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Redistricting and Party Polarization in the U.S. House of Representatives

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The elevated levels of party polarization observed in the contemporary Congress have been attributed to a variety of factors. One of the more commonly recurring themes among observers of congressional politics is that changes in district boundaries resulting from the redistricting process are a root cause. Using a new data set linking congressional districts from 1962 to 2002, we offer a direct test of this claim. Our results show that although there is an overall trend of increasing polarization, districts that have undergone significant changes as a result of redistricting have become even more polarized. Although the effect is relatively modest, it suggests that redistricting is one among other factors that produce party polarization in the House and may help to explain the elevated levels of polarization in the House relative to the Senate.

Keywords: *redistricting; reapportionment; U.S. House of Representatives; political polarization; political ideology; gerrymandering*

What factors account for the high levels of party polarization in the contemporary Congress? Journalistic accounts frequently advance the claim that gerrymandering is a primary cause of the divide between the parties in the U.S. House of Representatives because it makes members

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safer from interparty challenges and allows them to pay closer attention to their primary constituency (Balz, 2005; Nagourney, 2005). On its face, this argument has a certain appeal. Congressional districts have clearly become less competitive in recent years (Jacobson, 2004). In addition, political scientists have demonstrated that changes in constituency characteristics have contributed to polarization (Stonecash, Brewer, & Mariani, 2003). Yet for the redistricting explanation of polarization to work, both of these observations must be linked in a systematic way to party polarization. Furthermore, because polarization has increased not just in the House but also in the Senate and throughout the American political system, it seems implausible to pin all of the polarization we observe exclusively on redistricting.

In this article, we assess the degree to which congressional redistricting impacts party polarization in the U.S. House of Representatives. This is an important question because as districts become more polarized and the probability of defeating an incumbent approaches zero, there are serious consequences in terms of democracy and representation. In discussing the potential causes and effects of polarization, Mann and Ornstein (2006) contend in their new book about the failures of the modern Congress that

increasing geographical segregation of voters and successive waves of incumbent-friendly redistricting have contributed to this development by helping to reduce the number of competitive House seats to a few dozen. With the overwhelming majority of House seats safe for one party or the other, new and returning members are naturally most reflective of and responsive to their primary constituencies, the only realistic locus of potential opposition, which usually are dominated by those at the ideological extreme. This phenomenon has tended to move Democrats in the House left and Republicans, right. (p. 12)

As legislators move to the left and right, they may put more of an emphasis on hot-button issues such as flag burning, gay marriage, and stem cell research and fail to solve problems related to rising health care costs and the solvency of social security. Thus, to verify the accuracy of the claim that redistricting is indeed contributing to polarization, even at the margins, we must explore this topic in a systematic fashion.

Although the idea that redistricting contributes to polarization is not new, one difficulty in linking shifting district boundaries to members' behavior lies in measuring the extent of district change. Simply put, declaring a district "redistricted" after each round of redistricting may not adequately capture the true degree of change in a member's constituency. We depart from the approaches others have taken by linking districts over time (from the

1960s to the latest round of redistricting in 2002), allowing us to more explicitly evaluate the extent to which district boundaries are altered. The findings demonstrate that when districts undergo *significant* change, there is a modest but still significant increase in polarization. Moreover, such significant changes to district boundaries affect polarization not just at the time of redistricting. The choices of mapmakers reverberate over time as well.¹

Thus, although the impact of redistricting on polarization is modest, it appears to be a method by which political elites, as they seek partisan advantage and security, contribute to polarization above and beyond what is independently occurring in the political system. To the degree that the House has been more polarized than the Senate during the past few decades, redistricting may provide one explanation. Of course, additional explanations and analyses are necessary to more broadly explicate the root cause (or causes) of polarization in American politics.

The article proceeds as follows. In the next section, we touch on the literature on party polarization, drawing particular attention to the explanations for its existence and variation. We then review the redistricting literature and the implications it may offer for our study of polarization. The third section establishes some theoretical expectations dealing with the relationship between redistricting and polarization. Next, we describe our data and identify the necessary conditions that must be met for polarization to be linked to redistricting. The following section presents our systematic analysis, and the last section concludes.

Polarization in Congress

The fact that polarization within Congress has been increasing since the 1970s has been well documented (e.g., Jacobson, 2000; McCarty, Poole, & Rosenthal, 2006b; Rohde, 1991). Although the pattern of polarization is not disputed, there are multiple explanations for the underlying factors contributing to the shifts observed both within and between the parties. These explanations display two main themes—the first centering on elite-level changes, the second focusing on changes driven by forces at the electoral level. Prominent in the literature explaining polarization as a function of elite-level behavior are works suggesting that internal procedures and party manipulation within Congress have given rise to heightened levels of party voting (Cox & McCubbins, 1993; Kiewiet & McCubbins, 1991). Similarly, as Roberts and Smith (2003) indicate, though implicit in much of the recent congressional literature, it appears that changes in the nature

of the legislative agenda and the strategies of party leaders have fostered elevated partisanship in Congress.

On changes at the electoral level, a number of recent studies have examined the confluence of district partisanship and the party affiliation of members of Congress (e.g., Erikson & Wright, 2000; Jacobson, 2000). In addition, Collie and Mason (2000) suggest that even marginal changes in electoral bases can have dramatic effects on representation as a result of the single-member district phenomenon. More recently, Theriault (2006) employs DW-NOMINATE scores to match member ideology Congress by Congress in the postwar era and finds that continuing members are becoming more polarized, whereas concurrently, more moderate members are being replaced by newer, more extreme representatives.²

One of the most direct tests of the nature of changing district composition on polarization is that of Stonecash et al. (2003). They posit that changes at the district level can be directly linked to polarization, which they measure using ADA scores. The crux of their argument is that Republican and Democratic districts have become more homogeneous since the 1960s. Although the Republican base has shifted over time from the North and Midwest to the South and Southwest, it has become increasingly White, suburban, and affluent. Concurrently, the strongest Democratic supporters, formerly from the conservative, rural South, now hail mostly from urban areas in the Northeast and Midwest. These urban areas consist of a large percentage of minority constituents. Because, as the authors argue, voting records are partially a reflection of legislators' constituencies, we should expect to see increasing polarization in Congress as differences between Republican and Democratic districts become more distinct.

Congressional Redistricting and Polarization

Although many pundits and editorial pages have claimed that redistricting is driving congressional polarization, most of the academic literature suggests otherwise. For example, Abramowitz, Alexander, and Gunning (2006) argue that redistricting is not related to the declining number of competitive House seats. Therefore, they contend that redistricting cannot be contributing to polarization. They base this conclusion on the failure to uncover changes in district partisanship immediately after a redistricting. Similarly, Mann (2007) and McCarty, Poole, and Rosenthal (2006a) view the contribution of gerrymandering to be marginal at best.

In other work, McCarty et al. (2006b) argue that it is unclear how redistricting and polarization may be linked. More specifically, they claim, "As

polarization and partisanship have increased in the electorate, it would be surprising if congressional incumbents were not more secure, independent of how their districts were drawn” (pp. 59-60). Furthermore, the fact that the Senate has polarized at or near levels of the House would seem to suggest that redistricting is not a cause of polarization given that Senate boundaries do not change. They attribute the rise in polarization to a rise in income inequality.

Although many theories have been offered to explain polarization, our aim is not to advance one theory or another for why party polarization is on the rise in the United States. Rather, we are interested in whether polarization is heightened, above and beyond underlying levels, because of redistricting practices for seats in the U.S. House. Even though previous research has failed to find a link between redistricting and polarization, existing literature provides a reasonable basis on which to build an expectation of such a relationship. As districts have become populated with more extreme partisans, members are more able (if not compelled) to shift away from moderate stances to more extreme positions (which may show up as polarization in the aggregate). This conjecture is substantiated by anecdotal evidence and studies that have linked district-level changes with member behavior. For example, previous scholarship has demonstrated that members of Congress will modify their voting patterns in predictable ways in response to changes in district boundaries (Boatright, 2004; Glazer & Robbins, 1985; Stratmann, 2000). Using similar research designs with various measures of behavior (conservative coalition scores, ADA scores, and DW-NOMINATE), they all concluded that as a district becomes more liberal or conservative, so does the representative. Thus, members appear responsive to changes in their district.

Redistricting, Replacement, and Polarization

Previous research has largely focused on the question of polarization in the aggregate rather than focusing on changes across individual districts. This research has shown that the electorate has become more polarized since the 1960s and that polarization in Congress has also increased. Few would question that legislators are responding to the polarizing electorate—in fact, this is the underlying causal mechanism in most of the work examining the explanations for polarization. For instance, the electorate is becoming more polarized because of growing income inequality, shifting immigration patterns, and/or partisan realignment. However, by drawing congressional districts in creative ways, mapmakers can exploit the underlying polarization,

which further contributes to polarized legislative behavior. We believe that what redistricting does is provide the parties with an opportunity to reshape district preferences to gain partisan advantage *above and beyond* any national or statewide trends, thus contributing to polarization at the margins. This possibility is well demonstrated in the redistricting literature that discusses “bias,” which refers to the ability of parties to increase their share of seats relative to the statewide voting percentages through skillful drawing of district boundaries (Cox & Katz, 2002; Engstrom & Kernell, 2005).

To be clear, we are not suggesting that redistricting is the only factor contributing to polarization in Congress or even the dominant one. If this were true, we would likely not see a trend toward polarization in the Senate, a point to which we will return later. To show that redistricting is causally related to polarization, we must demonstrate that it is the districts that have been significantly redrawn that are becoming the most polarized. Given that there is little evidence of polarization in the 1960s, it seems plausible that the more districts are changed, the greater the opportunities to exploit underlying levels of polarization already present. At the same time, we acknowledge that it is possible for mapmakers to make substantial changes that result in little or no polarization. If that is indeed the case, our empirical analysis will show no difference between moderately altered districts and those that are significantly redrawn. In the remainder of the article, we demonstrate that some (but not all) districts have become more polarized in the past 30 to 40 years, a point that is often overlooked in aggregate studies of polarization, and that changing district boundaries are related to the increase.

It is important to make clear a few theoretical expectations regarding the distinct ways in which redistricting may contribute to polarization. For instance, if the mapmakers responsible for drawing new district boundaries are creating strongly Democratic or Republican seats for incumbent legislators, then this increases the likelihood that members will be able to more easily support a strong partisan agenda, precisely because the district’s partisanship and the party’s goals are more likely to coincide.³ The drawing of these types of seats can occur either through a classic “incumbent protection” plan, in which incumbents of both parties receive additional territory containing voters likely to support them, or through plans with partisan benefit as the goal.⁴ In the latter instance, the districting plan may “pack” voters of the opposition party into as few districts as possible, making them more atypical of districts generally. Simultaneously, the plan can seek to strengthen particular incumbents of the party responsible for the plan. This makes districts that are more likely to produce moderate representatives

less probable. Thus, it is our contention that redistricting plans, for the most part, create districts that are more extreme relative to previously drawn seats. To the degree that this is true, redistricting should lead to more partisan behavior.

Of course not every conceivable redistricting strategy is likely to lead so clearly to greater polarization. A tactic different from those just described is “cracking,” whereby both the planners’ partisans and those of the opposition are spread across a number of districts, with the partisan balance tilted toward the former (Butler & Cain, 1992). Most strategies, however, do lead in the direction of creating more extreme districts, and the substantive accounts of districting strategies during the post-*Baker v. Carr* (1962) period indicate that those strategies were most frequently chosen by planners.

Furthermore, both incumbent-protection and partisan districting plans seem to have had effects on the nomination processes in both parties. This, in turn, reinforces the trend toward polarization. Candidates must pay attention to the preferences of both their primary and their general election constituencies. However, as districts are drawn to be more strongly tilted toward one party, the relative importance of the primary constituency increases. It becomes less and less likely the candidate of the dominant party can lose in the general election, so we would expect more attention to be paid to the wishes of potential primary voters (Aldrich & Rohde, 2001; Crespin, Gold, & Rohde, 2006). Moreover, we know that party activists, who are especially influential in primaries, tend to have both more extreme and passionate opinions on issues than rank-and-file voters (Jacobson, 2000). Thus, both parties have tended to produce a greater number of nominees with more extreme policy commitments and/or more extreme personal views (Brady, Han, & Pope, 2007).

Another factor contributing to polarization may be member replacement, which, as Jacobson (2004, p. 172) asserts, is pronounced in election years ending in 2, when most redistricting occurs. This holds because incumbents are either more likely to retire or suffer defeat as a result of changed district boundaries.⁵ Furthermore, reapportionment can contribute to increased turnover as some incumbents in states with low population growth are forced to retire (or lose an election against another incumbent) and are replaced by new members in states with relatively high population growth. Theriault’s (2006) study of polarization also advances member replacement as a key contributor to polarization, although in this context replacement is not explicitly linked to the redistricting process. In our systematic analysis, we will consider the replacement hypothesis with the understanding that it is likely to be of only secondary importance to the redistricting variables.

If the popular belief that redistricting is contributing to polarization is correct, then several conditions need to be met. First, districts must have grown more polarized over time. Second, it is necessary to establish that districts that have been substantially redrawn are measurably more extreme than continuous districts. Third, consistent with changes in the districts, the House must have also become more polarized. Finally, if that is the case, then for the argument to be correct, it follows that representatives in significantly altered districts must exhibit more extreme behavior relative to members in continuous districts. Initially, we present results that lend support to each part of this argument separately, followed by a regression analysis that combines the various elements of our line of reasoning.

Data

To test our expectations regarding changing patterns of polarization in the House over time, we created a dataset linking congressional districts from 1962 to 2002. We started with the 1960s, as this decade marks the beginning of the era of regular, frequent redistricting initiated by the Supreme Court's landmark 1962 decision in *Baker v. Carr*. Our interest lies in determining whether changes in *individual* districts over time ultimately contribute to polarization in the House. More specifically, we will show that as districts change (or do not change), the members representing those districts exhibit certain patterns of behavior. After all, to understand whether polarization is a reflection of changes in the underlying constituency base, we need to show that the partisanship of the districts and the behavior of members are moving in parallel directions.

Most district boundaries are redrawn in some form or another after each decennial census (and sometimes within decades). Yet many district boundaries do not change so greatly that the basic character of the district is fundamentally altered. This is particularly true among states that do not gain or lose seats as a result of reapportionment. To determine the degree to which geographic changes affected individual districts, we examined the populations of impacted counties. To track districts over time, there is obviously no problem if the districts are not redrawn. If districts are redrawn, however, we must judge whether the new district is continuous with the previous or "parent" district. By laying predistricting and postdistricting maps side by side and consulting county and city population data, we were able to estimate whether more than half of each district's population was new and to place the district into one of three categories: significant redistricting (new), modest redistricting (continuous), or no change (which would also be continuous

by our definition). We define a continuous district as one where at least 50% of the population in the old district remains in the redrawn district. If the pair of districts does not meet this criterion, we consider the redrawn district to be new.⁶ Accordingly, we matched modified congressional districts with their parent districts sharing substantial population overlap. In some cases, districts remained virtually the same and were simply renumbered, whereas in other cases, districts were radically redrawn. More often than not, the basic character of districts remained the same with the addition and/or deletion of counties or parts of counties at the margins.

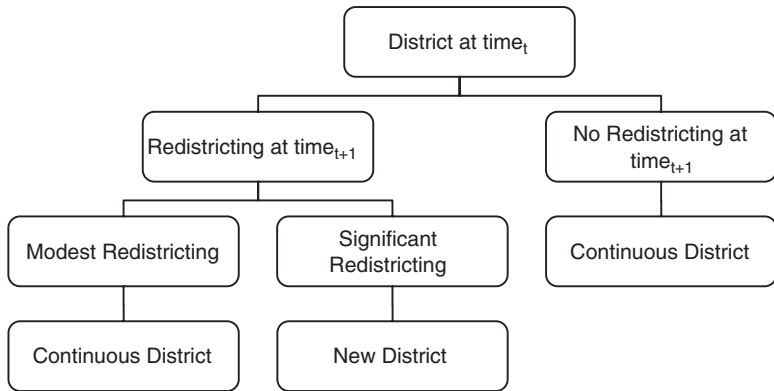
To more clearly illustrate the different types of districts that may result from redistricting, we present a visual explanation in Figure 1. Beginning with a district that exists at time_{*t*}, two events can occur at time_{*t+1*}: That district can be either redistricted or not redistricted. If no changes are made to the district, then it clearly falls into the continuous category. If there are changes to the boundaries, they can either be *modest* (more than 50% population continuous from time_{*t*} to time_{*t+1*}) or *significant* (less than 50% population continuous from time_{*t*} to time_{*t+1*}). Therefore, a district that has only modest or no change is considered continuous, whereas a district that was significantly altered is now a new district by our classification. We repeat this analysis for each Congress, comparing the districts at time_{*t+1*} with those from the previous Congress (time_{*t*}).

It is important to be clear about the form of our data and what can be done with it. Ideally, we would like to have an interval measure of the proportion of each district's population that had changed throughout the period of our analysis. This is relatively easy to compute using shape files and geographic information system software for the most recent cases of redistricting. However, if we wanted to create an interval measure for the full series of redistricting cycles covered in our analysis, we would need shape files back to the 1960s; unfortunately, they simply do not exist.

Although our measure is imperfect, we believe it is a substantial improvement on the conventional redistricted–not redistricted classification because that approach makes it impossible to track changed districts over time, whereas our classification permits us to do so with the districts that are continuous throughout our analysis. Furthermore, a parallel analysis of district change for the 2002 cycle of redistricting (which we discuss in Note 25), employing a more nuanced interval measure of district change based on the shape files for the 2000 and 2002 districts, yields substantively similar findings, thus offering additional validation of the measure that we employ to leverage the full time series.

Table 1 lists the number of new and continuous districts in the election years following a redistricting. We also list the number of districts that have

Figure 1
New and Continuous District Classification



undergone significant, modest, or no change. The first item to note is that significant redistricting does not occur only in years immediately following the census. Although not national in scope, redistricting in the interim years is not uncommon.⁷ More recently, intradecade redistricting can be attributed mostly to the courts declaring districts unconstitutional based on specific legal criteria.⁸ In the 42 years of redistricting covered in our data, there were 217 new districts according to our definition. Thus, a significant proportion of congressional districts has either experienced drastic changes or was created as a result of reapportionment since 1962. The greatest amount of change in a single year came in 1992, when 63 districts that could be classified as new were added to the mix. This large amount of change is likely a function of sizable shifts in population across the country and the reapportionment that followed and the increased effort to create minority-majority districts (Jacobson, 2004, p. 172). For example, in 1992, California gained seven seats, Florida four, and Texas three. Meanwhile, New York lost three seats and Illinois, Michigan, Ohio, and Pennsylvania each lost two. These eight states accounted for 43 (68%) of the new districts in that year.⁹ Clearly, it is difficult to change the number of districts a state has without making large modifications in district boundaries. In the other major redistricting years—1972, 1982, and 2002—the number of districts gained and lost by states was not as large; thus, we do not see the creation of as many new districts.

Table 1
Number of New Districts After Redistricting

Year	New Districts Significant Change	Continuous Districts Modest Change	No Change
1964	17	43	375
1966	18	190	227
1968	11	191	233
1970	4	60	371
1972	18	404	13
1974	16	55	364
1976	0	3	432
1978	— ^a		
1980	—		
1982	24	402	9
1984	6	105	324
1986	0	21	414
1988	—		
1990	—		
1992	63	363	9
1994	0	10	425
1996	7	34	394
1998	3	13	419
2000	2	0	433
2002	28	398	9

Note: In the first column, a zero indicates that of the redrawn districts; none were of substantial enough difference to merit classification as “new.”

a. No districts were redrawn this year.

Our goal in designing this data set was to emphasize *continuity* within districts over time, to maximize the number of connected districts available for analysis. Thus, the criterion we employ to indicate district continuity is relatively generous. At the same time, we are also interested in examining the incidence of change in districts.¹⁰ In particular, we seek to highlight similarities and differences between “continuous” districts that maintain the same general characteristics from 1962 to 2002 and those that have changed both geographically and politically. We believe that these results will give us leverage in understanding how changes in members’ underlying constituencies are reflected in overall patterns of legislator behavior.

Linking Redistricting and Polarization

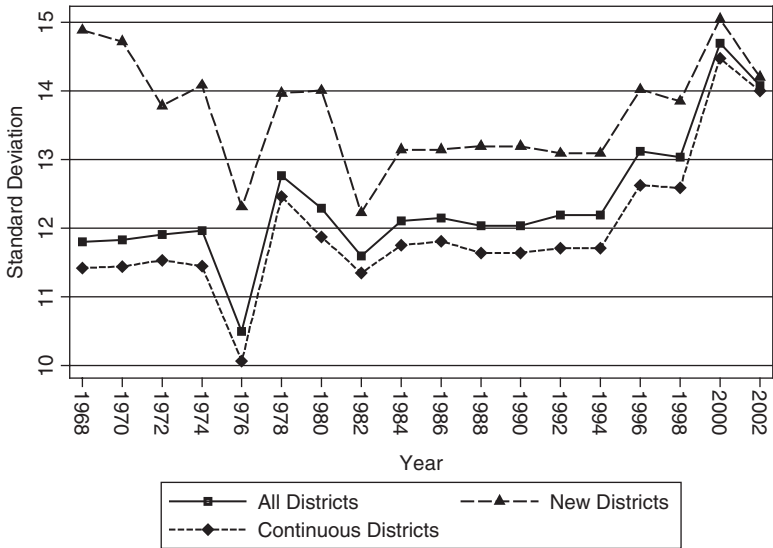
To examine the different parts of our argument, we need to be able to speak more directly about the effect of constituency-level factors on polarization.

Ideally, we would have survey data for each congressional district in our period of analysis, giving us the opportunity to understand how constituency-level changes can contribute to polarization. Lacking such data, however, it is necessary to identify an alternative measure that will substitute for a constituency-based measure of preferences. As a proxy for constituency-level preferences, we elected to employ the normalized presidential vote in each congressional district.¹¹ More specifically, we subtract the Democratic presidential candidate's share of the two-party vote in the entire nation from that in each congressional district for every presidential election from 1968 to 2000. By doing this, we can compare the relative strength of the two parties in each district with their strength in the nation across all the elections included in our analysis.¹²

Drawing on our earlier theoretical discussion, the first two matters we explore are whether districts in general, and substantially redrawn districts in particular, are *more* polarized. In our effort to measure redistricting and its link to polarization in the House, we created two sets of districts using our definitions of new and continuous. In 1962, all districts were coded as continuous. Then, as districts were redrawn or newly created as a result of reapportionment, they were coded as new and remained there for the rest of the time series. If a new district is significantly altered again, that district is replaced by another new district. If we were to use the traditional redistricted–not redistricted measure, all but the single-district states would quickly fall into the new category and we would not be able to make any meaningful comparisons across categories. Although all 435 districts were coded as continuous in 1962, 261 remained in that category by 2002. That is, a total of 261 unique districts were present at the beginning of our analysis and remained similar enough in character each time there was redistricting to be considered continuous up to the end of our sample period. In contrast, only 17 districts were new in 1964, whereas 174 fell into this category in the final year of our analysis.¹³ This variable is valuable because it allows us to measure not only the effect of redistricting when the boundaries are changed but also how those changes carry through to subsequent elections. After all, it may take a few election cycles for a member and his or her constituents to realize they are out of touch. If so, the member may either retire or be defeated. It is then likely that the new member will be a better fit for the district. If the new district is more polarized, this may mean it will be represented by a more extreme member.

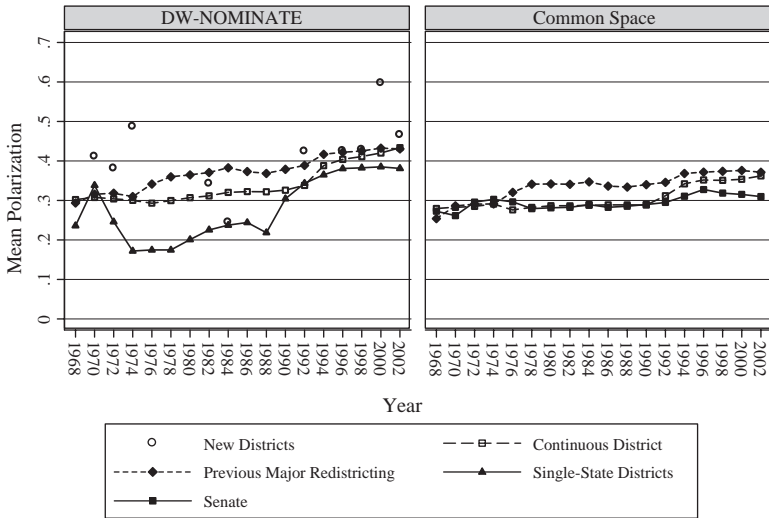
Figure 2 plots the standard deviation of the Democratic presidential vote in three categories of congressional districts—all, new, and continuous—illustrating the changing pattern in district preferences over time. The standard deviation indicates the spread of district partisanship, with greater

Figure 2
Extremity in District Partisanship by District Type



spread indicating more polarization. The figure suggests that although all districts have grown more polarized over time, the class of new districts are always more extreme in the underlying preferences of voters, although the difference has declined in recent years.¹⁴ This result supports our claim that much of the redistricting that has occurred in the past 40 years has been partisan in nature. The relatively large effect in the early years, although consistent with the findings of Cox and Katz (2002), is partly a function of the comparatively small number of new districts at the beginning of our period. Near the end of the time series, we observe a convergence in the two lines. Some of this may have to do with the fact that increasingly sophisticated redistricting technologies have allowed for more nuanced remapping, so that partisan gains may be obtained with a greater degree of precision (and less dramatic changes). To the degree that these considerations hold, our results may understate the effects of redistricting on polarization. Furthermore, it could be the case that mapmakers have exploited nearly all the underlying levels of polarization before districts are created while maintaining the maximum number of seats for their respective parties. It might be possible to draw even more polarized seats, but it would severely jeopardize any chance of earning or maintaining a majority in the House. But

Figure 3
Polarization of Members by District Type and Ideology Score



the point remains that throughout the nearly 40 years examined here, significantly redrawn districts are more extreme than those whose boundaries were more stable.

The next question we examine is whether the polarization that is present in the districts is also occurring in the House. By any of several measures—party unity voting, NOMINATE scores, ADA scores—the House has become more polarized since the 1960s (e.g., McCarty et al., 2006b, pp. 6-10). There was a relatively high degree of overlap between the parties through the 1960s and 1970s, and there were still liberal Republicans and conservative Democrats serving in the House (Rohde, 1991). By the late 1990s, there was no Democrat to the right of any Republican (Aldrich & Rohde, 2001). Clearly, we have seen polarization increase in the House since the 1960s.

Finally, we turn to the issue of whether there are demonstrable ideological differences between members elected in new versus continuous districts in the House and then compare the House with the Senate. In the first panel of Figure 3, we plot the mean polarization of members for four categories of districts—significant change (at time), those that previously experienced a significant redistricting, continuous, and districts from states

that had only one member of the House. Because this last group of districts cannot change from redistricting, they are a potential baseline category for comparison. In the second panel, we compare the districts that previously experienced a significant redistricting and continuous districts with the Senate, where there is, of course, no redistricting. Polarization in the first panel is measured as the absolute value of a member's DW-NOMINATE score (Poole & Rosenthal, 1997), with higher numbers corresponding to more extreme behavior. In the second panel, we must turn to common space scores to make cross-chamber comparisons.¹⁵ Again, higher values mean more polarization. Each data point represents the mean of the measure for that 2-year cycle for each type of district. Visibly, there is a general increase in polarization over the series for districts that were redrawn and continuous districts and those from single-district states. During the entire period, members in districts that were significantly altered are more extreme compared to members in continuous districts; however, the gap again narrows toward the end of the series. Changes in procedural rules subsequent to the Republican takeover of the House in 1994, driven by heightened levels of conditional party government (Aldrich & Rohde, 1997-1998; Rohde, 1991) that worked to bolster party cohesion and affect the agenda, may well help to explain the convergence of members in continuous districts with those in the more extreme, previously redrawn category.¹⁶ Aside from 1984 (when, according to our criterion, six new districts were created), new districts are *always* represented by more extreme members relative to continuous districts. This finding is true for 2000 and 2002 as well, despite the fact that the difference in the mean level of polarization in continuous and previously redrawn districts has diminished. In addition to the differences just discussed, members who represent substantially redrawn districts are also more extreme than members who come from states with only one district.

Turning to the second panel, which compares the House and the Senate, we first see that both chambers have become more polarized over time. However, the degree of polarization characterizing continuous districts and the Senate is nearly identical until 1994, when the Republicans began to centralize power in the House. Districts that underwent significant change are more extreme than the Senate, suggesting again that redistricting is contributing to some of the increased polarization in the House.¹⁷ If it were not a factor, we would expect no difference between the amount of polarization in the three groups.

The evidence we have presented up to this point is suggestive of the claim that redistricting is indeed contributing to polarization in the House. That is to say, we have shown parallel increases in polarization both at the level of congressional districts and on the part of members of Congress. We

then presented evidence that in substantially redrawn districts, there is even more polarization. However, it may be the case that other factors are confounding our results. To deal with this issue and to test for statistical significance, we turn to a regression analysis.

Analysis

Our measure of polarization is again the absolute value of members' DW-NOMINATE scores, which is theoretically continuous and ranges from 0 to 1, where larger values correspond to more extreme voting behavior. To measure redistricting, we apply the same variable used in Figures 2 and 3 where districts are coded as continuous until they fall into the new district category and remain there throughout the subsequent Congresses. Unless other factors are correlated with this measure, we continue to expect members representing new districts to be more extreme relative to members in continuous districts. To more thoroughly account for redistricting, we also isolate the short-term and long-term effects brought about by the creation of new districts. The significant redistricting variable captures the immediate impact of these new districts; it is coded 1 for the first Congress in which the district existed. Because these new districts do not revert back to their previous characteristics after redistricting and we are interested in isolating them from continuous districts, we also control for previous significant redistricting—those districts that were new at some point prior to the current election. Finally, to account for the possibility that even modest redistricting may have an impact on polarization, we identify those districts whose boundaries were altered at a level below our criterion for new districts. Such alterations occur mostly in years ending in 2 in almost all states with more than one district. Related to redistricting, we expect the number of districts in a state with more than one district to influence mapmakers' ability to carve out more polarized seats. States with a greater number of districts can more easily draw polarized districts because the states tend to be more heterogeneous (Lee & Oppenheimer, 1999). For example, California and Texas have more opportunities to draw polarized districts relative to New Hampshire or Maine. We also isolate single-district states because these represent instances where, by definition, redistricting cannot affect polarization.

To control for other factors that could influence a member's voting behavior, we also need to account for the underlying district preferences. Similar to the measure applied in Figure 1, we utilize presidential vote in the district, subtracted from the national average.¹⁸ However, we employ the

absolute value of the measure so that larger numbers mean the district is more polarized.

In some instances where a member represents a more competitive district, he or she may only be able to maintain his or her electoral security because he or she does not always vote with the party (Canes-Wrone, Brady, & Cogan, 2002; Carson, 2005; Mayhew, 1974). To account for this, we created a variable, congressional vote, which is simply the absolute value of 50 minus the Democratic two-party vote in the district. Here, higher numbers correspond to "safer" members.

We are also interested in the impact that replacement has on polarization (Therault, 2006). If replacement is contributing to polarization, as one might expect, then first-term members should be more extreme, *ceteris paribus*, compared to other members. The freshman variable is a simple dichotomous variable coded 1 for freshman members, 0 otherwise. Finally, to control for any year-to-year changes that can influence member behavior, we include a set of temporal dummy variables in each model. We fit several ordinary least squares regression models with robust standard errors to test our theoretical expectations.¹⁹

In Tables 2 and 3, we present our results from the separate analyses. Table 2 displays a regression run on the entire 1968 to 2002 period and then separate models for each of the apportionment decades or parts thereof.²⁰ Table 3 repeats the same models but tests for the possibility that the results are driven by changes in the South.²¹

In the first model in Table 2, we find that, consistent with our theoretical expectations and previous findings, redistricting does indeed contribute to polarization. This is evident when the districts are first drawn and over the course of time. When districts are initially redrawn, the members who represent them are more extreme compared to members in districts that remained the same or districts that were changed to a lesser degree.²² When districts undergo significant change, the members in those districts are 0.066 more extreme. If the district undergoes less change, then the increased polarization is smaller, only 0.020. Recall that these two measures are static and do not take into account previous significant changes in the district. Members who represent districts that were significantly altered at any time after 1962 are 0.017 more extreme compared to members representing continuous districts during the entire period. Although this change is modest, it is statistically significant, and as more members become more extreme, it contributes to conditions (*viz.*, increased intraparty homogeneity and interparty divergence) that may work to bolster party government in Congress and exacerbate polarization. In this way, redistricting may contribute to

Table 2
Redistricting and Polarization by Apportionment Decade

Variable	Apportionment Decade											
	1968-2002		1968-1970		1972-1980		1982-1990		1992-2000		2002	
	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE
Significant redistricting	0.066*	0.011	0.056*	0.027	0.055*	0.028	0.015	0.027	0.071*	0.019	0.124*	0.047
Previous significant redistricting	0.017*	0.004	-0.011	0.017	0.021*	0.009	0.034*	0.007	0.016*	0.007	-0.010	0.016
Modest redistricting	0.020*	0.007	0.018	0.014	-0.014	0.020	0.018	0.012	0.007	0.015	0.081*	0.041
Number of districts	0.002*	0.001	0.003*	0.0005	0.003*	0.0003	0.002*	0.0003	0.0004*	0.0002	0.0004	0.0005
Single-district state	-0.034*	0.012	0.074*	0.036	-0.055*	0.021	-0.022	0.024	-0.045*	0.018	— ^a	— ^a
Presidential vote	0.008*	0.0002	0.0099*	0.0007	0.007*	0.0005	0.009*	0.0004	0.009*	0.0004	0.007*	0.0009
Congressional vote	-0.0014*	0.0001	-0.003*	0.0004	-0.001*	0.0003	-0.001*	0.0002	-0.001*	0.0003	-0.0008	0.0005
Freshman	0.003	0.004	-0.008	0.013	-0.005	0.008	-0.001	0.008	0.018*	0.007	0.023	0.020
Constant	0.207*	0.011	0.229*	0.015	0.236*	0.021	0.202*	0.014	0.265*	0.017	0.253	0.047
<i>n</i>	7,809		866		2,169		2,171		2,169		434	
<i>R</i> ²	.247		.235		.153		.277		.210		.142	
Root mean square error	.151		.154		.159		.144		.144		.154	
<i>F</i>	126.72*		34.57*		39.44*		94.53*		62.79*		12.53*	

Note: Congress-specific fixed effects are not shown. Cell entries are unstandardized coefficients. Dependent variable is absolute value of DW-NOMINATE score. Significant redistricting is a population change of > 50%.

a. The variable for single-district states is excluded because, in tandem with the redistricting variables, the baseline category would simply be Maine, the only multidistrict state that did not redraw district boundaries for 2002.

**p* < .05.

Table 3
Redistricting and Polarization by Apportionment Decade and Region

Variable	Apportionment Decade																							
	1968-2002		1968-1970		1972-1980		1982-1990		1992-2000		2002													
	South	Non-South	South	Non-South	South	Non-South	South	Non-South	South	Non-South	South	Non-South												
Significant redistricting	0.093*	0.023	0.067*	0.013	0.129*	0.025	0.084	0.088	0.079*	0.025	-0.027	0.046	0.044	0.032	0.096*	0.020	0.046	0.029	0.102*	0.049	0.104*	0.051		
Previous significant redistricting	0.048*	0.008	0.013*	0.005	0.066*	0.029	-0.023	0.020	0.039*	0.019	0.031*	0.010	0.073*	0.014	0.022*	0.009	0.041*	0.012	0.006	0.008	0.001	0.032	-0.012	0.019
Modest redistricting	0.037*	0.014	0.021*	0.008	0.032	0.026	0.021	0.016	0.038	0.040	-0.002	0.021	0.014	0.028	0.023	0.013	0.037	0.023	-0.014	0.023	— ^b	— ^b	0.094*	0.042
Number of districts	0.002*	0.0005	0.001*	0.0001	0.003	0.002	0.001*	0.0005	0.002	0.001	0.002*	0.0003	0.004*	0.0009	0.002*	0.0003	0.0005	0.0007	0.0004	0.0002	0.0009	0.0002	0.0003	0.0005
Single-district state	— ^a	—	-0.058*	0.012	—	—	0.030	0.038	—	-0.088*	0.022	—	-0.047	0.025	—	-0.060*	0.019	—	—	—	—	—	—	—
Presidential vote	0.007*	0.0005	0.008*	0.0002	0.004*	0.002	0.010*	0.0008	0.003*	0.001	0.008*	0.0004	0.009*	0.001	0.009*	0.0004	0.010*	0.0009	0.009*	0.0005	0.009*	0.002	0.007*	0.001
Congressional vote	-0.001*	0.0002	-0.0007*	0.0002	-0.002*	0.0005	-0.002*	0.0007	-0.001*	0.0004	0.0001	0.0003	-0.001*	0.0003	-0.0008*	0.0003	-0.007	0.0004	-0.002*	0.0004	0.0002	0.0009	-0.001	0.0007
Freshman	0.016	0.008	0.004	0.005	0.001	0.021	0.002	0.015	0.009	0.016	-0.005	0.008	0.004	0.015	0.002	0.009	0.031*	0.015	0.013	0.008	0.045	0.028	0.010	0.026
Constant	0.191*	0.019	0.322*	0.010	0.176*	0.033	0.243*	0.017	0.238*	0.029	0.220*	0.012	0.115*	0.032	0.223*	0.016	0.300*	0.019	0.312*	0.025	0.279*	0.039	0.293*	0.041
<i>n</i>	2,086	5,723	211	655	540	1,629	579	1,592	625	1,544	131	303	221	184	139	150	140	167	148	148	148	148	148	148
<i>R</i> ²	.292	.246	.173	.199	.068	.199	.244	.281	.221	.220	.184	.139	.150	.150	.150	.150	.150	.150	.150	.150	.150	.150	.150	.150
Root mean square error	.154	.145	.133	.154	.164	.150	.147	.139	.150	.147	.139	.147	.139	.150	.147	.139	.150	.147	.139	.150	.147	.139	.148	.148
<i>F</i>	44.84*	99.17*	5.28*	21.84*	2.87*	52.08*	20.15*	72.95*	22.04*	48.25*	7.01*	8.77*	7.01*	8.77*	7.01*	8.77*	7.01*	8.77*	7.01*	8.77*	7.01*	8.77*	7.01*	8.77*

Note: Congress-specific fixed effects, where appropriate, were estimated but not shown. Cell entries are unstandardized coefficients. Dependent variable is absolute value of DW-NOMINATE score. Significant redistricting is a population change of > 50%.

a. All southern states are multidistrict.

b. See Note 26.

c. See note to Table 2.

**p* < .05.

polarization indirectly, as well. Finally, during this long time series, we do not find that new members are any more polarized than continuing members.²³

Members who represent large states are also more polarized.²⁴ For each additional seat, the state's delegation is an average of 0.002 more extreme. This effect is small for two-district states—about 0.004—but greater than 0.10 for California (with 53 districts). We also observe that member behavior is consistent with underlying district preferences. This is demonstrated by the positive and significant coefficient on presidential vote. As a member's district becomes more liberal (or conservative), so does the member. Electoral security does not appear to contribute to increased polarization in representative behavior after controlling for district preferences; rather, safer members are actually slightly *less* extreme. This result is instructive, however, in that it supports Mayhew's (1974, p. 99) contention that a legislator may be electorally safe precisely because he or she does *not* vote with his or her party all of the time. This is also consistent with the finding of Canes-Wrone et al. (2002) that members receive a lower vote share the more they vote with their party.

To better determine when redistricting contributes to polarization, we ran five additional models, also displayed in Table 2, for each apportionment decade (or partial decade) from 1968 to 2002. For each decade with the exception of the 1980s, districts that were significantly redrawn were more polarized compared to districts that did not change. Furthermore, we see that the effect increased over time. For the two elections in the 1960s, the coefficient on significant redistricting is 0.056, but by the 2002 election, it is 0.124. This pattern was evident earlier in Figure 2.

Districts that underwent a previous significant change were more polarized in the 1970s, 1980s, and 1990s but not in the 1960s or in 2002. We suspect that the null findings in the 1960s are because of the relatively small number of districts in this category, an average of only 46 per year, much lower than the rest of the decades. Although the previously redrawn districts were no longer more polarized in 2002, the large coefficient on significant redistricting leads us to believe that, as time progresses, those districts will continue to be more extreme relative to their unchanged counterparts.

The 2002 election was also the only year where districts that underwent a modest change were also more polarized compared to districts that were not redrawn. We also find that in the 1990s, new members were more polarized compared to members already serving in Congress. This is likely because of the large Republican freshman class of 1994. Finally, our other control variables are largely consistent across apportionment decades.

In sum, then, the results presented in these analyses confirm many of our theoretical expectations. Specifically, this evidence is consistent with the argument that redistricting offers a partial explanation for why members of Congress are now ideologically farther apart compared to the 1960s.²⁵ Although the results are modest, we argue that our findings make it difficult to reject the idea that redistricting is contributing to polarization, even if it is only in small ways during different points in time.

To determine if our results are simply a function of redistricting in the South and the creation of minority–majority districts, we reran our initial models both inside and outside the South.²⁶ These results are displayed in Table 3. First, we find that over the 1968 to 2002 period, *all* of the independent variables that were significant in the model presented in Table 2 during the same time frame are statistically significant when the model is estimated on districts inside or outside the South. When we examine the results over the apportionment decades, we find that significant redistricting is significant in the South in the 1960s, in the 1990s, and in 2002. Meanwhile, the same variable contributes to polarization outside the South in the 1970s, in the 1990s, and in 2002. For districts that were significantly redrawn for previous elections, they were more extreme in the South in the 1960s through the 1990s. Previous significant redistricting is significant outside the South in the 1970s and 1980s. Finally, members that represent districts that underwent only a small change were only more extreme outside of the South in the 1980s and 2002, but never in the South. Based on these results, we are more confident in concluding that polarization stemming from redistricting is not simply confined to Southern states; rather, it is prevalent throughout the country.

Conclusion

As noted at the outset of this article, polarization in the U.S. Congress has steadily increased in recent years. Although a variety of explanations (many of which may not be mutually exclusive) have been proposed to account for the polarization we see in the U.S. House, we consider an additional explanation—congressional redistricting. In recent years, it has become fashionable to blame the increase in polarization and the nearly impossible task of “throwing out” entrenched incumbents on the congressional redistricting process. For instance, a recent *Washington Post* editorial on this point suggests, “Elections are supposed to be about voters choosing candidates. That’s not a meaningful choice if the candidates have already gotten to choose the voters” (“Democracy in Voters’ Hands,” 2005,

p. A18). In contrast, more systematic studies that try to link redistricting and polarization fail to uncover a connection and declare the two cannot be systematically related. We take a different approach and make an argument similar to the one made by Mann and Ornstein (2006) in their recent book:

Redistricting is not the only or even the major cause of the ideological polarization and partisan tension that have beset Congress. One need only look back at the last partisan era, when redistricting was not a significant factor, or to the contemporary Senate, whose ideological and partisan patterns mirror those of the House, to realize that other, more powerful forces are at work. . . . Nonetheless, redistricting makes a difficult situation considerably worse. Lawmakers have become more insular and more attentive to their ideological bases as their districts have become more partisan and homogeneous. Districts have become more like echo chambers, reinforcing members' ideological predispositions with fewer dissenting voices back home or fewer disparate groups of constituents to consider in representation. The impact shows in their behavior. (pp. 229-230)

In particular, we assess the claim that districts that have undergone significant change following redistricting have become more polarized, thus contributing to higher levels of polarization among legislators representing those districts. By linking House districts over time, we find evidence in support of that expectation. Indeed, congressional districts that have significantly changed are having an effect on levels of polarization in the House, even when controlling for other prominent factors such as replacement and electoral safety, which are often indirectly related to redistricting. Although redistricting may not be as influential as some of the authors on the editorial pages or political pundits would lead us to believe, it would be difficult to conclude, based on our results, that redistricting plays *no* role in the divergence between the two major parties in the House. Although the effect is certainly modest, it is statistically discernible and, in an era of narrow partisan majorities, may well mean the difference between winning and losing policy battles on Capitol Hill.

The findings reported in this article suggest that a portion of the polarization we are observing in Congress is being artificially generated by the mapmakers responsible for drawing district boundaries at the state level. Even as factors such as growing income inequality are contributing to an underlying increase in polarization (McCarty et al., 2006b), Oppenheimer (2005) argues that like-minded partisans are deciding to reside near each other. This in turn makes it relatively simple for those drawing districts to do so in ways that pack relatively poor people into urban districts and

wealthier individuals into districts away from city centers in suburbs and exurbs. As state legislators alter district boundaries in response to changing demographics and partisan considerations, this behavior is having an effect on the degree of polarization in Congress. More specifically, we find that members representing new districts are more extreme in their voting behavior compared to continuous districts. So although other factors may be driving polarization in the aggregate, it would be premature to rule out redistricting as playing any role in the increased polarization we see in Congress today.

Notes

1. Although some have suggested that redistricting does not contribute to polarization, such assertions are typically based only on the election immediately following redistricting (years ending in 2). In contrast, our measure allows us to look at behavior in new districts from their initial conception to the present. As we will discuss in greater detail, there are good reasons to expect changes in behavior (or replacement) to gradually happen over time as such processes are likely to be somewhat “sticky.”

2. On this point, see also Fleisher and Bond (2004).

3. Canes-Wrone, Brady, and Cogan (2002) have demonstrated that polarized members representing more extreme districts are safer than those representing more moderate districts.

4. See Butler and Cain (1992) for a more explicit discussion of different types of redistricting plans. Because we are interested in investigating the link between district change and polarization, an exhaustive treatment of the numerous systems under which district boundaries are redrawn (e.g., Mann & Cain, 2005) is left to a separate analysis.

5. Hetherington, Larson, and Globetti (2003) similarly find that candidate entry decisions are related to the rhythm of the redistricting process in that experienced candidates are less likely to run the longer it has been since the last redistricting cycle.

6. In cases where county maps were not sufficient, such as in large urban areas falling within the boundaries of a single county, we turned to more detailed city-level maps and journalistic accounts of the nature of the redistricting to determine whether the district was in fact roughly the same or significantly different.

7. This practice was even more widespread during the 19th century (Engstrom & Kernell, 2005).

8. Some of the court-ordered redistricting was the result of a political desire for change by the litigants but was brought to trial under a different guise, such as increasing (or not decreasing) racial minority representation. More recently (but not in our data set), Texas decided to redistrict prior to the 2004 election solely based on the political goal of increasing the number of Republican representatives in Congress.

9. Specifically, California had 16 new districts, Florida 6, Texas 3, New York 5, Illinois 3, Michigan 7, Ohio 1, and Pennsylvania 2.

10. Of course, because we are looking at comparisons between districts at time_{*t*} and time_{*t+1*}, it is possible that a district that we consider continuous from one election to the next may not look the same at the beginning and end of the life of the district. Consider, for example, the eighth congressional district in Texas. In the 1970s, this district comprised the northern and

eastern portions of Harris County and part of Houston. By 2000, however, incremental changes during the decades gave rise to a suburban district falling within Montgomery and Harris Counties, north of Houston.

11. The advantage of employing district presidential vote is that it provides a more direct measure of the partisan or general ideological predisposition of each congressional district separate from the popularity of the incumbent representing the district (Ansolabehere, Snyder, & Stewart, 2000, 2001; Jacobson, 2000).

12. Data on the presidential vote within all congressional districts in midterm elections are not available for 1962 and 1966. As such, we begin our analysis with 1968.

13. Of course, in any one year there are only 435 districts. Thus, in 2002, the 261 continuous districts in existence since 1962 in tandem with the 174 districts that were newly created during the succeeding 40 years provide the 2002 snapshot of cases. By the same token, not all of the 217 new districts described in Table 1 make it to 2002 because some were either significantly altered or disappeared as a result of reapportionment.

14. Alongside the polarization in district preferences that has occurred since the 1960s has been a partisan sorting at the district level where nearly all conservative districts are represented by Republicans and nearly all liberal districts are represented by Democrats. Because this phenomenon is well known, we have chosen not to incorporate an additional figure. However, this sort of partisan separation is also an obvious component of polarization.

15. See Poole (1998) for a discussion of common space scores.

16. Furthermore, because of the nature of the DW-NOMINATE method of estimation, the scores of legislators are constrained to move in a linear direction during the course of their careers, and members not meeting a minimum number of terms served have the same score for each Congress. This is sure to diminish the observation of any Congress-to-Congress change that occurs.

17. Difference-of-means tests indicated that this difference is statistically significant for each Congress from 1978 to 2002.

18. We do this largely for consistency; the results are similar with a more standard measure of presidential vote in the district (Jacobson, 2004).

19. A few notes on method as it relates to our data are in order. Robust standard errors employ the Huber-White method to account for potential heteroskedasticity in the standard errors of the coefficients. The results are similar to those obtained with panel-corrected standard errors. Because of the nature of our data, which are essentially a series of district cross-sections occurring during a 40-year, 21-election-cycle period, we also estimated the results using a time-series correction accounting for the possibility of autocorrelation. However, the inclusion of various lags of the dependent variable had no effect on the substance of our results. To further test the robustness of our findings, we also estimated a model with state fixed effects. The overall results were quite similar. Similarly, the use of regional dummy variables instead of state-level variables produced no meaningful change in the estimates, nor did inclusion of demographic factors (urban and African American populations) or use of unsigned DW-NOMINATE scores as the dependent variable. Finally, DW-NOMINATE scores are not available for members who did not cast a minimum number of votes (such as the speaker of the house, who frequently does not vote), which explains why the n values are not evenly divisible by 435.

20. We start with 1968 because presidential vote data were not available for any of the congressional districts redrawn for the 1966 congressional elections. However, the results are similar when 1964 is included.

21. One might argue that any redistricting effects in our results are an artifact of changes occurring in the South in the post-*Baker v. Carr* (1962) context and the subsequent drawing of majority-minority districts.

22. We used an F test to determine that the coefficient for significant redistricting was statistically greater than modest redistricting at $p < .05$.

23. This may be a function of the nature of the DW-NOMINATE measure because freshmen are significantly more extreme when W-NOMINATE is used instead as the dependent variable. However, our finding with DW-NOMINATE differs from that of Theriault (2006). There are no other substantive differences when W-NOMINATE is employed.

24. In an alternative analysis, we replaced the number of districts with the change in the number of districts as a result of reapportionment, and the results were similar. However, because large states tend to undergo greater changes in the number of districts, including both variables introduced collinearity problems between the two variables and deflated the coefficient on the change variable.

25. As previously discussed, we do not have a continuous (in the statistical sense) measure of district change for our entire period because of data constraints. Crespin (2005) employs geographic information systems, congressional district and census tract files, and census population data to create a related measure of continuity for the 2000 to 2002 round of redistricting. Unfortunately, as mentioned earlier, the same type of data are not available back to the 1960s. However, we used his measure on our model for 2002 and continued to find that as district population continuity declines, polarization increases. Because we get the same results with both measures, this suggests that although the variable we use throughout the article is not perfect, it is indeed capturing the intended influence of redistricting. It may, in fact, understate the extent of polarization from redistricting because it imposes a threshold of 50% change.

26. We define the South as Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Texas, and Virginia. All of the districts in the South were redrawn to some extent for 2002. Therefore, modest redistricting and significant redistricting are perfectly collinear, and it is not possible to estimate the entire model without violating the assumption of no perfect collinearity, so modest redistricting is dropped.

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