultural systems. The American public overwhelmingly reveres the Constitution as the country's greatest strength—the one thing that unites everyone from the left to the right—which is precisely why it may actually be the country's greatest weakness. Most Americans believe the Constitution is a well-designed constitution, laying out democratic institutions that are as robust as can be. Therefore, political corruption must be exogenous to political institutions, originating in forces beyond the Constitution's control. This ideology leads even scholars of American politics to overlook the possibility that the unusual degree of economic inequality in the US is directly caused by the unusual features of its institutional design.

4.2 Revisiting the direction of causality

The design of the Senate is an apt starting place for assessing how the US Constitution affects political polarization and economic inequality. The Senate's apportionment is a unique and powerful feature of American political institutions. It is also arguably the single most immutable feature of American political institutions; in addition to being explicitly enumerated in the Constitution, the Senate's equal representation of states is the only provision that cannot be amended unless every state agrees to it.² This effectively means it is impossible to change, making it exogenous to economic and political processes of the twentieth and twenty-first centuries.³

In this section, I develop a theory connecting the Senate's apportionment to both polarization and inequality. I argue that the Senate's apportionment is a major factor contributing to the asymmetry between the parties. Republicans are systematically overrepresented, allowing them to drift to the right while the Democrats must stay in the center. This simultaneously causes two phenomena: first, the parties become polarized merely as an artifact of the asymmetry. This is perhaps why polarization

²See Article V of the United States Constitution: <https://www.archives.gov/founding-docs/constitution-transcript>.

³A reasonable critique of this approach is that it may not seem worthwhile to study the effects of something that is not likely to change. My view is that perhaps the reason it seems unlikely to change is that most people have yet to realize how beneficial the change would be. Furthermore, meaningful change of any kind is difficult, and the theory that I develop here would imply that prioritizing constitutional reform is at least the most efficient route for implementing meaningful reforms on other matters.

appears to follow a different relationship with economic processes in the US than in other countries; it is a fundamentally different type of polarization, or at least its source lies in institutional design more than social and economic patterns. Second, the policy drift in Republicans' favor skews economic policy toward inequality-exacerbating free-market ideology. Therefore, it is not so much that polarization causes inequality, but rather that disproportional representation causes both and simply takes longer to become visible in income distributions than in ideological distributions.

4.2.1 Asymmetric Polarization

As discussed previously, the current era of polarization has its roots in the 1960s, when Southern Democrats began shifting into the Republican Party in response to the Democratic Party embracing the civil rights movement (Carmines and Stimson 1989; Kuziemko and Washington 2018). However, the resulting polarization was uneven. Democrats have gradually shifted to the left over the last half century, but so has the public (Stimson 2012). Republicans, though, took a sharp turn to the right. The rise of polarization in the US was not the result of both parties moving apart evenly; rather, one party was shifting to the extreme while the other stayed near the center, a pattern known as *asymmetric polarization* (Leonard et al. 2021; Pierson and Schickler 2020).⁴

Most Americans would probably agree that one party has moved farther to the extremes and the other has stayed more moderate, but they disagree which one is which. Research consistently shows that the Republican Party has become more ideologically extreme and more stubbornly partisan than the Democratic Party (Bartels 2008; Grossman and Hopkins 2016; Hacker and Pierson 2015; Poole and Rosenthal 2017). One way to illustrate this finding is to zoom out and compare party ideologies from around the world. Most political parties release platforms or manifestos describing their ideology each election cycle, which the Manifesto Project collects and turns into a dataset. The dataset includes all major parties and many minor parties in democratic countries since the 1990s and some earlier platforms. Most countries not in the dataset are autocracies. Many independent researchers have developed algorithms that search for patterns in the text and score each party's economic and social ideologies. The chart below is based on a measure developed by Martin Elff (2013).

Because these ideological scores are based on party manifestos, they do not necessarily capture the party leaders' actual views (just the ones they believe will help

⁴In fact, comparative datasets with indices tracking positions of parties typically show the Democratic Party moving to the center at the end of the twentieth century (e.g., Lührmann et al. 2020), even to the point where it can be considered an economically right-wing party from a global perspective.

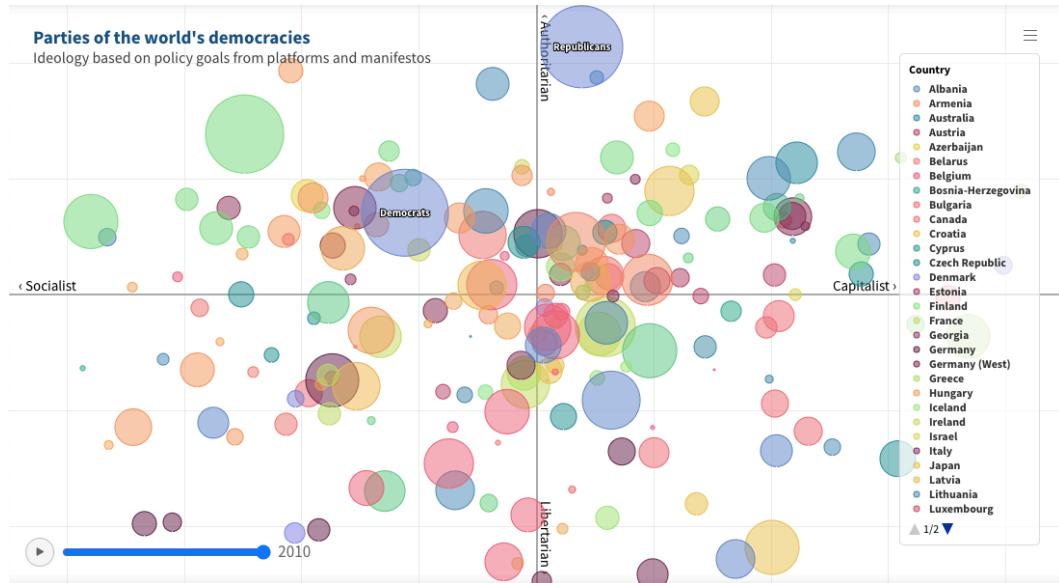


Figure 4.1: Ideal points of parties that held at least 5% of seats in a national legislature at some point between 1990 and 2010 (screenshot)

them gain votes) or their supporters' views. Parties can also backtrack on promises and move in a different direction once they are in power. Additionally, party manifestos do not always reflect the culture of the party's voter bases. Some groups prefer to use social norms rather than laws to enforce certain rules in society, so their parties may look more libertarian even if their bases are more authoritarian outside of politics. For example, at different times in recent history, both sides of the political spectrum in the US have used shaming, outcasting, or "cancel culture" to discourage behavior they deem immoral, which would only be picked up in the data if they also wanted to outlaw these behaviors or if their party mentioned the issue for the sake of virtue-signaling.

Most explanations of the asymmetry between the parties focus on the ideological, organizational, and media consumption differences between the parties (Grossman and Hopkins 2016; Martin and Yurukoglu 2017; Skocpol and Hertel-Fernandez 2016). Less work has been done on the institutional environments that set the stage for these party asymmetries in the first place (Pierson and Schickler 2020). An institutionalist explanation is as simple as it is intuitive: Republicans tend to move farther from the center because they *can*—they can win the Senate and the Electoral College without appealing to a majority of the population. The malapportionment of the Senate and the Electoral College throws off the typical calculus of party alignment (Downs 1957). When parties converge, they converge not to the median voter, but to a *weighted* me-

dian; that is, the equilibrium of the political environment is skewed toward voters in overrepresented constituencies.⁵ If one party happens to be favored by the overrepresented constituencies, it can stray farther from the center without electoral repercussions. The party favored by underrepresented constituencies must stay in the center or even cross the center.

When needed, the Republican Party is capable of converging toward the median voter and appealing to a majority of the electorate. Over the last 30 years, Republicans have won more votes than Democrats for House seats around half the time, yet they have won more votes for the presidency only once out of 8 elections in the same time period. Figure Figure 4.2 displays these trends. Republicans often win the “House popular vote” and nearly always lose the presidential popular vote because they don’t *need* to win the presidential popular vote. To win the House, though, Republicans *need* a more broadly appealing range of candidates. The House is more equitably apportioned, so it is rare for either party to win a majority of the seats without also winning a majority of the votes.

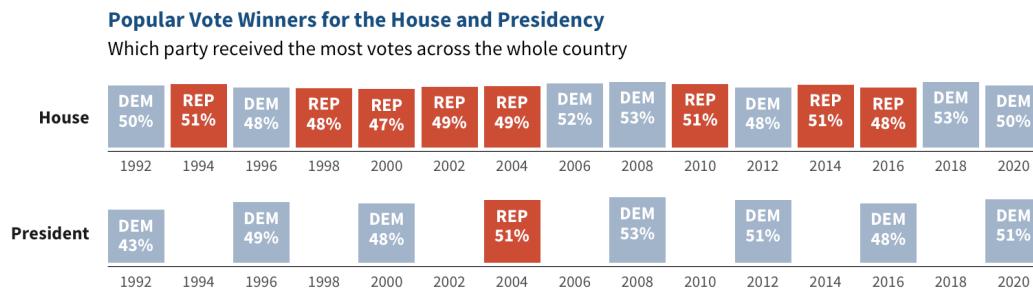


Figure 4.2: House popular vote and presidential popular vote results, 1992-2020

Theoretically, it may make sense for an overrepresented party to appeal to the median voter anyway in order to secure veto-proof supermajorities and to build more sustainable coalitions. In practice, though, the costs of appealing to more voters than needed are high. Every additional voting bloc Republicans could cater to would cost massive amounts of time and resources to win over. It would also require the party to compromise on positions in ways that may alienate its existing voters—particularly those on the far right who already see the party as *too* liberal and only marginally better than the Democratic Party. The overrepresentation of Republican-leaning states in federal political institutions nestles the party comfortably in a state where it can reliably maintain power half the time (and effectively constrain the Democrats the

⁵If each state had roughly the same rates of Republicans and Democrats, then neither party would have an advantage in Congress (although there may be a power imbalance within each party). But the parties *are* sorted geographically, so one of the parties is overrepresented at any given time (Rodden 2019).

rest of the time) while constantly shifting farther from the center.

4.2.2 Policy drift of overrepresented parties

Scholars and pundits have paid a great deal of attention to the Senate filibuster as a source of gridlock, polarization, and policy drift. However, the filibuster has only marginal effects on congressional behavior compared to the underlying issue with the Senate: its malapportionment.⁶ My theoretical argument here is that the Senate's malapportionment drives polarization by enabling the overrepresented party to drift farther from the center than the other while retaining the same chance of controlling the chamber.

More generally, we could expect variation in the disproportionality of representation in a legislative chamber to invoke a similar pattern. Malapportionment and disproportionality are mathematically equivalent, although they cover slightly different concepts. *Malapportionment* refers to geographical inequality, a disconnect between seat shares and population shares of districts or states; *disproportionality* refers to partisan inequality, a disconnect between seat shares and vote shares of parties or other cleavages (Monroe 1994). Although malapportionment has been the focus of this discussion, the true concept of interest is disproportionality. In the Senate, malapportionment can be thought of as a *mechanism* for disproportionality, since geographical inequality among states is the main reason the parties have uneven representation in the Senate.

Shifting the frame of reference from malapportionment to disproportionality opens the door to a range of testable hypotheses, as disproportionality can be caused by many other mechanisms too (such as gerrymandering). With this in mind, the theory implies that legislatures with disproportional representation are more likely to be polarized, and increases in a chamber's disproportionality tend to push overrepresented parties—any party with a higher seat share than vote share—farther from the center, increasing polarization. Put differently, we would expect:

- *Hypothesis 4.1a:* When a party becomes more overrepresented in a legislature, it tends to move farther from the center than the other party.
- *Hypothesis 4.1b:* When a legislature becomes more disproportional in partisan composition, it tends to polarize to a higher degree than legislatures with more equal representation.

⁶The filibuster likely receives more attention for two reasons: first, it is far easier to change, as it is an institutional norm rather than a constitutional provision. Second, the degree of malapportionment is so uniquely high in the Senate—compared to both state legislatures within the US and legislatures abroad (Samuels and Synder 2001)—that there is too little variation to make valid causal inferences about how the Senate's malapportionment affects political processes.

This theory should apply to legislatures in any democracy, but I will focus on state legislatures within the US. Ultimately, the US Senate is the main institution of interest, but expanding the scope to all legislatures, especially those in the US, allows for more data and statistical power. Doing so, however, requires several assumptions. First, I assume that disproportionality has homogeneous effects on the outcomes of interest regardless of what caused the disproportionality. In other words, if a malapportioned legislature and a gerrymandered legislature both have the same deviation of party seat shares from party vote shares, then they should both see the same degree of polarization (all else equal). Second, I assume that processes in state legislatures are analogous to processes in Congress. Third, I must also assume that disproportionality is exogenous to the other variables. All three of these assumptions raise the same endogeneity issues as discussed earlier, which will be addressed with structural modeling and robustness checks.

4.2.3 Polarizing incomes

When a legislature or electorate is polarized, income inequality can increase through two main mechanisms. First, if the polarization is asymmetric, policies that increase inequality become more likely to pass. Second, regardless of the symmetry, policies that restrain inequality become more likely to fail.

Free-market policy passing. Malapportionment usually favors rural areas, which tend to be more socially conservative in the US (Rodden 2019). When party ideologies follow two or more dimensions, rural constituencies can be represented by a party (or faction) that is socially conservative and economically liberal. When politics flattens to a single dimension—as it does in times of polarization, especially in two-party systems (McCoy, Rahman, and Somer 2018)—rural constituencies must pick between a consistently conservative party or a consistently liberal party. These voters tend to develop a rural consciousness built around social identity, seeing the urban vs. rural divide as more important than the rich vs. poor divide (Walsh 2012). Even if one would expect overrepresented constituencies to be economically liberal based on their history or interests, they usually stick with the more socially conservative party when they have to pick a side.

Southern Democrats, for example, were once the most economically liberal faction in Congress despite their extreme racial conservatism.⁷ They then gradually shifted to the economic right over the course of the twentieth century. The South may have become economically conservative simply because racial discrimination was becoming harder to get away with; to maintain the South's racial hierarchy, white Southerners had to shift their strategy from depending on *de jure* political discrim-

⁷See: http://nmorse.com/thesis/figures/anim_cong.gif.

ination to depending on *de facto* economic discrimination. In theory, though, the Republican Party's free market economic platform is also not politically viable, as a solid majority of the public wants inequality-restraining social safety nets, labor regulations, and progressive tax codes (Page and Jacobs 2009). The reason Southern and rural voters *could* shift to economic conservatism is that they were overrepresented enough for it to be a viable policy agenda.

My theory argues that malapportionment enables the overrepresented party to move to the right, polarizing the parties. Even if the overrepresented party is not on the economic right at first, the resulting polarization collapses the ideological space of the parties to a single dimension, pulling social conservatives on the economic left to the economic right. Therefore, malapportionment tends to push the overrepresented party not just to the right, but to the economic right. Policy then becomes skewed toward economic agendas that enable or exacerbate inequality.

Redistributive policy failing. Economic inequality in capitalist environments naturally rises over time (Piketty 2014), so economic policies usually need frequent adjustments and renewals to stay relevant. Otherwise, minimum wages, tax codes, labor regulations, and welfare programs can stagnate from inflation or changing environments (McCarty 2007). This is already an uphill battle as public policy generally follows patterns of punctuated equilibrium, where policy tends to experience very little change aside from periodic episodes of major change (Baumgartner, Jones, and Mortensen 2018; Hacker 2004). Polarization tends to induce gridlock and block this routine maintenance even more.

- *Hypothesis 4.2:* Redistributive economic legislation is more likely to garner more support and pass in the House than the Senate, especially as the malapportionment of the Senate increases.

If this analysis finds evidence that malapportionment spurs asymmetric polarization, then we would expect to see Hypothesis 4.2 supported; that is, the rising economic inequality in the United States was due in part to free-market policies passing due to overrepresentation in the Senate and in part to redistributive policies failing due to gridlock. If, however, the asymmetric polarization cannot be explained by the Senate's malapportionment, then gridlock over redistributive policies may be the stronger mechanism.

4.3 Analysis

The theory was assessed with two studies corresponding to the two sets of hypotheses. Analyses were applied at both the state level and the national level when possible. Table 4.1 below summarizes the studies, along with the expectations from the

hypotheses. The national-level analyses includes legislation from 1949 to 2015. This timespan was selected because economic inequality began rising in the 1970s. Economic legislation can take several years before it shows an effect on income distributions, so including at least 20 years of legislation before the uptick in inequality provides ample data for this study. The state-level analyses cover 1993 to 2018 because state politics started becoming more influential over state-level income distributions in the mid-1990s (Kelly and Witko 2012).

Study 1 uses data at both the party level and the chamber level in state legislatures. A standard linear regression model would not suffice since the data are correlated across time and space. To account for the complex correlation structure, I employ generalized estimating equations (GEEs). These models can handle a variety of correlation structures. Study 1.1 accounts for correlations at the state-chamber-party level while Study 1.2 is modeled at the state-chamber level. Both models also account for first-order autocorrelation over time. Controls include state-level income inequality, voter turnout rates from the most recent election, the voter turnout rate from the most recent election, and the median DW-Nominate scores of each constituency's representatives in Congress. Study 1.1, which is at the party level, uses the median scores for any House members affiliated with the party. Study 1.2, at the chamber level, uses the median scores for all House members from the state.

Study 2 is interested in the likelihood of different types of economic legislation passing in Congress. I used simple regression models controlling for the conditions in each chamber and term. Specifically, Study 2.1 models the likelihood of a bill passing using logistic regression with a control for the overall percent of all bills passed in the chamber-term for each bill in the sample. Study 2.2 models the share of the chamber that voted for the bill using linear regression, likewise controlling for the average share of support for all bills in the chamber-term.

Table 4.1: Summary of research designs

Study	Unit	Model	Hypothesis
1.1	Party (legislatures)	Overrepresentation → Extremity	4.1a: +
1.2	Chamber (legislatures)	Disproportionality → Polarization	4.1b: +
2.1	Legislation (Congress)	Senate → Legislation passing	4.2: -
2.2	Legislation (Congress)	Senate → Legislation support	4.2: -

Overrepresentation and disproportionality. As discussed in the theory section, *disproportionality* refers to the degree to which the parties' seat shares in a legislature matches their vote shares (Monroe 1994). The most common measure of disproportionality is known as the Gallagher Index (Gallagher 1991), which is based on an earlier metric known as the Loosemore-Hanby Index (Loosemore and Hanby 1971). The

Gallagher Index for a legislative chamber is calculated with the following formula:

$$D = \sqrt{\frac{1}{2} \sum_{i=1}^n (v_i - s_i)^2}$$

where v is the vote share and s is the seat share for party i . This index can be calculated for each legislative term.⁸ A higher value of disproportionality indicates that the legislature overrepresents one party and underrepresents the other, and lower value indicates the parties' voter bases are more equally represented. The index makes no indication of *which* party is which, so the party models in Study I will use a variant for each party, which we can call a *representation ratio*:

$$r_i = \frac{s_i}{v_i}$$

where r_i is the ratio of party i 's seat shares to vote shares. A value above 1 means the party is overrepresented; a value of 1 means the party's representation is perfectly proportional to their vote shares; a value below 1 means the party is underrepresented. In a legislature with no third parties or independent members, the Republican Party's ratio should be the exact inverse of the Democratic Party's ratio. Disproportionality and overrepresentation in all 99 state legislative chambers will be calculated with election returns from Klärner Politics (Klärner 2018).

Party ideology. Some of the analyses employ longitudinal data that goes far enough back to the time when two dimensions were needed to capture variation in congressional behavior. Therefore, I cannot always assume that politics follows a single dimension. However, because economic policy is the main substantive issue of interest, the only relevant dimension in a two-dimensional environment is the one that more directly relates to economic ideology. Poole and Rosenthal (2017) demonstrate that as congressional behavior flattened from two dimensions to one during the twentieth century, it collapsed toward the economic dimension rather than the social dimension. Put differently, economic ideology in Congress has generally followed a constant dimension, and dimensions beyond it can be treated as exogenous. Therefore, spatial models that assume legislative behavior follows a single-dimensional ideal space are still applicable even in two-dimensional ideal spaces when economic legislation is the only topic being studied.

To measure a party's ideological position on economic issues, I used the median

⁸Technically, the level of disproportionality could change between elections if seats in a legislature are vacated or members switch parties. Likewise, if vote shares are interpreted as a proxy for voter preferences, then voter preferences could theoretically change between elections as well. For the sake of simplicity, this analysis will only use one value of the disproportionality index per term, as of the beginning of the term.

ideal point of its members in a given chamber.⁹ Data for the House and Senate were obtained from Voteview (Lewis et al. 2021), and data for state legislative chambers were obtained from Shor (2020).

Legislation. The legislation-level analyses are limited to Congress since congressional legislation data are easily available in Voteview, which includes roll-call voting data on every question considered before the House and the Senate. To identify legislation as economic, I relied on Clausen's categorization of bills, which is included with the Voteview data. All legislation tagged as "Social Welfare" were included in the sample.¹⁰ The data were also subsetted to only include the final vote on each bill so that each observation corresponds to a single piece of legislation.

To identify economic legislation as redistributive or free-market, I used the median ideal point of the bill's co-sponsors, relying on two assumptions. First, I assume that members of Congress choose to co-sponsor legislation close to their ideological position and choose not to co-sponsor legislation farther from their ideological position. An alternative would be to use the median ideal point of the members who voted for the bill, which is readily available for each roll-call vote in the Voteview data. However, the assumption that members vote for bills close to their ideology is weaker than the assumption that members co-sponsor bills close to their ideology. Co-sponsoring is a tool for branding the member's ideological stances, whereas voting behavior can include many more considerations (e.g., pressure from one's party). Co-sponsor medians should be a more precise and accurate measure of a bill's ideological slant. The second assumption is that bills with left-leaning co-sponsor medians can be considered redistributive and bills with right-leaning co-sponsor medians can be considered free-market. I may need to adjust the cutoff points to include a neutral category (between, say, -0.5 and 0.5). I will also look for other ratings of legislation to check for robustness.

4.3.1 Study 1: State legislatures

Results for Study 1.1 and 1.2 are displayed in Figure 4.3. In the party-level model, the *representation ratio* is the main independent variable. Higher values indicate the party is overrepresented; that is, its seat share exceeds its vote share in the most recent election. Against expectations, parties that are more overrepresented tend to be less extreme. States with higher income inequality also tend to have less extreme parties in their legislatures. These findings are consistent with the chamber-level

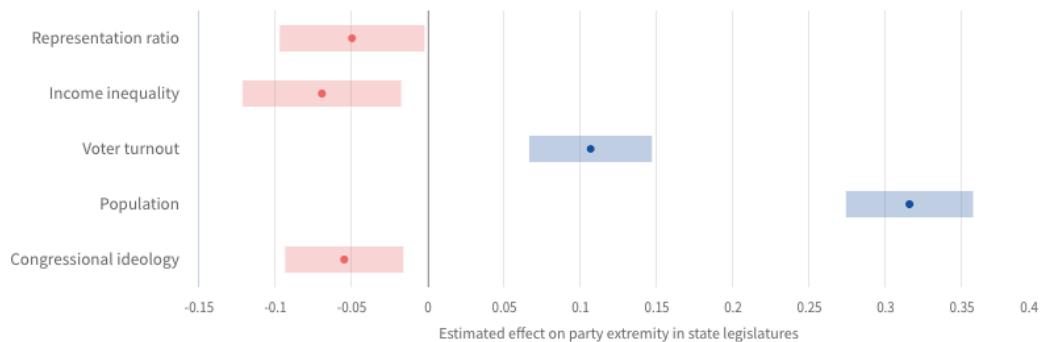
⁹Members of Congress who have no official party affiliation are omitted from this analysis.

¹⁰The Social Welfare category covers: "Social security; public housing; urban renewal; labor regulation; education; urban affairs; employment opportunities and rewards; welfare; medicare; unemployment; minimum wage; legal services; immigration, etc." More details are available at https://Voteview.com/articles/issue_codes.

model: legislatures with more disproportional partisan compositions relative to vote shares tend to have smaller differences between each party's ideology, meaning they are less polarized. Higher voter turnout and larger populations seem to give rise to more extreme parties and more polarized legislatures.

Determinants of party extremity in state legislatures

Generalized estimating equations for median ideal point of party



Determinants of polarization in state legislatures

Generalized estimating equations for difference in median ideal points between parties

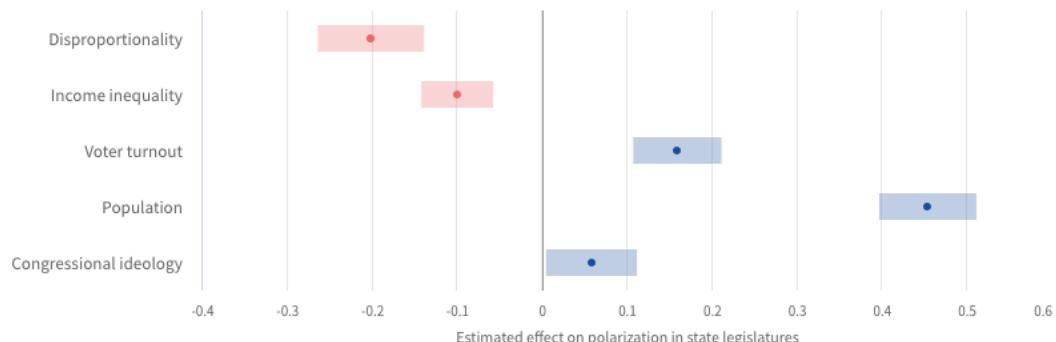


Figure 4.3: Coefficient plots of generalized estimating equations of ideology in state legislatures (screenshots)

4.3.2 Study 2: Congress

Because Hypothesis 4.2 is simple, exploratory analysis can be almost as useful as regression. To start, Table 4.2 reports summary statistics of the congressional bills in the sample. In line with the hypothesis, redistributive legislation is significantly

Table 4.2: Congressional support for economic legislation and all other legislation, 1949-2015

Chamber	Legislation type	Average support	Passage rate	N
House	Redistributive	60.1%	81.1%	222
House	Free-market	76%	94.4%	395
House	All other bills	81.2%	93.2%	7664
Senate	Redistributive	55.7%	52.7%	74
Senate	Free-market	68.3%	72.9%	155
Senate	All other bills	76.8%	81.1%	2793

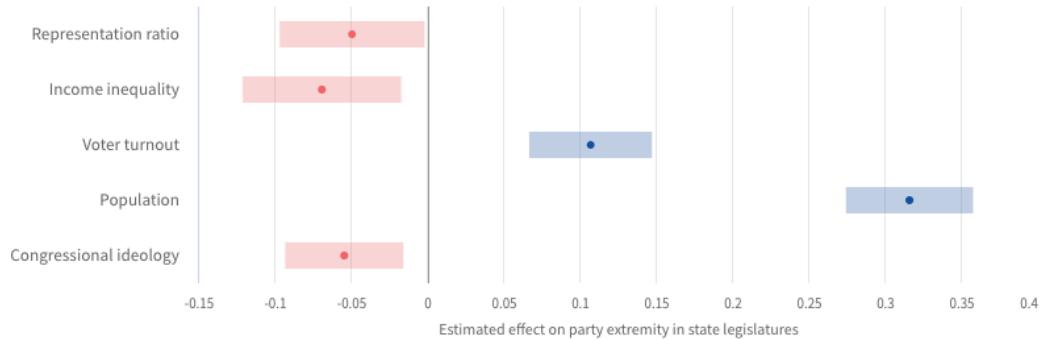
more likely to pass in the House than the Senate. 81% of redistributive economic bills that went up for roll-call votes on the floor of the House passed, while only 53% of these bills passed the Senate. This could be due to the Senate's filibuster, not just its malapportionment, so the vote shares each bill received is also important to explore. Redistributive bills in the House received an average of 60% of the votes in the House and 56% of the votes in the Senate. At the same time, though, the House is also more likely to support and pass free-market policies than the Senate, but with lower gaps than redistributive policies.

Turning to the regression models, legislation in general is less likely to pass in the Senate. Hypothesis 4.2 implies that the interaction of the chamber and legislation type should help explain a bill's support, but the interaction term is not significant. This suggests that economic bills are more likely to fail in the Senate regardless of whether they are redistributive or free-market in nature.

Although the hypotheses were not supported, the analyses here are simple and have a fair amount of room for improvement. All of the models are light in control variables, so there could be omitted variables whose effects are being unintentionally absorbed by the independent variables. Due to data limitations, I was not able to model the full data-generating process proposed by the chapter's theory, which describes complex relationships among malapportionment, disproportionality, polarization, and economic inequality. Finally, the classification of bills as redistributive or free-market is also very rough. A small-N study that more closely analyzes the substance and life cycles of a handful of important legislation might be more reliable than a large-N study with loose measurements. For these reasons, it is very possible that the unexpected results are artifacts of methodological issues.

Determinants of party extremity in state legislatures

Generalized estimating equations for median ideal point of party



Determinants of polarization in state legislatures

Generalized estimating equations for difference in median ideal points between parties

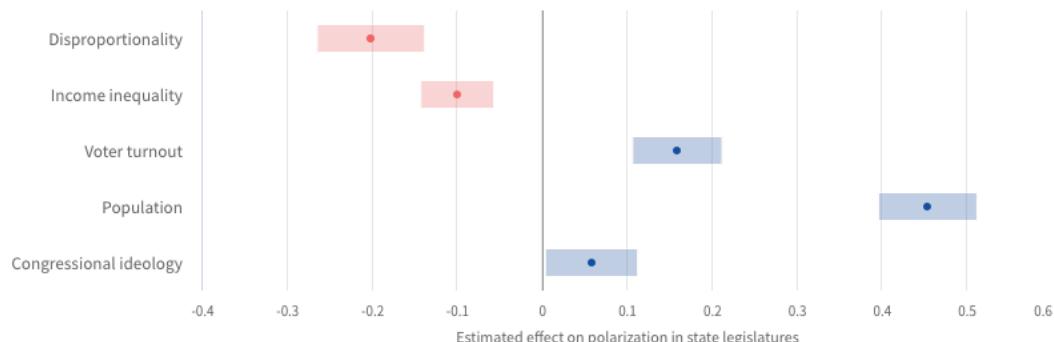


Figure 4.4: Coefficient plots of regression models of support for economic bills in Congress (screenshots)

4.4 Discussion

One could argue that the Senate cannot single-handedly enable inequality to rise since the House, president, and courts can block anything it tries to do. However, the ideological distributions of these institutions depend on the Senate in the first place. Members of the House look to the voting behavior of their counterparts in the Senate as cues for how to model their own voting behavior. Partisanship and far-right economic positions in the Senate signals these are acceptable and possibly even preferred for House members seeking to work their way up to higher positions.

Likewise, during the party primaries for presidential elections, voters, donors, and party elites often oppose candidates whose policy agendas they see as too ambitious to pass the Senate, opting instead for more realistic candidates. Many presidential candidates are themselves senators whose electability is based in part on their record of legislative achievement. Presidential selection, then, is constrained from the beginning by the malapportionment of the Senate. However, the strength of this pattern is difficult to establish due to the confluence of ideological extremism, viability of winning the primaries, and electability in the general election (Abramowitz 1989). Investigating the constraining effects of Senate apportionment on presidential selection would be a good direction for future research.

A persistent methodological challenge mentioned throughout this work is the endogeneity issue. Untangling the link between polarization and inequality is a classic “chicken or the egg” problem. For every claim one could make about the causes of any of the processes discussed here, we could back up even more and ask what causes *those*. Most paths would eventually circle back around to the outcome of interest. This is a prevailing problem throughout social science research; everything is interdependent. Most empirical work connecting political polarization and income inequality makes assumptions of exogeneity that may throw off the results. For example, economists often assume that political processes are exogenous to economic processes so that they can study the effects of, say, tax policy on income inequality. Political scientists often assume the opposite so they can study the effects of income inequality on polarization. As a result, ironically, economic research can easily underestimate the effects of economics on politics while political science research can easily underestimate the effects of politics on economics. This chapter starts to synthesize these literatures by charting the processes through which political phenomena shape economic phenomena.

5 Tyranny of the Dead

A FEW DAYS after the Senate began deliberating on a set of amendments that would become the Bill of Rights, Thomas Jefferson wrote a letter to James Madison arguing that the Constitution needed an expiration date. In his view, imposing an immortal constitution on future generations would impede on their right to self-govern. “The earth belongs always to the living generation,” he wrote. “The dead have neither powers nor rights” (1789a). If a majority of the people who instituted a constitution are no longer living, then it is no longer legitimate. Jefferson suggested that all constitutions and laws should expire after 19 years, a number he arrived at by calculating that half of all voting-age citizens at the time were expected to be dead within 19 years.

Jefferson forgot to mail the letter for several months. Regardless, it would not have made it to Madison in time for the final vote on the amendments because Jefferson was in Paris at the time.¹ Madison (1790) found Jefferson’s general idea to be a “great one” but was skeptical that setting 19-year terms on constitutions would work in practice. Still, if Jefferson had been present at the Constitutional Convention or the debates over the Bill of Rights, perhaps a requirement for a convention to be held every two decades or so would have made it into the Constitution.² History could have been very different, for better or worse.

Although Jefferson’s method and measure were peculiar, scholars in recent years have come to an eerie finding: the median lifespan of a national constitution, out of all constitutions in the world since 1789, happens to be 19 years (Elkins, Ginsburg, and Melton 2009). Was Jefferson onto something? Perhaps his ideal life expectancy matches actual life expectancies by mere coincidence, but his argument still raises

¹Jefferson wrote the original letter shortly before leaving Paris, where he had been a diplomat for several years. He didn’t have a chance to send it in Paris, so he brought it home with him. He once again forgot to give it to Madison when they hung out at Jefferson’s estate. He finally mailed the letter to Madison and reported that he saw “no occasion to alter my mind” after pondering it for several months (1789b). If he had sent the letter when he wrote it, perhaps the Bill of Rights would have included an amendment requiring that a constitutional convention be held every two decades.

²Jefferson was also in Paris during the Constitutional Convention and only influenced the document indirectly through his correspondence with Madison. An expiration date for the Constitution does not appear to have been brought up in any debates at the Constitutional Convention or writings of the founders aside from Jefferson and Madison’s correspondence. The idea might not have even occurred to anyone else since they were already deep in uncharted territory.

some questions: do constitutions risk decaying beyond repair when they age past their prime? Or is endurance a sign that a constitution is resilient enough to withstand threats indefinitely into the future?

The United States is one of the only countries in the world that has kept the same core constitutional text for more than two centuries, and it is one of the only countries that has not amended its constitution in three decades. Even then, the most recent amendment, ratified in 1992, was minor and had an unusual journey (see the appendix below). The last significant change to the Constitution which followed a standard process was adopted in 1971. Half a century later, around 2016, the United States began falling into its sharpest episode of democratic backsliding in its history, according to most major democracy indices (Coppedge et al. 2021; M. G. Marshall 2020).

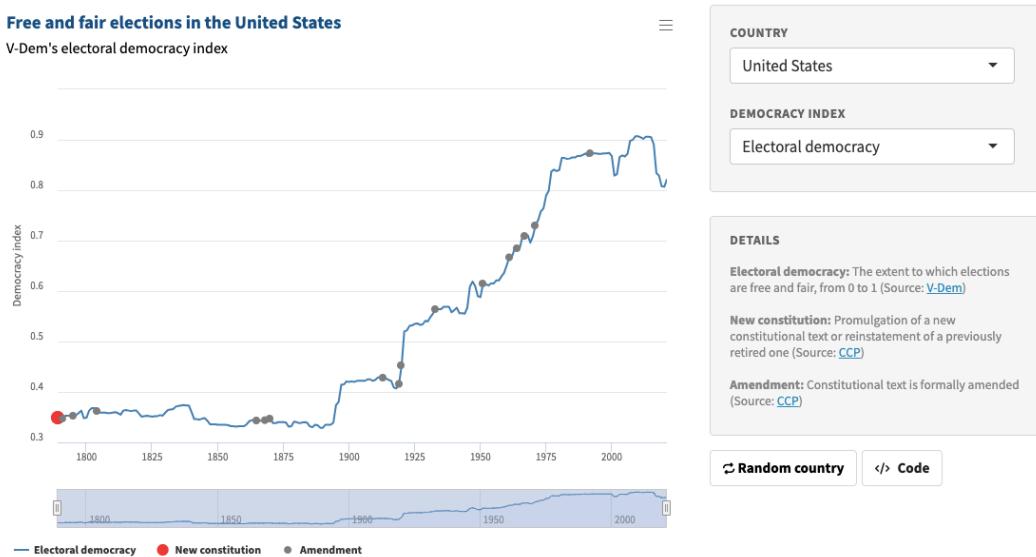


Figure 5.1: App showing constitutional revisions and democracy (screenshot)

In this chapter, I argue that these trends are connected. Constitutions that are easier to amend or replace are stronger bulwarks against threats to democracy than rigid constitutions. First, Section 5.1 reviews the comparative politics literature to understand why the US Constitution has endured for more than two centuries with relatively few changes. In Section 5.2, I argue that less entrenched constitutions keep the public more engaged in politics, strengthen the polity's reflexes against new forms of loopholes, and facilitate advancement away from old forms of oppression.

Next, Section 5.3 revisits Jefferson's claim that 19 years is the optimal frequency for constitutional revisions. Jefferson argued that *all* constitutions should have 19-year

term limits, assuming that 19 years is a universal estimate of the optimal lifespan of a constitution. I argue that constitutional life cycles are heterogeneous and cannot be evaluated around a single number, but they do follow predictable patterns based on their design and environment. I propose a more powerful, state-of-the-art alternative to Jefferson's ideal constitutional lifespan: life expectancies computed by a supervised machine learning algorithm, tailored for each constitution based on its design, environment, and history.

I investigate theories of optimal constitutional lifespans by testing the effects of constitutional aging on political and economic outcomes. I hypothesize that democracy is likely to slip and income inequality is likely to rise when constitutions last longer than expected. The results do not provide evidence for these hypotheses, but they do offer ideas for how future work can explore these relationships more closely.

5.1 Why the Constitution has lasted so long

Most American theories on why the US Constitution is one of the longest-lasting constitutions in the world are not supported by comparative politics research. Some of the most commonly cited reasons are that the Constitution lays out a good model and its lack of detail encourages more flexible institutions. However, most constitutions with the same model and level of detail are nowhere near as successful, and most successful constitutions have the opposite traits.

5.1.1 A solid design?

The popular belief is that the Constitution has endured because it lays out a good model of governance. As Chapter 3 shows, most countries that followed the American model are now either unstable and corrupt or they have shifted to a more parliamentary-style model. The US is the only country where a constitution has endured so long with a full presidential system with majoritarian elections. This does not rule out the possibility that the Constitution's design is responsible for its success, but we would expect this model to have a better track record outside the US if it were true.

One could also argue that the design of a constitution does not matter at all; constitutions are merely reflections of their environments, and their survival depends more on social pressures that are far deeper than their political structures. EGM's analysis suggests that variables that are endogenous to constitutions (features that the authors can control) generally have stronger effects on constitutional lifespans than exogenous variables (outside forces such as economic crises and international

conflicts). This was not the central focus of their work, so I investigated this idea further in the appendix below.

5.1.2 The lack of specificity and detail?

For two centuries, the consensus legal theory among legal and political scholars was that short, vague constitutions (like the US Constitution) are more durable than longer, more detailed constitutions (Hammons 1999), a theory typically attributed to James Madison. When constitutions provide less detail and merely lay out the basic institutional framework, the political system is more flexible and stable (Elazar 1985; L. M. Friedman 1988; Przeworski 1991). If a brief and vague provision needs to be updated, then political actors can simply reinterpret it rather than going through a tedious amendment process. The constitution can stand as a “living constitution,” a foundational document that leaves controversial issues to the legislative process and judicial review rather than codifying them as the law of the land. In short, brevity enables flexibility, and flexibility brings stability.

While the logic of the Madisonian theory is intuitive, the evidence has consistently shown the opposite: longer, more detailed constitutions last longer than brief constitutions. This was first observed by Hammons (1999) in the context of US state constitutions; by Negretto (2012) in the context of Latin American constitutions; and by Elkins, Ginsburg, and Melton (2009, hereafter “EGM”) in the global context with all national constitutions on record. Brief constitutions are often vague and can easily be interpreted different ways, which can fuel polarization and conflict. Courts usually hold the final say on what a constitution means, and they can easily be packed with judges who will interpret text in whichever way is the most favorable to the group in power. Constitutions with more detail bring a more universal understanding of the text says.

The US Constitution is an outlier: it is one of the briefest constitutions in the world, yet it is also the longest-lasting. It has had more detail than it seems, at least at times—it initially prohibited a ban on slavery, it briefly prohibited alcohol, and it has an unusually specific procedure for executive selection—but it is still one of the shortest and least specific constitutions on record.

5.1.3 The amendment process?

Another record the US Constitution holds is having one of the toughest amendment processes in the world. In one study, Lutz (1994) measured the difficulty of amending 32 democracies’ constitutions based on the number of steps needed and the vote threshold needed at each step. The US Constitution’s amendment process has two

steps, the first requiring a two-thirds vote (either an amendment is supported by two-thirds of Congress or it passes a convention that was called upon by two-thirds of the states) and the second requiring a three-fourths vote (three-fourths of state legislatures must ratify it). By Lutz's measure, the Constitution was the most difficult one to amend in the sample, scoring just over twice as high as the average constitution. Likewise, Ginsburg and Melton (2015) find that the Constitution has changed at an extremely low rate, with only 0.02% of its provisions changing every 100 years.

It seems plausible, then, that the Constitution has lasted so long because it is not amended often. Once again, though, the opposite pattern has emerged around the world. EGM found that constitutions that are more easily amendable tend to endure longer than those that are not. A tough amendment process can build tensions as the constitution fails to adapt over time until replacing it altogether becomes easier than passing a whole series of overdue amendments. On the other hand, an easier amendment process encourages political actors to perform routine maintenance on the constitution so it can adapt to the changing world.

In the US, the Supreme Court has been unusually active at democratizing the constitutional system. Landmark decisions such as *Brown v. Board* expanded civil rights on a scale that most countries need amendments to achieve. But these advancements often came fairly late compared to most countries. The US used court decisions to catch up to social changes that an easier amendment process would have achieved earlier.

In a later study, Ginsburg and Melton (2015) argue that the culture of a constitution is a stronger factor in its amendment rate and endurance than its amendment process. Countries that take pride in their constitutions are less likely to change them, even if they need to. The US Constitution has lasted so long because Americans wanted it to. No other factor can explain the Constitution's endurance as well as this simple fact. Its design, detail, and amendment process are usually weaknesses for most constitutions. Perhaps these features really are the reasons for the document's success, and the US simply follows a different set of natural laws than the rest of the world. It is more likely that the Constitution has survived despite these features, not because of them.

5.2 How constitutional aging affects democracy

A long-lasting constitution can be desirable, but survival is not the end goal of a constitution; it is more of a means to an end. Throughout the preambles and purpose statements of constitutions, the closest goal to survival is stability (Elkins et al. 2014), although these are not the same. Survival often indicates stability, but it can also indicate impending instability. If the framework of a political system has flaws, then the

survival of its constitution can come at the cost of stability. Autocratic regimes, for example, sometimes democratize and install a new constitution when public dissatisfaction with the status quo becomes dangerously high (Huntington 1991). In these moments, lengthening the lifespan of the constitution any more would become the *cause* of instability.

Constitutions are usually designed with many other goals in mind, such as security, state capacity, representativeness, economic prosperity, and civil liberties. The literature is rich with evidence that constitutional design affects these outcomes. Lederman, Loayza, and Soares (2005) find that parliamentary systems and states with strong protections for the freedom of the press have less corruption. Lijphart (1997) identifies many electoral rules that increase participation. Golder and Stramski (2010) find that systems with proportional representation are more representative of their constituencies than majoritarian systems. Likewise, Anderson and Guillory (1997) find that constituents are more satisfied with their government under proportional representation. Birchfield and Crepaz (1998) find that constitutions calibrated toward consensus democracy have lower levels of income inequality than those calibrated toward majoritarian democracy.

Perhaps the most critical outcome constitutions are geared toward is democracy. Specifically, constitutions are usually designed (in theory) to maintain the two primary dimensions of democracy identified by Dahl (1971): competition and participation. Around the world, democracy has been slipping since around 2005, marking the first global democratic recession since the World War II era (Institute 2021; Repucci and Slipowitz 2021). Unlike economic recessions, which are cyclical, predictable, and relatively short, democratic recessions are a new phenomenon that are much less understood. Political science does not yet have a consensus diagnosing the causes, a general theory explaining the processes universally, or a clear solution (Waldner and Lust 2018).

A wide range of theories have been offered: agency-based theories suggest power-hungry presidents and political actors are to blame (Mainwaring and Perez-Linan 2013); cultural theories focus on the effects of norms and civic engagement (Putnam and Leonardi 1993); institutionalists posit that certain types of electoral systems and party systems are more vulnerable (Reynolds 2010); political economists argue inequality and economic structures affect regime types (Boix 2003); social theories suggest ethnic divisions, class, and coalitions shape democratic outcomes (Rabushka and Shepsle 1972); and international relations theories highlight the influence of foreign actors Levitsky and Way (2006). The causes of democratic backsliding are likely heterogeneous around the world, so each of these six frameworks is relevant in some countries more than others. Waldner and Lust (2018, 107) point out that the “causes of vulnerability to backsliding may be distinct from the proximate causes of particular instantiations of backsliding.” Each of the factors theorized to contribute

to backsliding may put countries at risk, but the specific force that ultimately triggers backsliding in a country may not be as easy to observe or explain systematically.

One undertheorized factor in this realm is constitutions, likely because of the problems discussed earlier. Additionally, the consequences of constitutions on democracy may be confounded by the forces that shape constitutions in the first place. Norms and culture, for example, have been found to have wide-ranging effects on unwritten constitutional practices, and thus on constitutional performance (Wiener 2008). Many scholars argue that the written constitution is merely a symbol, a reflection of political norms. Yet a constitution's symbolic role is precisely where its effects may be found.

Constitutions are the most tangible symbols nations have for their political systems. Cultures can develop around them, especially around specific provisions. In the United States, for example, an entire subculture has developed against gun regulation, hailing the Second Amendment as its source of authority. The text of the provision matters less than its symbolism—the second word of the text is “well-regulated”—since its mere presence gives legitimacy to the movement. Perhaps if the Bill of Rights explicitly mentioned the right to vote, that same subculture might hold voting rights just as preciously. Constitutions serve as reference points on which the public views the political system at large.

When constitutions stagnate, the public is likely to view the unwritten constitution as stagnating as well. The symbol of the political system appears immutable and unshakeable, so the system itself must be. Nationwide cynicism over the political system can more easily flourish, and political participation decreases. This, in turn, signals to elites that they face lower costs for corruption, as the size of the electorate decreases (De Mesquita et al. 2005). In contrast, when constitutions undergo revisions at a healthier pace, the prospect for change is within closer reach. Amendments allow the public to correct for loopholes where there is a disconnect between enumerated rules and contemporary norms, which raises the costs of corruption and violating norms even further for elites. This, in turn, prevents elites from passing policies that help them consolidate economic power as well.

5.3 Theories of the optimal constitutional lifespan

Is there a point when constitutions become too entrenched and outdated to perform adequately? In this section, I discuss several theories of when a constitution might meet an inflection point after which it struggles to maintain freedom and fairness. To investigate these theories empirically, we can explore whether democracy declines at predictable points in a constitution's life cycle:

- *Proposition 5.1:* If political and economic indicators tend to downturn after constitutions survive past a certain age, whether it be a universal number or a more individualized number, then this figure is a useful estimate of a constitution's optimal lifespan.

Jefferson proposed 19 years as an optimal lifespan for any constitution, but he based this figure on demography data from the eighteenth century. He also offered it as a universal figure for all constitutions.

5.3.1 Jefferson's electorate half-life

Jefferson argued that a constitution loses its legitimacy after a majority of the electorate that instituted it has deceased. We can call this the *electorate half-life*. Jefferson calculated 19 years using life expectancies and mortality rates from the late 1700s. He seems to assume that these data were representative of all societies. This might have been a fair assumption at the time since even the best medical care was not much help, so there would have been very little inequality between rich and poor societies in terms life expectancy. Life expectancies and voting ages have changed since the eighteenth century and are more heterogeneous around the world. Replicating Jefferson's method using more recent data suggests the electorate half-life for any US government action in 2023 is 31 years. In other words, if a new constitution or law were adopted today, a majority of the current electorate (which in theory is ultimately responsible for instituting it) would be deceased in just over three decades. By Jefferson's argument, a legal measure passed in 2024 would lose its legitimacy by 2056.

If the electorate half-life of a constitution is meaningful, we would expect to see declines in political and economic indicators when it outlives this figure. Rather than calculating the electorate half-life for each individual constitution on record, I assessed whether these democracy and inequality changes after the 19-year and 31-year benchmarks for all constitutions:

- *Hypothesis 5.2a:* After a constitution has been in use 19 years, democracy tends to decline and income inequality tends to rise.
- *Hypothesis 5.2b:* After a constitution has been in use 31 years, democracy tends to decline and income inequality tends to rise.

I do not expect either of these hypotheses to be supported, but I am also not aware of any empirical studies directly testing implications of Jefferson's theory.

5.3.2 Life expectancies from survival models

Each constitution and country is unique, so accounting for each constitution's design, history, and environment can offer more detailed insights about how long a constitution can be expected to survive in good health. Perhaps a constitution's life expectancy as predicted by these variables would be a stronger indicator of when a constitution will decline. I first replicated EGM's models of constitutional survival to grab their life expectancy estimates and then used a more advanced prediction algorithm the next hypotheses:

- *Hypothesis 5.2c:* After a constitution has outlived its life expectancy as predicted by a survival analysis model, democracy tends to decline and income inequality tends to rise.
- *Hypothesis 5.2d:* After a constitution has outlived its life expectancy as predicted by random survival forests, democracy tends to decline and income inequality tends to rise.

The life expectancies estimated with these two methods and the actual ages of constitutions for 35 OECD nations are displayed below in Figure 5.2. Across the 169 current constitutions in the dataset, the average age as of 2024 is 48 years. The average life expectancy from both the random forests and the Cox models is 53 years. (This is significantly higher than EGM's finding of 19 years as the median lifespan because their estimate included all constitutions on record, including short-lived ones that are no longer in operation.) Around 43% of current constitutions have outlived their life expectancy according to the random forests or 36% according to the Cox models. As expected, the random forests predictions are more accurate, with a C-index of 0.67 compared to 0.62 for the Cox models.

5.4 Analysis

Are the electorate half-life figures and constitutional life expectancies actually meaningful? The final stage of this analysis adds these figures to models of democracy and inequality. Specifically, I employ fixed effects panel models with several common controls regressed on V-Dem's liberal democracy index and the income share of the top 1% in the country of each constitution. Because the analysis is at the constitution level rather than country level, there could be some correlations among constitutions from the same country, which could lead to underestimates of errors. Future research could use more advanced techniques to better account for the correlation structure.

For each dependent variable, I estimated five models. The main independent vari-



Figure 5.2: Comparisons of constitutional life expectancies and actual ages for OECD nations (screenshot)

able for the first two is an indicator of whether a constitution has outlived its life expectancy predicted by random survival forests and Cox models. The next two models employ indicators of whether a constitution has outlived its electorate half-life using Jefferson's 19-year cutoff and more modern 31-year cutoff. The final models include the raw age of each constitution. The age models may be more powerful since they use a continuous rather than binary variable, but they cannot say anything about the effects of outliving the life expectancies in particular.

Control variables for all models, which were taken from the same data sources as the survival models, are: the number of veto players, population, ethnic diversity (ethnic fractionalization index), conflict (indicator of whether the state experienced domestic conflict), GDP per capita, and public health (life expectancy for the population). The democracy models include income inequality as a control while the income inequality models include democracy as a control. Finally, the models include a one-year lag of the dependent variable to account for autocorrelation over time. I experimented with additional lags of up to four years, but only the first one was needed.

5.4.1 Results

The models of democracy and inequality are displayed as coefficient plots in Figure 5.3. The lagged dependent variables were omitted from the coefficient plots because their coefficient estimates were significantly larger than any of the other variables, which is to be expected. The table in the appendix below the plots shows more detail about the lagged variables' effects and overall model fit. The income inequality models only explain around half as much variance as the democracy models explain, likely because I selected variables based on democracy and used the same ones for income inequality rather than starting the model selection process from scratch.

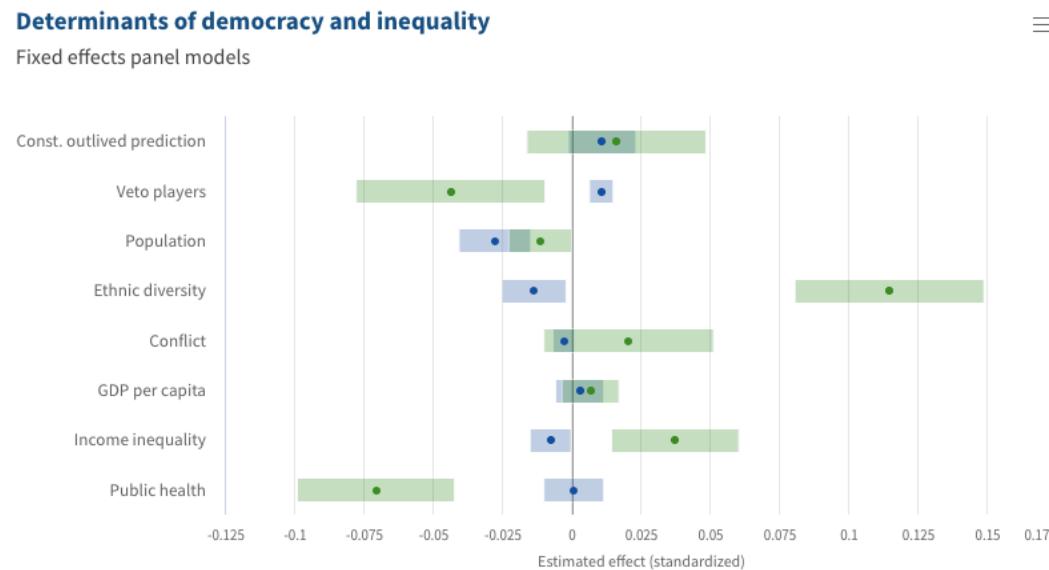


Figure 5.3: Coefficient plots of fixed effects panel models of democracy (screenshot)

If the hypotheses are supported, the first variable in each coefficient plot would show a negative effect on democracy (blue error bars completely to the left of the vertical line) and a positive effect on income inequality (green error bars completely to the right of the vertical line). However, across all the models, the effect of the independent variable is either not statistically significant or in the opposite direction as hypothesized. The life expectancies from the Cox models are the only thresholds with significant effects on democracy, but they suggest that democracy improves after a constitution has outlived its life expectancy. Similarly, all models except for the ones with life expectancies projected by random forests suggest that older constitutions tend to have lower levels of income inequality. This casts doubt on the proposition that electorate half-lives and constitutional life expectancies are meaningful.

5.4.2 Discussion

This chapter shows that the design of a constitution is important for understanding how long it will last, but the analyses do not uncover any evidence that long-lasting constitutions present dangers to political and economic environments. Several possibilities could explain these results:

- **Constitutional life expectancies and electorate half-lives are not reliable indicators of optimal lifespans.** As with human life expectancies, a constitution's predicted lifespan is not necessarily an indicator of how long it *should* survive. The models used to estimate life expectancies may be oversaturated since they were trained on many of the constitutions whose lifespans they seek to predict. The two electorate half-life figures may also have low construct validity. Perhaps more fine-tuned estimates of electorate half-lives that are time-variant and calculated for each country would return clearer results.
- **Amendments may have similar effects as new constitutions.** In countries where amendments are rare, a single amendment—even one that seems to be of little consequence—may be enough to refresh public engagement with the political system. In countries where frequent amendments are commonplace, a new constitution may be needed to activate the same response. Modeling the amendment rate of a constitution could help explain processes such as democratic backsliding more than its survival.
- **The models employed in this analysis are not adequate.** The dataset used in the models of democracy and inequality only goes back to 1920 due to limited data for control variables. Some constitutions (including the US Constitution) outlived their life expectancy before this date, so these cases had no variation on the key independent variable. Collecting more data, adding more control variables, including lags of control variables, and accounting for more advanced correlation structures could produce different results.
- **The effects of constitutions on democracy and inequality cannot be studied quantitatively.** Although the dataset has hundreds of constitutions, they may be too heterogeneous and unique to provide meaningful results in a quantitative study. A more qualitative approach focused on individual cases may be needed to understand a constitution's life cycle.
- **A constitution's endurance beyond expectations could help, not hurt, its constituents.** Jefferson's fear that a constitution with an indefinite timeline could lead to corruption may not have been warranted. A long-lasting constitution can bring stability and prosperity. The US Constitution might not be responsible for the challenges American democracy is facing.

It is unlikely that constitutional survival has no effect on democracy and inequality,

but we still do not know exactly how these processes would work. The age and rigidity of the US Constitution may not be posing as grave of a danger on its own as theorized in this chapter. Nevertheless, the US would still benefit from reevaluating parts of the Constitution and keeping a healthier pace of reform. Even if the Constitution is not the problem, it could be part of the solution.

6 Conclusion

THE US CONSTITUTION laid the foundations for centuries of stability and prosperity—for some, at least—but it is no longer compatible with American society. American-style systems concentrate broad powers in an ever-expanding executive that alternates control between two parties, so they perform best when voters are split into two main sides.¹ They struggle when voters become more divided since multiparty systems are not stable in these institutions.² If voting rights expansions or ideological rifts add more dimensions to politics, the country has to either sort itself back into two parties as the US did after the Civil Rights Era, or it descends into conflict as it did leading up to the Civil War.³

In diverse societies, American-style systems can only stabilize by shrinking the electorate to a more cohesive subset of the population. For most of American history, systems of race, class, and gender limited the electorate to a privileged voting class that fit well in a two-party system. The Constitution was mostly adequate for maintaining democracy *within* this class, which helped this group prosper and keep order over the country as a whole. Over the twentieth century, many more groups were brought into the voting class.⁴ The two-party system is now stretched beyond its limits: the parties are at maximum capacity and can barely hold themselves together, yet they each represent a third of the population or less and let the rest go ignored.

¹By American-style systems, I mean countries with a presidential form of government and a majoritarian election system.

²Majoritarian elections tend to only produce multiparty systems in countries where an entire region is dominated by a minority, especially if that region has its own national identity and has been its own country in the past. These regions have distinct political cultures from the rest of the country, so regional parties are able to win seats in the legislature. In the US, Hawaii is the most likely state to have its own party, but it likely sees a greater advantage to working within the Democratic Party rather than as a tiny third party.

³Leading up to the Civil War, Americans became split three ways: aside from the abolitionist unionists and pro-slavery secessionists, there were also many pro-slavery unionists and a few abolitionist secessionists. The Civil War was triggered by the presidential election of Abraham Lincoln, who was elected by a minority of the population. In a parliamentary system or a presidential system with proportional representation, a coalition of parties would have run the government rather than a minority party, so it is possible the dispute could have been resolved peacefully if the US had more European-style institutions. However, this could have just delayed a conflict that was bound to happen and in some sense had to happen in order to end slavery for good.

⁴Voting rights expansions and immigration influxes brought many more cultural minorities into the electorate, and a proliferation of political philosophies brought more ideological minorities as well.

Technically, a wide range of groups have a seat at the table, but in practice the table is not big enough for all of them. The system has replaced disenfranchisement with disillusionment to narrow the amount of support it needs to maintain order.

The US has been due for a transition to a newer constitutional model for at least half a century. American-style systems with diversifying electorates can appear to be stable on the surface, but the mismatch between the electorate and the majoritarian institutions quietly brews tension for decades. The symptoms of this tension are low voter turnout, deepening polarization, widening economic inequality, social unrest, and growing authoritarianism. The tension continues to boil until the system crashes unless either an anti-democratic movement forces the electorate to fit the institutions (by limiting voting rights to a smaller class that they can sustain) or a pro-democratic movement forces the institutions to fit the electorate.

Countries in this situation typically have to adopt elements of proportional representation and parliamentary democracy to remain both free and stable. These reforms encourage multiparty systems and spread out power among several groups rather than concentrating it in one or two. Americans have resisted making this transition because the bedrock of their national identity is the Constitution—not just the document itself, but its model—and reconstructing the model might mean Americans have to reconstruct their whole identity. American politics is not so much polarized as it is paralyzed by a lack of willpower to adapt its institutions to the changing world.

Now that American democracy is under more pressure than it has ever faced since the Civil War, the time is right for the US to return to its long-retired role as the world's pioneers of democracy and reevaluate some of the foundational features of its institutions. The US could learn from the advancements in constitutional design made over the last two centuries while tweaking them to fit American culture. For example, the US could limit executive power by making the cabinet answer to Congress rather than the president, a method that emulates parliamentary democracy while retaining the familiar institutions of presidential systems.⁵ Likewise, Congress could be elected with open-list proportional representation, a variant of a common multiparty electoral system. Most multiparty democracies use party-list proportional representation, but the open-list method would be more relatable to Americans since it retains the tradition of primary elections.

⁵This violates the rule that the three branches must be run independently, which is the point. As Chapter 3 and Section 6.1.1 below discuss, the separation of powers into three independent branches is rarely an effective safeguard against tyranny and usually enables tyranny by concentrating too much power in a single person. Countries with only two independent branches (the legislature and the judiciary, since the executive is run by the legislature) are significantly more likely to be democratic and stable. This point is practically a law in the comparative politics literature, but it is usually discussed in terms of parliamentary/presidential systems instead of the separation of powers into two/three independent branches.

Proportional representation can be achieved through laws, but other problems are more deeply ingrained in the Constitution. The Senate's extreme malapportionment creates a permanent inequality of power that skews policy toward whichever party happens to be favored more by smaller states. The separation of executive and legislative powers into independent branches enables presidents to continuously gain more power, and the Electoral College enables them to cater to a smaller share of the population. The brief, unclear language of the Constitution allows it to be interpreted in whichever way is the most favorable to the political establishment. Over time, population shifts toward larger states have been exacerbating the inequality in the Senate and the Electoral College while ideological rifts have weakened Americans' shared understanding of their constitutional text.

Even if there was demand for constitutional reform, the Constitution has one of toughest amendment processes in the world.⁶ Most other long-lasting constitutions are regularly amended so they can adjust to social pressures and resolve disputes over vague language, which is the main reason they have lasted so long. The US has survived by using court decisions rather than amendments to modernize its constitutional system. The official interpreter of the Constitution is a panel of nine elites, many of whom were chosen by presidents who lost the popular vote and then approved by senators representing a minority of the population. This has worked well for a surprisingly long time, but at some point the country will need a more democratic process for updating its institutions. The features of the Constitution that cripple the American political system the most are the ones that are explicit and leave little room for reinterpretation.

After building up so much deferred maintenance to its institutions, the US will eventually need to hold a constitutional convention. Americans invented the constitutional convention, but they seem to have forgotten that it is even an option. Around the world, conventions are common tools for maintaining peace and democracy. They bring together elected representatives from every corner of society to renegotiate an institutional setup that the public can support. Holding a convention would open the door to conversations on solutions that can address the root of the problems with American politics for the long term.

6.1 Revisiting the American constitutional model

Most of what we know about constitutional design suggests that the US has enjoyed exceptional stability and prosperity *despite* its Constitution, not because of it. Many of the basic theories informing its design have been debunked over the last century.

⁶Three-fourths of states must ratify any amendment for it to be added to the Constitution. Most other countries do not have any thresholds over two-thirds.

American-style systems are twice as likely to be autocracies as countries with newer constitutional models. Globally, the US Constitution is now used more as a model of what *not* to do since newer models perform better. The document's key features that Americans attribute its success to—its lack of detail, separation of executive and legislative powers, equal representation of states in the Senate, and uniquely high obstacles to change—are the very features that usually give rise to short-lived, corrupt regimes. The US is an anomaly. It is the only country that has remained stable for centuries with a presidential system and a barely touched constitution built on so many unsupported assumptions.

The US is still a great place to live compared to most of the world, but it is quickly becoming more polarized, unequal, and corrupt than its peers. Its luck with an outdated constitution may be running out. I recognize that calling for a more critical eye on the Constitution could be seen as a futile or unpatriotic effort. The document is central to American political culture, and questioning its merits could delegitimize it and fuel the very forces that are destabilizing the country. But unrest is already brewing, and encouraging people to think more critically about how the Constitution itself cultivated this unrest can help draw attention to where the solutions lie. In the meantime, it is important for the Constitution to be seen as fully legitimate throughout the public conversation and any amendment processes. The main point of this dissertation is that the US should revise the Constitution *before* it loses legitimacy and destabilizes the country.

6.1.1 The four horsemen of the Constitution's design

The Constitution was built on several theories that either no longer apply or are contradicted by the patterns that have emerged worldwide over the last two centuries. This dissertation explores four theories that influenced the Constitution's design or were offered later to justify its design. They were discussed at the Constitutional Convention, in the Federalist Papers, or other writings of the document's authors. For each theory, I reviewed the literature for evidence corroborating it or casting doubt on it:

1. **Madison's theory of multiparty democracy:** James Madison theorized that larger, more diverse nations would develop multiparty systems (in today's words) while small, homogeneous nations would have fewer parties. For this reason, Madison felt comfortable that the US was safe from a tyranny of the majority. Today, we know that most presidential systems naturally develop two-party systems unless they elect their legislatures with proportional representation. Without this newer election system, presidential systems are easily prone to being run by a majority party that can invade on minorities' rights.

2. **Montesquieu's theory of separation of powers:** The philosopher Montesquieu theorized that separating legislative and executive powers would prevent corruption. The US was the first of many countries to experiment with this arrangement. These countries (presidential systems) usually result in a single leader holding broad powers, whereas countries where the legislature runs the executive (parliamentary systems) spread out power among a wider group of officials. Presidential systems are much more likely to be corrupt and unstable than parliamentary systems. Scholars disagree on whether this reflects correlation or causation, but we know that the separation of powers into three independent branches is rarely an effective check on power and often helps chief executives gain too much power.
3. **Washington's theory of the Senate as a cooling saucer:** George Washington suggested that the Senate would filter out extremism and polarization from the House. Nowadays, the Senate fuels polarization more than it cools it. Over the last half century, population shifts toward larger states have made it easier for Republicans to control the Senate while catering to fewer and fewer people, letting the party skew policy farther away from the center. The Senate now becomes polarized more quickly than the House. The magnitude of the effect of the Senate's apportionment on polarization is unclear since it is difficult to study empirically.
4. **Madisonian theory of constitutional endurance:** The conventional wisdom typically attributed to James Madison was that short, vague constitutions would be more stable. The opposite is true; most long-lasting constitutions are more specific and detailed. Shorter constitutions tend not to last as long because they invite more disagreements in interpretation. The US Constitution is the exception, not the rule. This is likely because the Supreme Court's reinterpretations of the Constitution have taken on the role that amendment processes serve in most other countries.

If the Framers of the Constitution had today's knowledge on these four theories alone, they likely would have (1) required proportional representation for congressional elections; (2) given Congress more authority over the executive branch, possibly even keeping a parliamentary model; (3) based the Senate's apportionment on population; and (4) made the text more specific, detailed, and easier to amend to prevent future conflict over vague language. Perhaps the Senate would not have changed since many Framers including James Madison and Alexander Hamilton were not thrilled about letting each state have equal representation; they agreed to it since it was the only way to appease small states into ratifying the Constitution. The Framers might have at least made the House the more powerful chamber to minimize the risks that come with such an inequitably apportioned upper chamber.

6.1.2 Constitutional conventions: a forgotten tool for strengthening democracy

A major step toward reinvigorating American democracy would be to hold a constitutional convention. The US has not held one since 1787 even though the Constitution provides a mechanism for it. Thomas Jefferson suggested conventions should be held every two decades or so, and the average state has held at least four conventions for its own constitution.⁷ Constitutional conventions bring together representatives from every corner of society to consider proposals to amend or rewrite their foundational document. They usually propose several amendments and rarely propose an entirely new constitution. To hold a convention for the US Constitution, two-thirds of states would need to call for it, as Article V of the Constitution states:

The Congress, whenever two thirds of both Houses shall deem it necessary, shall propose Amendments to this Constitution, or, on the Application of the Legislatures of two thirds of the several States, shall call a Convention for proposing Amendments, which, in either Case, shall be valid to all Intents and Purposes, as Part of this Constitution, when ratified by the Legislatures of three fourths of the several States, or by Conventions in three fourths thereof, as the one or the other Mode of Ratification may be proposed by the Congress[.]

This is all the Constitution says about conventions, so Congress has broad authority to determine how a convention would work. On the least democratic end of the spectrum, a convention could follow the model of the Constitutional Convention of 1787, a closed-door assembly where each state gets one vote through a small number of delegates chosen by state politicians. On the other end, a convention could resemble more inclusive conventions used around the world today: delegates are directly elected by the public, each person (not state) has an equal vote, and public input is sought throughout the process.

Dozens of bills have been introduced in Congress proposing details for a constitutional convention. None passed, but they generally converged on a common framework. The Congressional Research Service summarized these patterns in a 2017 report (Neale 2016). By the 1990s, most bills proposed structuring the convention like the Electoral College, with one delegate per congressional district plus two delegates for each entire state. These delegates would all be directly elected by the voters. The vice president would preside over the convention until leaders are elected by the dele-

⁷This is a rough figure based on Ballotpedia's (2023b) count of more 233 state-level constitutional conventions in US history. Dividing by the 50 current states, that averages to just over 4 conventions per state. This is not necessarily the best measure of the frequency at which states hold conventions because many states have been added over the years. Additionally, some states may hold conventions much more frequently than average, which skews the average upwards.

gates. Congress can reject the convention's proposed amendments if they are beyond the scope of the subjects the convention can touch.

Although Congress has established these loose precedents for constitutional convention procedures, a wide range of options still exist since the Constitution places very few restraints on conventions. Conventions can have multiple types of delegates who are chosen through different processes to make sure that all groups in society are represented, including the ones that are more spread out geographically. Some delegates could be elected by congressional districts using plurality voting while others are elected nationwide through proportional representation. Randomly selected citizens and constitutional experts appointed by Congress could also hold seats.

The key advantage of assembling a convention over the alternatives—Congress proposing amendments on its own or the Supreme Court reinterpreting constitutional provisions—is that conventions can more actively involve the public, which in turn fosters a wider discussion of how to improve the Constitution. Voters would have to think about what types of amendments they might support, if any, before electing their delegates. These delegates would then serve as an entirely new type of elected official whose sole job is reforming the nation's institutions while the rest of the government continues to operate. These delegates can hold town halls and online forums to learn their constituents' preferences on institutional reform, which is not usually a top priority for general elected officials. Conventions bring a whole atmosphere of discussion around constitutions, helping leaders find a consensus that the public supports.

It is important to note that these benefits would only be realized if a convention is democratically elected. An elite-run convention in the style of 1787 would not offer much benefit over starting amendments in Congress and could backfire by helping powerful elites or factions rig the Constitution in their favor. Conventions that are more democratic come with minimal risks and typically only improve democracy and stability.⁸ If a convention were held today, the public would probably need more time to warm up to amendments that address the deeper issues in the Constitution such as the Senate's built-in inequality and the presidency's continuous expansion of power. Even if a constitutional convention does not successfully pass any amendments, the process itself would start the national conversations on these issues and would remind people that change is possible, which could open the door to more reforms in the long term.

Constitutional conventions are not just for writing new constitutions. The only one the US has ever held resulted in a new constitution, but around the world conventions

⁸Constitutional conventions where every major group in society is fairly represented and participates in drafting revisions tend to see the greatest improvements to democracy in the years that follow (Eisenstadt, LeVan, and Maboudi 2015).

often only amend the existing one. A new constitution would probably not pass anyway, nor would the American public agree to it. To dissuade concerns that a convention could crush the national spirit by questioning the legitimacy of the whole system, Congress can set limits on a convention's scope. It can be tasked with exploring amendments on a particular subject and can be prohibited from proposing amendments on certain sections or rewriting the whole document. The US should focus on reforming election systems for Congress and the president, limiting the Senate's power, limiting presidential power, and amending the amendment process itself to be more democratic.

6.2 Designing a better constitution

Every society is different, and there is no one-size-fits-all formula for a constitution that could optimize outcomes in any scenario. Instead, each constitution has to be tailored for the individual needs and goals of its constituents. Now that we have centuries' worth of data on the effects of different choices in different contexts, learning about these patterns is both important and practical. This section presents an app I built which shows how constitutional amendments can affect a variety of outcomes in different contexts. More specific suggestions for amendments are discussed next.

6.2.1 AI-driven constitutional design

The app below is a tool that can help observers and political actors design a constitution for a given society. First, users can specify geographic, cultural, and economic conditions of a country, and they can also select which outcomes are the most important to them. The app then projects the optimal institutional design for these conditions. Users can edit this design to see how these adjustments will affect 10 different outcomes ranging from democracy and political stability to income inequality and standard of living.

6.2.2 Amendments that could strengthen democracy

The process of revising the Constitution is just as important as the product, possibly even more important. No single person, not even the Constitutionater, knows what the best constitution would look like. Instead, every group in society must be included in a fair process for negotiating over its provisions. Only then can a constitution emerge with the right balance of empirical support and popular support. While political science research offers many insights on which amendments could have the

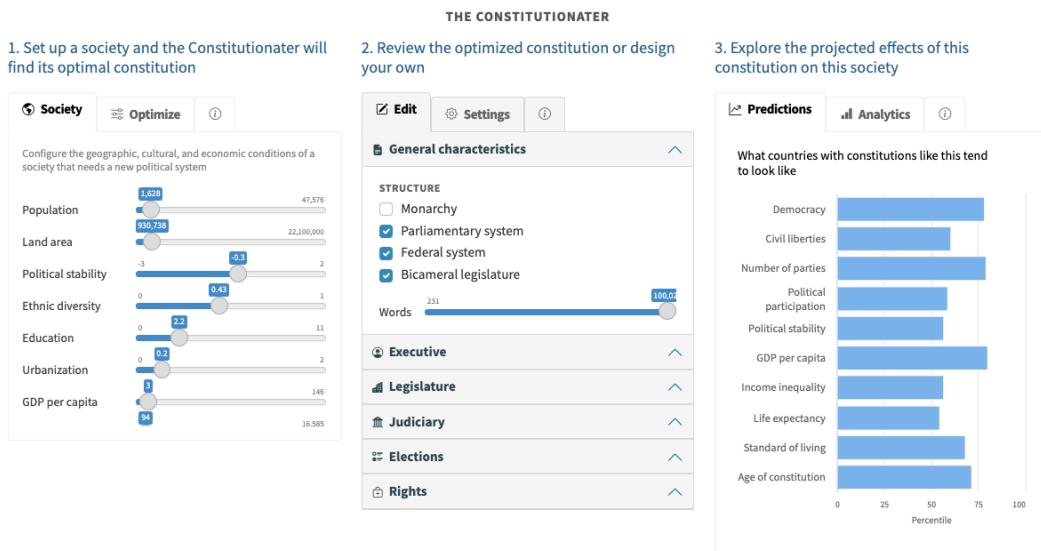


Figure 6.1: The Constitutionater (screenshot)

most positive effects on American politics, even the most proven reforms could struggle if they are unpopular. People have to respect a constitutional provision for it to be seen as legitimate and for elected leaders to execute it faithfully. Below are some constitutional revisions that the political science literature and this dissertation lend the most support to, but they may only work if people want them to work.

- 1. Require proportional representation in Congress.** Many countries with healthy multiparty systems mandate proportional representation in their constitution. They often state that elections for their legislature must be conducted “on the basis of proportional representation” or something along those lines. This could also be achieved through laws, but an amendment to the Constitution would make it harder to undo and therefore would preserve a multiparty system longer into the future.
- 2. Shift the Senate’s powers to the House.** The Senate is one of the most unequally representative legislative bodies in the world, which throws off the balance of the whole political environment.⁹ Although the idea that each state should be counted equally in at least one institution makes sense, in reality it does more harm than good for most people’s lives. The Senate makes it easier for elites to control policy through a party that only represents a fraction

⁹Presidents cannot win their party primaries unless their policy agendas can realistically pass the Senate; House members usually model their behavior on their counterparts in the Senate in the hopes of moving up; judges must be confirmed by the Senate to serve in courts.

of the population. However, the equal representation of states in the Senate cannot be amended unless every state agrees to it. An easier alternative would be to shift all of the powers that only the Senate has (e.g., approving executive and judicial appointments) to the House, making the House the upper chamber. The Senate could also be stripped of all of its powers, which would make it a ceremonial body and would effectively turn the House into a unicameral legislature.

3. **Remove the Electoral College and use approval voting for presidential elections.** The Electoral College enables the president to govern without being held accountable to a majority of the population. A national popular vote with simple majority voting or ranked-choice voting would be fine, but approval voting would work best. As discussed in Chapter 3, ranked-choice voting does not offer much improvement over simple majority voting and can be confusing, whereas approval voting is simple and effective.¹⁰ Under approval voting, each voter can select as many candidates as they want. They do not have to pick just one (although they could) and they do not have to order their preferences. The candidate with the most votes—the highest approval of the population—wins.
4. **Remove the presidential veto power.** The presidential veto was intended to only be used if the president believed a piece of legislation was unconstitutional. The first presidents used it sparingly, for this purpose alone (Watson 1987). Early on, though, the power to decide constitutionality became vested solely in the courts, so presidents began using vetoes (and the threat of vetoes) to advance their own political agenda (Prakash and Yoo 2003). This is why presidents have such strong influence on legislation. Legislation should be left to Congress, as was originally intended. Removing the president's veto power would significantly limit the president's unilateral power over Congress.
5. **Give Congress more power over the executive branch.** In presidential systems, the executive usually gains more and more power over time. This may be inevitable because a single person has many advantages over a whole body of people. Many countries have sustainably limited presidential power by shifting the authority to dismiss executive officials from the president to their legislature. This would make the US a semi-presidential system, specifically a *premier-presidential system*.¹¹ The cabinet would still be chosen by the president

¹⁰Experiments usually show that ranked-choice voting lowers voter satisfaction with the election result (Cerrone and McClintock 2021) and approval voting raises it (Fishburn and Little 1988).

¹¹Semi-presidential systems are presidential systems with elements of parliamentary democracy. There are two main types. In *premier-presidential systems*, the president appoints cabinet officials but only the legislature can dismiss them. This has two main differences from standard presidentialism: (a) the president cannot fire top officials, and (b) the legislature can remove cabinet officials for political disagreements or poor job performance, not just for impeachable crimes. France is a good example of a premier-presidential system. Another type of semi-presidentialism is *president-parliamentary*

but would answer to Congress. The president's main roles would be to set the agenda, represent the nation abroad, run foreign policy, oversee the military, and take the lead during emergencies.

6. **Add term limits for judges.** Federal judges serve for life or until they decide to retire. The Framers of the Constitution believed this was the best way to prevent judges from biasing their decisions around their own political goals after serving on the court. This is not worth the cost: lifetime judicial appointments enable presidents to impose their legacy decades into the future, impeding on future generations' right to govern themselves. A better solution is to limit judges to serving no more than, say, 20 years, after which they are provided with a hefty pension and are prohibited from participating in public affairs of any kind. Note that term limits are not advisable for legislatures like Congress, as discussed in Chapter 2.
7. **Shift some administrative powers to juries.** Constitutional processes that are supposed to be independent of partisan politics—election administration, judicial appointments, and impeachments, to name a few—could be handled by committees of randomly selected citizens, a model known as sortition. Sortition offers the benefits of democracy without its dangers: juries represent the public better than elected bodies, jurors' votes are not clouded by reelection interests, and their decisions are based on careful deliberation rather than politicized media consumption. Like judicial juries, administrative juries would be ad-hoc; each would assemble for a single purpose, taking anywhere from a few hours to a few weeks to deliberate. Certain types of decisions could be required by the Constitution or by law to be decided by juries,¹² although Congress, the president, and courts could also defer virtually any other kind of decision in their power to a jury.¹³ The public could also convene a jury for a specific power if a petition reaches a certain threshold.¹⁴

8. **Require public approval of the Constitution and amendments.** The Constitu-

systems, where both the president and the legislature can remove cabinet officials. Germany is the strongest example of a president-parliamentary system. Outside of Germany and a couple other countries, this model tends to perform worse than standard presidential systems, while premier-presidential systems tend to perform just as well as parliamentary systems (Sedelius and Linde 2017).

¹²Some examples: nominations for judges, election administrators, attorneys general, and other theoretically nonpartisan posts would be made by juries rather than governors and the president (with recommendations from parties and interest groups).

¹³Some examples: the president could defer the decision on whether to veto a controversial piece of legislation to a jury. Congress could establish a precedent of deferring a final vote on the annual budget to a jury. If the Supreme Court finds that a ruling comes down to a question of morality rather than an interpretation of the law, it could defer that question to a jury.

¹⁴Some examples: a publicly initiated jury could hold an impeachment hearing of an official if the House refuses to, decide whether to indict a person for a crime that a prosecutor refused to pursue, or force the Senate to vote on a bill that the majority leader refused to bring to the floor.

tion has never been put up for a public vote, nor have any of its amendments. In a true republic, the people have the right not just to pick their leaders, but to pick the system itself. If anything, democratic accountability for the system is more important than democratic accountability for individual leaders. Most modern democracies and US states require their constitutions and amendments to pass a public vote, and the US would benefit from this practice too by amending its amendment process. It could allow for any future amendment to be ratified by a public referendum instead of state legislatures. The Constitution as a whole could also go up for a public vote of confidence every 20 to 40 years. If the people are not satisfied with it, then a constitutional convention could be assembled to propose amendments or draft a new constitution.

9. **Restructure the document.** An unusual trait of the Constitution is that the Bill of Rights was drafted after the rest of the Constitution. Many constitutions begin with a bill of rights and then lay out the institutions designed to protect those rights. Starting with the institutions and leaving the rights to an addendum is like prescribing a medicine before making a diagnosis. Perhaps the Constitution would have been designed differently if the Framers had already established which rights they were designing it to protect.
10. **Modernize the language.** The Constitution was deliberately written in a style that ordinary people of the day could understand, using eighteenth-century colloquialisms rather than scholarly jargon or elitist legalese.¹⁵ The English language has changed so much over the last couple hundred years that the Constitution is difficult for most people to read nowadays. The language of the Constitution will keep getting more distant from modern English and causing deeper and deeper disagreements in interpretation as time goes on. As a result, the court tasked with interpreting vague constitutional language is slowly losing legitimacy. These trends could become particularly dangerous in the coming years as Americans become more polarized on provisions such as the Second Amendment. If government is of the people, by the people, and for the people, then the people should be able to maintain a common understanding of their own governing document.

The last two points are more general critiques of the Constitution as a whole and would not necessarily translate into a specific amendment. Because of the odd structure, outdated language, and long list of issues with the institutional design, one could argue that the Constitution needs to be rewritten altogether. At the same time, any one of the first eight ideas listed above would likely heal American democracy at least a little. The Constitution needs a breath of fresh air, a jolt of some kind, to renew its energy. It needs to be seen not just for what it is, but what it could be.

¹⁵The Supreme Court discusses this in *United States v. Sprague*, page 731.

6.3 It's not 1787 anymore

The simple, uncomfortable truth about the US Constitution is that it is not a particularly well designed constitution by today's standards. The Constitution now excels only at survival, to the point now where it sacrifices the rest of its objectives so it can survive longer. On those actual objectives, listed in the preamble, the Constitution performs more poorly than most similar countries' constitutions. It was innovative by 1700s standards, but the rest of the world has been making great strides in constitutional design over the last two centuries. Most countries have rewritten their constitutions within the last century, each time building on the lessons of the previous. Their political systems were based on scientific evidence of what works and what doesn't. The American political framework was based mainly on speculation since barely any evidence existed yet. Many of its prominent features are ineffective and counterproductive.

One of the most unpopular features of the Constitution is the Electoral College, but the document's problems go much deeper. The Electoral College has garnered more attention than most other issues in the Constitution because it has a straightforward problem and a straightforward solution. The Electoral College weights certain votes more than others, which violates the most fundamental standard of elections: *one person, one vote*. The president is elected unequally, so of course the president serves unequally.

If we look a little deeper, we see that the Electoral College treats people unequally because its composition is based in part on the Senate, which treats people even more unequally. On average, a person from the bottom half of states by population has 5 times as much power through their senators as a person from the other half. A person from Vermont has 46 times as much power through their senators as a person from Texas. Equal representation of states means unequal representation of people. This has ripple effects throughout the government: all judges and top officials are appointed by presidents and confirmed by the Senate. Of the elected institutions in the federal government, the House is the only one that even attempts to treat each person equally, yet it is the least powerful.

Most of the power in the government stems from elections that count people unequally, so most of the government serves unequally. Over time, any groups that happen to be overrepresented can skew policy in their favor, building up a snowball effect of increasingly unfair outcomes. People naturally use this advantage to gain more freedom for themselves at the expense of others' freedom. Society as a whole sees a net loss to freedom, simply because its Constitution does not treat each person equally. To make matters worse, the primary source of this inequality—the apportionment of the Senate—is the one feature of the Constitution that is prohibited from being amended unless every single state agrees to it.

In the United States, political inequality is built into the core of the system, codified in the Constitution. Not even economic inequality, or the economic system in general, is so strictly enforced. The Constitution is immortal, never to be questioned, never to fall. If a leader demanded the same treatment, they would rightfully be labeled a tyrant. If a leader imposed the same level of inequality, Americans would not stand for it. When a centuries-old document does these, they make excuses for it. This is precisely why a tyrannical system is even more dangerous than a tyrannical leader. It's easier to have faith in a bad system than it is to have faith in a bad leader. It's easier to rationalize a tyranny of the dead than it is to rationalize a tyranny of the living.

By the end of Trump's presidency, a pandora's box of crises were unleashed: violence had been tearing through the country, people couldn't even agree on who won an election, the Capitol was sieged by extremists, public confidence in the government was drying up, the president had lost the respect of the world, and hundreds of thousands of people were dying from an out-of-control pandemic that most other governments contained more effectively. The United States was facing an oddly similar set of crises to what it faced in 1787—although 1787 didn't have the widespread election disputes, the attempted coup, or the mismanaged pandemic.

Furthermore, Trump's rise to power was the culmination of a perfect storm of structural problems, each stemming from an outdated constitution. If the Constitution had included incentives for more parties, Trump would not have been one of only two viable candidates in 2016. If the Electoral College followed a principle so simple as counting each person equally (which virtually every other presidential system follows), Trump would not have won. If the Constitution's checks and balances actually worked, Trump would not have been able to maintain such a firm grip on power. Trump—and the chaos he brought—rose not in spite of the Constitution, but because of it. At the very least, a more modern constitution could have stopped him and numbed the recent wave of democratic erosion.

The Founding Fathers were not as attached to their creation as Americans are today. Many of them would be concerned, not proud, to learn of the Constitution's extraordinary longevity. They saw it not as a perfect, permanent law of the land, but as a flawed, shorter-term compromise that would eventually run into problems. We now know how to fix those problems based on centuries' worth of data and experience around the world. But the mood is different these days. Americans only know how to point fingers at problems and cross their fingers for solutions. The fear that a constitutional convention would make matters worse has overshadowed the fact that if Americans don't even try to come together and agree on a better system, they may never see one.

The Constitution is held to an unusually low bar. American politics has become rife with injustice, indifference, incompetence, greed, elitism, corruption, and vi-

ulence. This is not what a well-functioning constitution looks like, and there is no need to wait until the collapse of civilization to take action. *This* is the moment in history to reevaluate the foundation of the system. When the country's forefathers faced similar problems to the current ones, many wanted to stick with the original constitution but ultimately decided that a good constitution was better than a permanent one. They didn't need death and destruction to realize their constitution was failing. They were proactive enough to build a better system before the old one fell. They had the courage to peacefully reconstruct their institutions before they descended into chaos. Do we?

Appendices

A. Why term limits don't work

From the introduction section of Chapter 2. While most of the public supports placing term limits on Congress, the academic consensus is that they would do more harm than good. This appendix reviews findings on the effects of term limits from the American politics literature.

Limiting the number of terms that legislators can serve ensures that most of the politicians in office are relatively new to the job. The legislature becomes full of politicians who are less experienced, less competent, less well-known, and less powerful than legislatures with no term limits. Most newer legislators are only in office because of the party by their name, which puts them at the mercy of their party and their donors. If they want to win re-election even once, they have to do what the powers that be tell them to do, or they'll be unseated.

Most politicians spend years building enough of a reputation, voter base, and personal donor base before they can afford to vote their conscience. Politicians with limited terms have to rise to fame more quickly if they want to stray from their party, which usually requires promoting sensational and extreme ideas. In sum, term limits make it easier for political and economic elites to control rank-and-file legislators, which pushes some to become more polarizing so they can escape elites' hold on them. When states implement term limits for their legislatures, we tend to see:

- **Party leaders and wealthy donors gain power.** Term limits ensure that very few members of a legislature have served long enough to build their own independent voter bases and donor bases, so greater share of the legislature is dependent on powerful political actors if they want to win re-election or seek higher office (Maskin and Shor 2015).
- **Polarization increases.** Because party leaders and partisan donors have more leverage over rank-and-file members, the parties become more polarized and bipartisanship declines (Olson and Rogowski 2020; Sarbaugh-Thompson et al. 2006).
- **Lawmakers become less competent.** When a legislature has term limits, its

members overall are less familiar with the legislative process, less knowledgeable of policy issues, and less skilled at passing good quality legislation (Burns et al. 2008).

- **Lobbyists for special interests become more influential.** Legislators with less experience and competence rely more on lobbyists to inform their votes (Moncrief and Thompson 2001).
- **Governors become more powerful.** Executive branches have more institutional expertise at their disposal—career bureaucrats, political operatives, and policy experts—giving governors the upper hand at politicking against legislatures with high turnover and low competence (Carey et al. 2006).
- **Oversight of the bureaucracy declines.** Term-limited legislatures have less experience holding government agencies accountable and place a lower priority on it (Sarbaugh-Thompson et al. 2010).
- **Lawmakers slack on their responsibilities.** Politicians who know they are in their last term tend to be less productive, work on less legislation, and are absent from meetings more—especially if they plan on seeking a higher office in the next election cycle since they have to size up their campaigning operations. If a legislature has a limit of four terms, then an entire quarter of the legislature may be in their lame duck term, whereas legislatures with no term limits have very few members who are not seeking reelection (Fouirnaies 2018).
- **Lawmakers spend more time fundraising.** Legislators who are newer to the job have to spend more time fundraising than legislators who are more established. This means the average member of a term-limited legislature spends less time at events with ordinary constituents and more time at events with wealthier donors (VanDusky-Allen 2014).
- **Voter turnout decreases.** Partisanship in general alienates potential voters and decreases voter turnout, so the increased partisanship that comes with term limits can dampen voter turnout even more. Plus, longer-serving politicians with more name recognition and campaign experience tend to be more effective at driving up turnout, and term-limited legislatures have fewer of these politicians (Nalder 2007).
- **Gerrymandering worsens.** Districts become more oddly shaped to favor the majority party, mainly because of the increased power of parties in the legislature. Legislators who are close to their term limit also have an incentive to make sure their state senate's districts or their congressional districts are favorable to their party so they can jump to a different chamber in the next election (Schaffner, Wagner, and Winburn 2004).
- **Representation doesn't usually improve.** Some studies have found cases when

women and minorities were slightly more likely to hold office after their states adopted term limits, but most research fails to find a significant effect of term limits on descriptive representation (Caress et al. 2003; Carey et al. 2006; Carroll and Jenkins 2001; Pettey 2017; Schraufnagel and Halperin 2006).

Keep in mind that these findings only apply to term limits for legislatures (e.g., Congress and state legislatures). Term limits on presidents, governors, and judges are important safeguards for democracy. Executive and judicial officials each have more unilateral power, which is not safe in the hands of a single person for a long period of time. Legislators' power is already constrained by the fact that each one has very little power on their own, so term limits have a different effect on them than on other officials.

B. How many people did the video and its critics reach on TikTok?

From Section 2.1 of Chapter 2. A misleading animated chart went viral on TikTok and then on other platforms. This appendix sums up view counts from September to November 2023. By March 2024, the video had resurfaced many times, adding several million more views to the view counts tallied here.

While it's impossible to know exactly how many people saw a video, the view count gives a general idea of the relative reach of each video. The chart got around **30 million** views on TikTok as of November 14, 2023:

- The original video had **9.5 million** views
- A re-post had **20 million** views
- Many other re-posts had smaller view counts

The response videos pointing out the error received around **425,000** views:

- The video featured in Figure 2.1 had **270,000** views
- The next most popular video had **150,000** views,
- One video had **7,000** views
- The only other videos I could find (3) totaled around **1200** views

The original video and re-posts garnered more than **70 times** as many views as the response videos. This is the best estimate of the relative reach of the chart and its critics, but it is a very rough estimate. We don't know how many individual people actually saw these videos for many reasons:

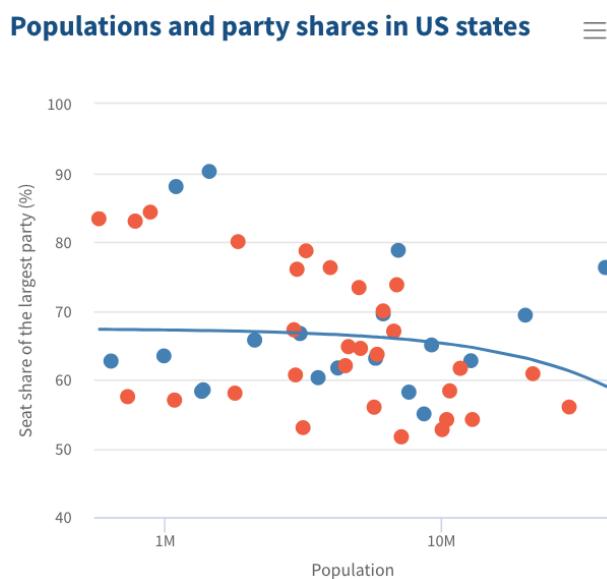
- a. Re-posts could have been deleted before I found them (especially if a user who re-posted the video realized it was misleading)
- b. Re-watching a video adds to its view count
- c. Some viewers may have seen both the original video and a re-post
- d. Quickly scrolling past a video still adds to its view count even if the viewer doesn't pay attention to it (which would affect the response videos more than the original video because they're boring)
- e. Some viewers could have shown the video to a group of people around them
- f. There could be other re-posts that I couldn't find or didn't have access to (e.g., private videos or videos posted in other countries that are disconnected from TikTok in the US)
- g. Bots could inflate view counts

Finally, note that the video went viral on other platforms as well. By my count, X posts sharing the video got a total of 8 million views at the time of writing. Across all platforms, I count around 40 million views.

C. Populations and party shares in US states

From Section 3.1 in Chapter 3. My analysis of OECD nations casts doubt on Madison's theory that larger countries are less likely to be controlled by majority parties. This appendix replicates the analysis at the state level within the US.

To his credit, Madison's theory holds a little more support when comparing party seat shares in legislatures of US states. Smaller states are slightly more likely to be dominated by a single party, but the correlation is weak and not statistically significant ($r = -0.16$). Furthermore, every state regardless of population has a two-party system and a majority of states are controlled by a single party across their three branches. Data for the figure below were obtained from the National Conference of State Legislatures (2020).



D. Ranked-choice voting

From Section 3.2.2 of Chapter 3. Most political science research on ranked-choice voting (RCV) suggests it creates more problems than it solves. The focus of Section 3.2.2 is RCV's inability to help third parties or produce multiparty systems. These appendices review literature exploring other effects of RCV.

D1. How RCV affects voter participation

While some analyses find that RCV increases voter turnout (Jerdon 2006; McGinn 2020), others find no change in turnout (Juelich and Coll 2021; McCannon 2022; Schultz and Rendahl 2010), and some find a decrease in turnout (Holtzman 2012; McDaniel 2016, 2019). In general, the analyses finding the greatest increase in turnout tend to be limited to a single jurisdiction, while the studies finding no effect or a negative effect tend to employ more rigorous methods with larger samples. Furthermore, the apparent effect of RCV on turnout could be inflated by the fact that the only municipalities that have implemented RCV are early adopters of a new trend, meaning their electorates are already more engaged and receptive to electoral reform than the rest of the population. Indeed, most municipalities with RCV had unusually high turnout rates prior to implementing RCV (Kimball and Anthony 2016).

The main reason RCV could decrease turnout is that ranking candidates requires more time, information, and critical thinking than selecting a single candidate or party (J. Clark 2020). On top of that, voters have to learn how RCV works in the first place, which is especially difficult for older voters (Coll 2021; Donovan, Tolbert, and Gracey 2019). The more effort it takes to vote, the less people will vote. Therefore, although there is evidence that RCV increased turnout in certain elections, readers should be cautious of generalizing those results to all settings. Implementing RCV nationwide would likely decrease overall participation.

D2. How RCV affects polarization

Proponents often argue that RCV can help moderate the parties and cool down political polarization, but this claim is not supported by the literature. N. Atkinson, Foley, and Ganz (2023) find that winners under RCV tend to be more ideologically extreme than winners under other electoral methods. This effect is greatest in states that are already highly polarized. Similarly, McDaniel (2018) finds that RCV leads to more racially polarized voting, meaning voters pay greater attention to racial identity and they vote more cohesively with their race.

One possible reason why RCV increases polarization is that it legitimizes and draws attention to extremist third-party candidates. More voters have candidates they can be excited about and heated about. In the end, though, the two major-party candidates are still the only ones with a real chance of winning. Third parties that have no chance of holding power tend to only attract fringe voters. Thus, by giving third parties more visibility but still no chance of winning, RCV helps grow fringe movements while mainstream voters stick with the two major parties. A healthy multiparty system could help alleviate polarization, but a two-party system that fuels third parties while still blocking them from power can only make matters worse.

D3. Public satisfaction with RCV

Most Americans do not support RCV and are less satisfied with outcomes from RCV compared to the status quo. Some surveys do report that a majority of their respondents support RCV (Moser 2022; Robinson 2018), but these surveys only sampled residents of areas that already use RCV—meaning these areas had higher levels of support in the first place to become early adopters of the reform. Surveys of national samples consistently find that no more than 25% of the nation as a whole supports RCV, usually lower (Drutman, Galston, and Lindberg 2021; Nielson 2017).

Cerrone and McClintock (2021) investigate voter satisfaction using an experiment where participants were given different ballot formats for a hypothetical election. Participants who used RCV had significantly lower satisfaction with the outcome of the election. To some, RCV appears to be a method for manipulating votes to favor establishment candidates, hiding it behind a seemingly arbitrary set of rules that complicate it beyond the average person's comprehension. Any system that rearranges votes through an algorithm before returning the final results is harder to trust. While ranked-choice voting may help some people trust the government more, it would cause others to trust it less. There may not actually be a net increase to the legitimacy of the system in the public's eyes.

E. The unusual journey of the 27th Amendment

From the introduction section of Chapter 5. The last major amendment to the US Constitution was ratified in 1971. One amendment has passed since then, but it was minor and had a very unique history, which this appendix describes.

The 27th Amendment prevents members of Congress from raising their own salaries for the current term. Congressional salary increases can now only go into effect after the next election. Without this provision, members of Congress could theoretically make themselves instant billionaires by allocating most of the federal budget to their own salaries (and overriding a presidential veto of the budget, unless the president is in on the scheme too). The public's only recourse would be to vote these politicians out in the next election, after the deed is done. In practice, the danger of such a move is low considering that it did not happen in the entire 200-year span before the amendment was put in place. Thus, while the amendment is not a bad protection to have, it is relatively unimportant.

The amendment passed the first step toward adoption in 1789, when Congress approved it and 11 other amendments proposed by James Madison. Ten of those amendments went on to become the Bill of Rights, but two of them failed to garner enough support from the states. Two centuries later, an undergraduate student at UT Austin named Gregory Watson wrote a paper for a political science class where he argued that failed amendments like these could still be ratified at any time. Amendments passed by Congress do not expire if they fail to be ratified within a certain time period; they simply remain dormant. If new states are later admitted to the union, they could vote on dormant amendments from before they even existed. Nearly three-fourths of the current states were admitted since 1789—just shy of the threshold needed for an amendment to succeed—so an amendment passed by the first Congress could potentially be added to the Constitution even if only one state ratified it at the time.

Watson's professor was skeptical and gave him a C, but legal scholars agreed with him. In the 1980s, he began convincing lawmakers to vote on one of the two long-lost amendments. The first of the two failed amendments from 1789 set a cap on the size of congressional districts to 50,000 constituents, which today would mean the House would have more than 6,000 representatives. This is probably why Watson focused on the second one, regarding congressional salaries. Because of his efforts, state legislatures slowly voted on the amendment until it was fully ratified in 1992. See Bernstein (1992) for a more detailed background of the 27th Amendment.

Around 35 years after Watson received a C on his paper, his former professor retroactively changed his grade to an A. Two heartwarming lessons can be gathered from this story. For students: if you don't like a grade you received in college, all you

have to do is organize a nationwide movement to pass a constitutional amendment based on an obscure legal theory you discovered while writing a term paper, and your GPA may bump up slightly by the time you retire. For educators: it's never too late to change a student's grade.

F. What constitutes a constitution?

From the introduction section of Chapter 5. This appendix discusses how the word “constitution” is defined and conceptualized in this dissertation.

Although the term *constitution* can refer to political institutions in the abstract, here I use it to refer to written texts that serve as the foundation of a country’s political institutions. Constitutional texts take many forms around the world, everything from loose collections of laws and treaties to formal documents explicitly labeled constitutions.¹⁶ To account for this heterogeneity, Elkins, Ginsburg, and Melton (2009, 49) spell out a general definition that can apply to at least one text in most countries:

Constitutions consist of those documents that either: (1) are identified explicitly as the *Constitution*, *Fundamental Law*, or *Basic Law* of a country; OR (2) contain explicit provisions that establish the documents as the *highest* law, either through entrenchment or limits on future law; OR (3) define the basic pattern of authority by establishing or suspending an executive branch of government.

Furthermore, EGM do not consider constitutional amendments to be replacements. They only consider a constitution to be an altogether new constitution if it is revised outside of the normal amending procedures of the preceding constitution (55). For example, EGM mention that each of South Korea’s six republics effectively rewrote its constitution through formal amendment processes, which they code as a continuous constitution. This may not be appropriate for most constitutional research. Jefferson may be satisfied by South Korea’s constitutional turnover despite its constitution technically remaining in place. If the only continuity in the foundational document of a country is a single thread of formal amendment processes, then models are not fully capturing the variation across constitutions and are overestimating the variation within constitutions.

Even beyond amendments, a constitutional order can fundamentally shift over the course of a constitution’s lifetime. B. Ackerman (2000) argues that the US has effectively had three constitutions (not including the Articles of Confederation), with fundamental shifts after the Civil War and during the New Deal. The post-Civil War shift came with three transformative amendments, while the paradigm shift of the New Deal had no corresponding amendments.

¹⁶For example, New Zealand technically has no formal constitution, but the Treaty of Waitangi is considered its foundational document. This agreement laid out the terms for relations between the indigenous Māori population and British settlers while also establishing universal rights for all residents. The treaty functions more like a bill of rights than a traditional constitution since the institutional structure and other provisions are left to laws such as the Legislature Act 1908.

More than a decade after publishing their seminal study on constitutional endurance, Elkins and Ginsburg (2021) step back from focusing on core constitutional texts as the unit of analysis and argue that the “small-c” constitution is more important than the formal document. Constitutions are only the surface of political environments, and they are too heterogeneous to show consistent patterns. Some cultures may prefer frequent constitutional turnover as insurance against legacies of oppression, while other cultures may prefer endurance as insurance against short-term whims. Scholars may need to reorient the scope of their theory and sample to particular types of constitutions at particular phases of their life cycles (Geddes 2003).

Even when patterns emerge, Elkins and Ginsburg are doubtful that constitutional texts have much of an effect on political outcomes. They argue that their work on the determinants of constitutional endurance still has causal validity because the variation in the types of constitutions around the world is precisely the variation that they sought to explain. It seems, then, that really the only universal conclusions scholars can draw about causal effects of constitutional design are how long the core texts last. But if the core texts do not matter, then the endurance of a constitution does not matter either. In this chapter [Chapter 5], I argue that constitutional endurance does matter to some degree, but not because of the text itself—rather, endurance shapes the political culture.

G. Details of the predictive analysis

From Section 5.1 of Chapter 5. One could argue that constitutions are merely reflections of their environment and do not shape politics on their own. If that were true, we would expect environmental factors to be more powerful predictors of a constitution's lifespan than features of its design. This appendix compares the predictive power of these variables by experimenting with different specifications of predictive algorithms.

Assessing the predictive power of constitutional design is an important step before moving on to an analysis of how constitutional age affects its performance. If the design of a constitution does not matter even for predicting its endurance, then it may not matter for predicting or explaining more complex phenomena such as democracy and inequality.

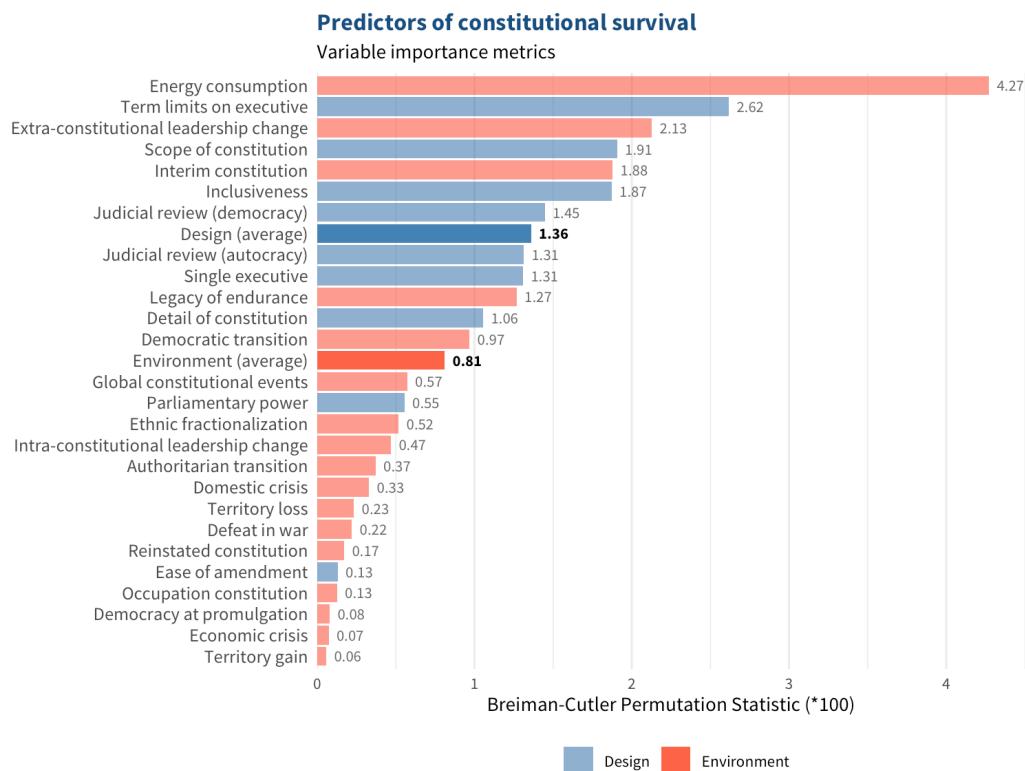
Shifting from a causal inference framework to a prediction framework is useful for a few reasons. As Shmueli (2010) notes, predictive modeling can be useful for theory development and providing a “reality check” on the accuracy of theories. Hence, this stage of the study is a practical opportunity to double check EGM’s findings that the text of a constitution can have a bigger impact on its survival than environmental factors. Second, constitutional design is itself a product of exogenous factors, and accounting for the full web of interconnected relationships among variables can be difficult if not impossible. Many of the issues that analysts must think through when constructing models for causal inference—variable selection, interactions, multicollinearity, heteroskedasticity, model efficiency, and bias reduction, to name a few—are less relevant for prediction (Shmueli 2010).

Third, while causal inference can help explain the past, prediction tools offer more insights for the future. In particular, machine learning algorithms can search for patterns that analysts might not have modeled on their own (Cranmer and Desmarais 2017). The tradeoff is that machine learning algorithms are less precise than regression models at estimating the effects of individual variables on the outcome. Luckily, this analysis is not seeking to find the effect of any single variable; it merely seeks to understand if one set of variables is more important than another set when projecting constitutional endurance, which is squarely in the domain of predictive algorithms.

To get a closer look at whether a constitution’s design or environment is a stronger predictor of its endurance, I replicated EGM’s model and then constructed similar models with random survival forests. Random forests, as originally developed by Breiman (2001), are a common machine learning algorithm, although they generally cannot handle right-censored data. Ishwaran et al. (2008) developed random survival forests to solve this problem, and they show that their random survival forests perform better than Cox hazard models in an epidemiological application. To my

knowledge, random survival forests have not yet been applied in political science. These algorithms are useful for predicting how long things will last, which the next section uses, and also for assessing which variables are more important for making the prediction.

The random survival forests were run on a subset of the constitutions data (the training sample) and then were used to predict constitutional lifespans for the rest (the test sample). To compare the predictive importance of design and environmental variables, Breiman-Cutler permutation statistics estimate the importance of each variable in the training data. The average and total scores of design variables and environmental variables are then compared to see which set of variables tends to be more important. Higher scores for design variables would suggest that design variables are more important for predictive accuracy than environmental variables. The relative importance of each variable in the random survival forests is shown in the figure below. Higher scores indicate higher predictive value for constitutional survival. All scores are multiplied by 100.



Higher-scoring variables tend to be design variables, although both environmental and design variables seem to be important. On average, the 9 design variables were around 1.7 times as powerful as the 17 environmental variables. Summing the scores shows that the total variable importance of design variables is 4.8 compared to 4.89 for environmental variables. Collectively, the design variables have about as much predictive power as the environmental variables even though there are twice as many environmental variables. Design variables appear to be just as influential, if not more, for predicting constitutional lifespans. We know that constitutional design matters for constitutional endurance, but many of the features of the US Constitution's design usually shorten constitutional lifespans in any other context.

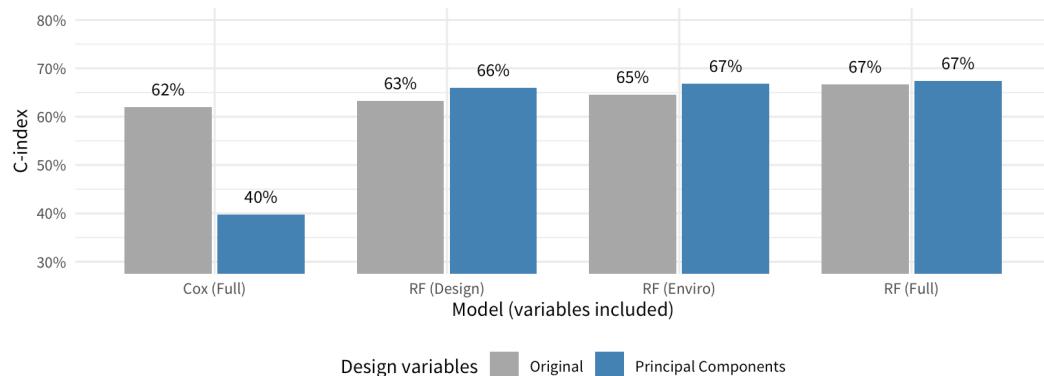
Next, a series of random forests were run with various specifications of variables. The dataset includes 9 design variables and 17 environmental variables, so only the 9 most important environmental variables are used. One set of forests only includes design variables, the next one only includes environmental variables, and the final one includes all variables. If adding design variables minimizes error rates more than adding environmental variables, EGM's finding would be corroborated.

The 9 design variables provide only a limited summary of each constitution's design. To further investigate the predictive power of constitutional design, I ran random survival forests on a broader dataset of constitutional characteristics. The full dataset compiled by EGM for the Comparative Constitutions Project documents more than 600 variables, which comes out to 1,087 variables after recoding categorical variables as dummy variables. Many of these variables cover similar topics that are correlated with each other, so condensing the data is a prudent step for streamlining the computations of the random forests. To reduce the dimensions, I ran principal components analysis on the data. Due to the high dimensionality of the data, most of the variance is not able to be explained by just a few components. However, because I am not attempting to make inferences based on the principal components, I retain 25 dimensions, which account for around half of the variance in constitutional characteristics.

The figure below shows the error rates of these forests when the original 9 design variables are switched out for the 5 principal components calculated from the full constitutional characteristics data. In theory, the RF (Enviro) models should not be affected, so the differences are due to random error and are insignificant.

Predictive accuracy for constitutional survival

Updated with principal components of design variables



Here, the results show the opposite—models with environmental variables tend to perform slightly better, although not by much. Overall, we have mixed results regarding the predictive power of design variables relative to environmental variables. When controlling for environmental variables, EGM found that design variables have strong explanatory power, but environmental variables seem to have slightly more predictive power. This shows the importance of accounting for both design and environment when analyzing constitutions.

H. Calculating today's electorate half-life

From Section 5.3 of Chapter 5. Jefferson argued that constitutions should only last 19 years because eighteenth-century mortality data suggested half of the voting population at any given time was expected to be dead within 19 years. This appendix updates his calculation using more recent data, although the analyses later on in Chapter 5 suggest neither of these figures are very meaningful.

Jefferson used a mortality table from the Comte de Buffon, a French mathematician, but it is not clear what population these data represented. They could have been figures for the US, but they could have been figures from France. Jefferson calculated the electorate half-life from these data as follows:

Suppose a society in which 23,994 persons are born every year, & live to the ages stated in this table. The conditions of that society will be as follows. 1st. It will consist constantly of 617,703. persons of all ages. 2ly. Of those living at any one instant of time, one half will be dead in 24. years 8. months. 3dly. 10,675 will arrive every year at the age of 21. years complete. 4ly. It will constantly have 348,417 persons of all ages above 21. years. 5ly. And the half of those of 21. years & upwards living at any one instant of time will be dead in 18. years 8. months, or say 19. years as the nearest integral number. Then 19. years is the term beyond which neither the representatives of a nation, nor even the whole nation itself assembled, can validly extend a debt.

Jefferson used life expectancy figures for all adults who were at least 21 years old because that was most common voting age at the time. I lowered that to 18 for the calculation here. Jefferson's method requires many assumptions—constant population, constant birth rate, and negligible immigration rates—but he intended for his calculation to be rough and hypothetical, not exact. The first four steps of Jefferson's method are no longer needed due to more widely accessible data, so we can skip to the final step. How long can we expect half of all adults living right now to live?

I obtained an actuarial table from the Social Security Administration (2020), which separates out life expectancies for men and women at each age until 119. I averaged the life expectancies for all adult male Americans, weighting by population, and then did the same for adult female Americans. Assuming men and women are each half the population, I then averaged the two numbers together. This results in the average number of years that American adults are expected to have remaining. One final assumption we must make is that the average is roughly equal to the median. That would mean that the average life expectancy for all adults is the amount of time it will take for half of adults to die.

According to this method, half of American adults living today will be dead within 30.9 years, which can be rounded up to **31 years**. This is 65% longer than it was in Jefferson's time. If the voting age had stayed at 21, this number would be 29.5 or around 30 years, which is 58% longer than in Jefferson's time. This means that 11% of the growth in the electorate half-life is due to lowering the voting age and 89% of the growth is due to longer life expectancies.

I. Constitutional variables and data sources

From Section 5.3 of Chapter 5. These appendices document the data collection, methodological challenges, and results of my replication of Elkins, Ginsburg, and Melton's (2009) models of constitutional endurance.

I1. Variables and data sources

The data compiled by EGM in preparation for their book were obtained from the Comparative Constitutions Project (CCP, see Elkins, Ginsburg, and Melton 2005). It includes information on all known constitutions in the world since 1789; it has 1,048 constitutions across 216 countries. The replication data for their book only contains variables relating to the design of each constitution, as the environmental variables were obtained from outside sources. I compiled these data independently, sticking to EGM's sources and measures as much as possible.

For some of the variables, I used different data from EGM because I could not access the dataset they used. For others, better data are now available since it has been 15 years since their book was published (and probably even more since they collected their data). For example, they use Fearon's (2003) ethnic fractionalization index to measure ethnic diversity, but this index is time-invariant. Drazanova (2020) extends Fearon's index and produces yearly data, so her data are used instead.

Four datasets come from the Correlates of War Project (COW): Territorial Change (Tir et al. 1998), Militarized Interstate Disputes (Palmer et al. 2022), Intra-State War Data (Dixon and Sarkees 2016), and National Material Capabilities (D. J. Singer, Bremer, and Stuckey 1972). Additionally, political regime data were obtained from the Polity Project (M. G. Marshall 2020), ethnic fractionalization data were obtained from Drazanova (2020), and leadership transition data were obtained from Goemans, Gleditsch, and Chiozza (2009). The appendix below shows the details of each variable.

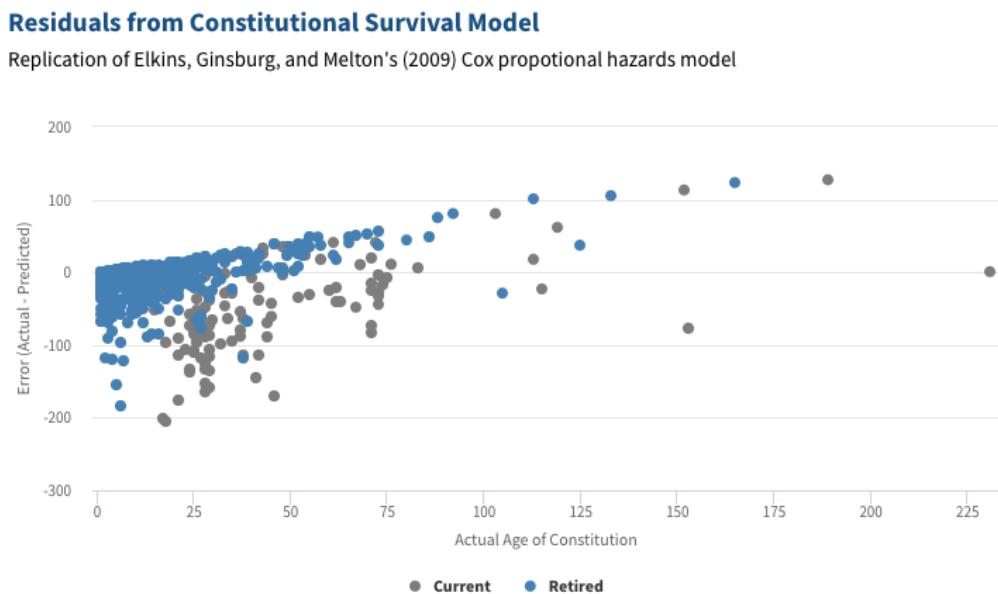
The table below is modeled on Table 5.1 in EGM (2009) [pp. 95-96]. All variables from *Legacy of endurance* to *Parliamentary power* were taken exactly from EGM's replication data via the CCP, and all others were obtained or calculated independently. Abbreviations: Comparative Constitutions Project (CCP); Correlates of War (COW); Elkins, Ginsburg and Melton (EGM).

Category	Concept	Measure	Source
Enviro	Global constitutional events	Number of new constitutions in the world in the prior year	CCP
	Territory gain	Binary indicator of whether the state gained territory	COW
	Territory loss	Binary indicator of whether the state lost territory	COW
	Defeat in war	Binary indicator of whether state lost a major militarized interstate dispute	COW
	Domestic crisis	Binary indicator of whether the state experienced intrastate conflict	COW
	Economic crisis	Binary indicator of whether the state's energy consumption per capita dropped by more than 10% annually	COW
	Democratic transition	Binary indicator of whether the state's Polity score increased by at least 5 points in one year	Polity
	Authoritarian transition	Binary indicator of whether the state's Polity score decreased by at least 5 points in one year	Polity
	Extra-constitutional leadership change	Binary indicator of whether an executive exited through irregular means	Archigos
	Intra-constitutional leadership change	Binary indicator of whether an executive exited through regular means	Archigos
	Democracy	Binary indicator of whether the state's Polity score is at least 6	Polity
	Ethnic heterogeneity	Ethnic fractionalization index	Drazenova
	Economic development	Energy consumption per capita	COW
	Legacy of endurance	Average lifespan of previous constitutions	CCP
Design	Interim constitution	Binary indicator of whether constitution is interim	CCP
	Reinstated constitution	Binary indicator of whether constitution was reinstated	CCP
	Inclusiveness	"Additive index indicating the inclusiveness of the constitution-making process and constitutional provisions" (EGM)	CCP

Category	Concept	Measure	Source
Control	Democratic at promulgation	Binary indicator of whether the state was democratic when constitution was instated	CCP
	Occupation constitution	Binary indicator of whether constitution was written “during or within two years of foreign military occupation” (EGM)	CCP
	Amendment rate	“Predicted probability of the promulgation of a constitutional amendment” (EGM)	CCP
	Judicial review	Binary indicator of whether “any court can review the constitutionality of laws” (EGM)	CCP
	Scope	“Percent of selected issues covered in the constitution” (EGM)	CCP
	Detail	“Words per issue covered in the constitution” (EGM)	CCP
	Single executive	Binary indicator of whether “the constitution calls for a single executive” (EGM)	CCP
	Parliamentary power	“De jure measure of Fish and Kroenig’s Parliamentary Power Index” (EGM)	CCP
	Region	7-level categorical variable indicating region	World Bank
	Era	3-level categorical variable indicating whether constitution was promulgated before 1914, between 1914 and 1945, or after 1945	CCP

12. Methodological challenges with constitutional survival models

EGM employed a Cox proportional hazard model, a standard statistical technique for estimating the effects of various factors on how long something lasts. The figure below compares the errors of the predictions of the model based on my replication:



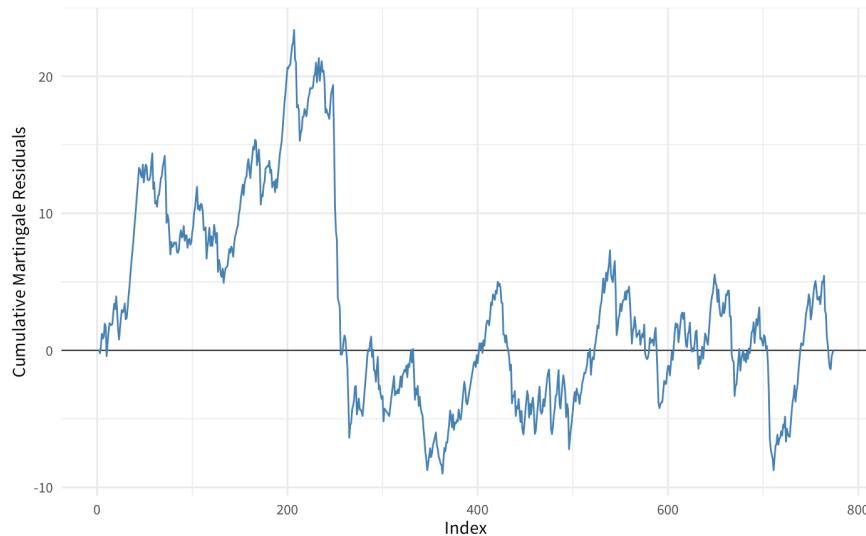
While not a standard diagnostic plot for this type of model, this plot reveals two challenges for modeling constitutional survival. First, the model is significantly more accurate for Western democracies than for the rest of the world, probably because the US holds disproportionate influence in the theory development and the model calculations. The fact that the model's prediction for the US Constitution's lifespan almost exactly matches its current age despite most other long-lasting constitutions being underestimated may indicate that the model is calibrated too heavily with US-oriented interpretations of constitutions and the determinants of their survival.

Second, errors are not random, and the model systematically underestimates survival of older constitutions. This is likely due in part to nonproportional hazards: for a Cox model to fit data appropriately, the effect of each variable must not change over time, or else it may bias the results (Box-Steffensmeier and Zorn 2001). EGM note that hazards of many covariates—including specificity of the constitution—are not proportional over time, although they report that correcting for this did not change the results (128). However, this does not indicate the nonproportionality can be ig-

nored; rather, more advanced techniques are needed (Licht 2011). In the case of constitutions, nonproportionality may be exacerbated by correlations among constitutions within the same country (as Box-Steffensmeier and Zorn (2002) point out), separate processes for short-lived constitutions (Alt, King, and Signorino 2001), or some combination of these phenomena. The figure below volken indicates that nonproportional hazards are present and influencing the model, as the cumulative sum of martingale residuals should fluctuate continuously around the x -axis (Xue and Schifano 2017).

Graphical check for proportional hazards

Replication of Elkins, Ginsburg, and Melton's (2009) Cox proportional hazards model



These challenges are far from fatal to studies of constitutional design. On the contrary, they show that EGM's pioneering work on this area is only the beginning. The paradoxes among the hypotheses, general results, and specific predictions for the US can still be explained. The literature is full of suggestions for how scholars can approach time-to-event data with the properties described here. Importantly, the presence of nonproportionality, repeated events, and separate data generation processes have implications for both theory development and methodological choices. I begin with theory development, and methodological considerations will be discussed in the Data and Methods section.

13. Replication of Elkins, Ginsburg, and Melton (2009)

EGM model constitutional survival with Cox proportional hazard models. Cox models are a common technique for survival analysis, otherwise known as event history modeling or duration modeling. The main advantage of survival analysis is that it accounts for right-censoring, which is when the event of interest has not yet occurred for a particular observation. In the context of constitutional survival, all current constitutions are right-censored; they could be replaced next year, or they could last for centuries. Excluding these cases or marking their duration as their current age can bias regression models (Box-Steffensmeier and Jones 2004). Survival analysis circumvents this problem by modeling conditional probabilities of survival at any given age rather than lifespans. I replicated EGM's model as closely as possible using a standard Cox model. There are a few discrepancies in the direction and significance of some variables' effects due to slightly different data sources, but the overall conclusions are consistent.

This table summarizes the effects of select variables on constitutional life expectancy from EGM's Cox model and my Cox model. Relevant variables that were significant in at least one of the studies are included. Region variables were omitted as they were not categorized consistently. "Longer" indicates that the variable has a hazard ratio under 1 and thus increases life expectancy relative to the reference category, while "Shorter" indicates the variable has a hazard ratio above 1 and thus decreases life expectancy relative to the reference category. Asterisks indicate statistical significance.

Variable	EGM (2009)	Morse (2024)
Global constitutional events	Shorter*	Shorter
Domestic crisis	Shorter*	Longer
Economic crisis	Shorter	Longer*
Democratic transition	Shorter*	Longer*
Authoritarian transition	Shorter*	Shorter
Extra-constitutional leadership change	Shorter*	Shorter*
Democracy	Longer	Longer*
Legacy of endurance	Longer*	Longer*
Interim constitution	Shorter*	Shorter*
Inclusiveness	Longer*	Longer*
Amendment rate	Longer*	Longer*
Scope	Longer	Longer*
Detail	Longer*	Longer*
Single executive	Longer	Shorter
Executive term limits	Longer*	Longer*
Parliamentary	No effect	Longer

J. Regression tables

From Section 4.3 in Chapter 4 and Section 5.4 in Chapter 5. These tables provide more detail on the models from the empirical analyses.

J1. Overrepresentation and polarization in state legislatures

	Dependent variable:	
	Party extremity	Chamber polarization
Representation ratio	-0.071* (0.035)	
Disproportionality		-0.014** (0.002)
Income inequality	-0.005** (0.002)	-0.01** (0.002)
Voter turnout	0.003** (0.001)	0.007** (0.001)
Population	0** (0)	0** (0)
Congressional ideology	-0.048** (0.017)	0.102* (0.049)
Intercept	0.6** (0.057)	1.144** (0.079)
Observations	2000	1000
QIC	222.9	172.8

Note: p<0.1; p<0.05; p<0.01

J2. Economic legislation in Congress

	<i>Dependent variable:</i>	
	Bill passage <i>logistic</i> (1)	Bill support <i>OLS</i> (2)
Senate	-0.945 *** (0.321)	-0.032 ** (0.015)
Redistributive	-1.859 *** (0.275)	-0.244 *** (0.014)
Overall passage rate	0.065 *** (0.011)	
Average bill support		0.007 *** (0.001)
Senate * Redistributive	0.434 (0.414)	0.017 (0.029)
Intercept	-2.653 *** (0.976)	0.250 *** (0.080)
Observations	1,197	1,197
R ²		0.285
Adjusted R ²		0.283
Log Likelihood	-349.009	
Akaike Inf. Crit.	708.017	
Residual Std. Error		0.185 (df = 1192)
F Statistic		119.051 *** (df = 4; 1192)
<i>Note:</i>	<i>p</i> <0.1; <i>p</i><0.05; <i>p</i> <0.01	

J3. Constitutional aging and democracy

	<i>Dependent variable:</i>			
	V-Dem's liberal democracy index			
	Life expectancy (RFs)	Life expectancy (Cox models)	Over 19 years	Over 31 years
	(1)	(2)	(3)	(4)
Democracy (t-1)	0.862*** (0.006)	0.860*** (0.007)	0.853*** (0.006)	0.852*** (0.006)
Outlived RF prediction	0.004** (0.002)			
Outlived Cox prediction		0.006*** (0.002)		
Over 19			-0.001 (0.001)	
Over 31				0.002 (0.001)
Veto players	0.002*** (0.0004)	0.002*** (0.0004)	0.002*** (0.0004)	0.002*** (0.0004)
Population	-0.00000*** (0.00000)	-0.00000*** (0.00000)	-0.00000*** (0.00000)	-0.00000*** (0.00000)
Ethnic diversity	-0.012* (0.007)	-0.011* (0.007)	-0.005 (0.005)	-0.005 (0.005)
Conflict	-0.004*** (0.001)	-0.004*** (0.001)	-0.005*** (0.001)	-0.005*** (0.001)
GDP per capita	0.00005 (0.0001)	0.0001 (0.0001)	0.0001 (0.0001)	0.0001 (0.0001)
Public health	0.0001 (0.0002)	0.00003 (0.0002)	0.0003** (0.0002)	0.0002 (0.0002)
Income inequality	-0.0002 (0.0001)	-0.0002 (0.0001)	-0.0001 (0.0001)	-0.0001 (0.0001)
Observations	4,969	4,969	5,766	5,766
R ²	0.831	0.831	0.817	0.817
Adjusted R ²	0.821	0.821	0.806	0.806
F Statistic	2,565.956 *** (df = 9; 4705)	2,568.520 *** (df = 9; 4705)	2,694.406 *** (df = 9; 5423)	2,694.937 *** (df = 9; 5423)

Note:

p<0.1; **p<0.05;** p<0.01

J4. Constitutional aging and income inequality

	Dependent variable:			
	Income share of the top 1%			
	Life expectancy (RFs)	Life expectancy (Cox models)	Over 19 years	Over 31 years
	(1)	(2)	(3)	(4)
Inequality (t-1)	0.611*** (0.011)	0.610*** (0.011)	0.630*** (0.010)	0.628*** (0.010)
Outlived RF prediction	-0.046 (0.136)			
Outlived Cox prediction		-0.197 (0.156)		
Over 19			-0.134 (0.096)	
Over 31				-0.411*** (0.119)
Veto players	-0.002 (0.030)	-0.004 (0.030)	-0.001 (0.029)	0.003 (0.029)
Population	0.0001*** (0.00001)	0.0001*** (0.00001)	0.0001*** (0.00002)	0.0001*** (0.00002)
Ethnic diversity	1.240** (0.519)	1.232** (0.518)	1.429*** (0.444)	1.493*** (0.444)
Conflict	0.100 (0.110)	0.099 (0.109)	0.107 (0.106)	0.111 (0.106)
GDP per capita	0.013** (0.006)	0.012** (0.006)	0.005 (0.006)	0.008 (0.006)
Public health	-0.051*** (0.013)	-0.048*** (0.013)	-0.025* (0.013)	-0.021* (0.012)
Democracy	-1.650*** (0.521)	-1.555*** (0.527)	-1.511*** (0.524)	-1.371*** (0.525)
Observations	4,969	4,969	5,766	5,766
R ²	0.451	0.451	0.453	0.454
Adjusted R ²	0.420	0.420	0.419	0.420
F Statistic	429.410 *** (df = 9; 4705)	429.711 *** (df = 9; 4705)	499.292 *** (df = 9; 5423)	501.300 *** (df = 9; 5423)

Note:

p<0.1; **p<0.05**; p<0.01

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EDUCATION

EXPERIENCE

MANUSCRIPTS

- *American Politics in Perspective: The Limitations of Static Constitutions and Static Content.* Doctoral dissertation, 2024.
 - “Untangling Ideology and Inequality in the United States: How Polarization Deepens Economic Inequality.” Master’s thesis, 2021.
 - “Police, Violence, and Public Opinion: Linking Polling Practices to Current Events.” Working paper with Ray Block Jr.

AWARDS & SCHOLARSHIPS

- **Friedman Award for Excellence in Teaching:** Dept. of Political Science, 2023.
 - **Graduate Scholar:** Center for American Political Responsiveness, 2022.
 - **Peter Schallmoser Award:** Dept. of Political Science, 2019.

TECHNICAL SKILLS

- **Methods:** Data visualization, time series analysis, survey design and analysis, machine learning
 - **Proficient in:** R, HTML/CSS **Experience with:** Python, Java, JavaScript, LaTeX, SQL