

The Participatory Effects of Redistricting

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While the effects of legal and institutional arrangements on political participation are well documented, little attention has been given to the potential participatory effects of one of the United States' most important electoral laws: constitutionally mandated reapportionment. By severing the ties between constituents and their incumbents, we argue, redistricting raises information costs, leading to increased levels of nonvoting in U.S. House contests. Survey data from the 1992 American National Election Studies show that redrawn citizens are half as likely to know their incumbent's name as citizens who remain in a familiar incumbent's district and, consequently, significantly more likely to roll off, or abstain from voting in the House election after having cast a presidential vote. We also show that participation rates in the 2002–2006 House elections in Texas—each of which followed a redistricting—match these patterns, with roll-off increasing 3% to 8% in portions of the state that were redrawn, controlling for other factors. The findings demonstrate that scholars and policy makers ought to be concerned with the extent to which the redrawing of congressional lines affects citizens' exercise of political voice.

Legal and institutional arrangements have a profound effect on political participation in democratic politics. A large literature in political science has highlighted voting laws, registration requirements, the design of electoral systems, the structure of legislative bodies, and public policy outputs as powerful influences on who votes and how often (see Blais 2006 for a review). Such findings have led to calls for changes to American election laws as a way to combat declining levels of electoral participation (Lijphart 1997; Patterson 2002; Wattenberg 2002).

Despite the vast literature on the relationship between participation and institutional arrangements, there has been virtually no consideration of the potential participatory effects of one of the United States' most important electoral laws: constitutionally mandated reapportionment. In this study, we note that the literature's overriding focus on redistricting's effects on electoral outcomes (e.g., Galderisi 2005) has caused scholars to overlook the influence of redistricting on citizens' exercise of political voice. We argue that by severing the ties between constituents and their incumbents, redistricting raises in-

formation costs for some citizens, leading to increased levels of nonvoting in U.S. House contests.

We explore this argument with both individual- and aggregate-level data. First, we analyze data from the 1992 American National Election Studies (ANES), comparing citizens who remained in a familiar incumbent's district with those who were redrawn following the 1990 Census. We find that not only are redrawn voters much less likely to recognize or recall their incumbent's name, but also that this lack of familiarity produces a higher probability of abstention in the House contest. Having established the microfoundations of our theory, we examine levels of voter roll-off in a series of elections, using data from the 2002, 2004, and 2006 U.S. House races in Texas, where boundary changes were implemented three times over a six-year period. Our analysis of election returns from more than 8,000 voting tabulation districts finds that roll-off increased 3% to 7% in portions of the state that were redrawn into new incumbents' districts, controlling for other factors. Abstention rates among those redrawn into districts with a new incumbent in consecutive elections—the “re-redistricted”—were 8% higher.

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Our results reveal that redistricting can have significant participatory consequences, contributing to the literature on the legal and institutional influences on political participation and suggesting a new direction for redistricting research. The findings also have serious implications for the increasingly familiar phenomenon of mid-decade redistricting. Since 2003, six states, including Texas, have overhauled existing district maps mid-decade, and recent court rulings have opened the door for future attempts (Levitt and McDonald 2007), even if undertaken only in the pursuit of political gain. With the prospect of more re-redistrictings on the horizon, our findings recommend that scholars and policy makers concern themselves with the effects on participation rates.

The article proceeds in the following order. First, we discuss the relevant literature on political participation and redistricting, highlighting extant findings that lend support for our hypothesis that redrawn voters are more likely to abstain from voting in House elections. Second, we undertake both individual- and aggregate-level analyses that support our arguments. We conclude with a discussion of the implications of roll-off asymmetry caused by redistricting.

Institutions and Political Participation

The role of laws and institutions has been central to the study of political participation in industrialized democracies (see Blais 2006). Much of the cross-national work examining voter turnout rates has demonstrated the ways legal and institutional mechanisms promote or inhibit participation (Franklin 2004; Jackman 1987; Powell 1986). Institutional design is argued to indirectly influence voting rates by affecting factors that increase or decrease participation. For example, the proportionality of electoral systems affects the competitiveness of elections and the likelihood of party mobilization (Jackman 1987; Powell 1986), which results in variations in turnout. The concentration of power in a single legislative chamber, or unicameralism, increases turnout by making legislative elections more salient to voters (e.g., Fornos, Power, and Garand 2004). And laws that regulate the practice of voting—such as compulsory voting statutes—alter the costs of participation and do much to explain cross-national variation in turnout rates (Franklin 1999, 2001).

These findings have helped explain why the United States' turnout rate lags behind that of its peers cross-nationally and has illuminated state-by-state variation in participation rates within America. The low voter turnout in the United States compared to other established democracies is argued, in large measure, to re-

flect strict registration requirements (e.g., Wolfinger and Rosenstone 1980) and the presence of a single-member district electoral system (Downs 1957; Powell 1986). States in which registration statutes are less restrictive tend to have higher turnout rates (Wattenberg 2002). And rules that govern the timing and frequency of elections, as well as the mechanisms by which votes are cast, also shape the likelihood that individuals will turn out (Highton and Wolfinger 1998; Niemi and Weisberg 2001; Southwell and Burchett 2000; Stein 1988; Wattenberg 2002).

As a central institutional component of American congressional elections, however, redistricting's potential impact on participation has received scant attention (see Winburn and Wagner forthcoming). Instead, scholars have trained their attention on the way the redrawing of political boundaries affects partisan competition, electoral outcomes, and political representation, to the exclusion of exploring how reapportionment influences participation.¹ But we contend that redistricting's participatory consequences deserve attention.

The combination of the "one-person, one-vote" decisions, the emergence of majority-minority redistricting, and recent population shifts in the last four decades has led to substantial disruptions in congressional boundaries in the two most recent decennial redistrictings. In

¹For recent works, see Ansolabehere, Snyder, and Stewart (2000); Cameron, Epstein, and O'Halloran (1996); Canon (1999); Carson, Engstrom, and Roberts (2006); Cox and Katz (2002); Desposato and Petrocik (2003); Engstrom (2006); Epstein and O'Halloran (1999, 2000); Gelman and King (1994); Hetherington, Larson, and Globetti (2003); Hill (1995); Lublin (1997); McKee (2008); Petrocik and Desposato (1998); Rush (1993). In many ways, the focus on electoral outcomes and partisan advantage is not especially surprising, given the development of the redistricting process over time. As with so much of the U.S. Constitution, the clauses in the founding document mandating decennial reapportionment are vague, and the details of its implementation were left up to members of Congress, who experimented with a variety of methods for reallocating seats (Congressional Quarterly 1998). Because there were so few stipulations, the institutional evolution of congressional redistricting has been characterized by tremendous variability both within and across the states (see McDonald 2004), whose legislatures have been the primary locus for drawing district boundaries (Butler and Cain 1992; McDonald 2007). Since the Constitution was silent on the specifics of candidate selection, historically there were states that elected U.S. Representatives at large, in multi-member districts, and in single-member districts, and some states used different combinations of these selection methods (Congressional Quarterly 1998). Further, in the nineteenth century it was not uncommon to find several states that redistricted at mid-decade solely for partisan advantage (Carson, Engstrom, and Roberts 2006; Engstrom 2006). Eventually, however, the lack of uniformity in the drawing of congressional maps—and the presence of extreme malapportionment in particular—prompted the Supreme Court to wade into the redistricting thicket in the 1960s, imposing mandates to protect the equality of voting across the country. This move, and perhaps due to the hyperpolitical nature of redistricting—a process in which partisan elites seek political advantage—has prompted the bulk of scholarship to address the question of how political boundaries affect partisan outcomes.

1992, incumbent House members running for reelection found, on average, that 25% of their districts' population had been redrawn. Ten years later, in 2002, that figure was 22%.² In other words, in the two most recent decennial reapportionments, in those districts with an incumbent seeking reelection, about one-quarter of the population has found itself in a district with a new, unfamiliar representative.

It is this element of redistricting—the severing of the bonds between incumbents and their constituents—that has the potential to affect participation rates in important ways. The unfettering of voters from their well-known representatives (Desposato and Petrocik 2003; Petrocik and Desposato 1998) injects a measure of instability into the political system (Gelman and King 1994) and can raise the costs of casting a ballot for some voters. As we describe in the next section, there is reason to believe that this process has consequences for the level of participation in the U.S. House elections following the reconfiguration of district lines.

Incumbency and the Information Costs of Redistricting

Information costs are among the most formidable barriers to citizens' political decision making and participation. The desire to reduce costs encourages voters to adopt a strategy of "low-information rationality," using simple cues to minimize the effort required to arrive at a satisfactory political judgment (Popkin 1994). For example, a candidate's party affiliation, personality traits, standing in the polls, or endorsements serve as heuristics from which to make inferences about a politician's fitness for office (e.g., Lau and Redlawsk 2001; Lupia 1992, 1994; Popkin 1994). The use of information shortcuts also promotes political participation, allowing citizens to reduce the effort required to arrive at a choice. Participation rates go up when information costs decline, whereas high costs may lead to rational abstention (Downs 1957). This helps explain why participation tends to be highest in elections characterized by heavy media attention

²These data were calculated by the authors using the geographic correspondence engine provided by the Missouri Census Data Center in 1992 (<http://mcdc2.missouri.edu/websas/geocorr90.shtml>) and 2002 (<http://mcdc2.missouri.edu/websas/geocorr2k.html>). The median redrawn in 1992 was 20% and it was 19% in 2002. Though we lack similar data on prior decennial reapportionments, given the substantial changes with regard to race-based redistricting after the 1990 Census, the prevalence of partisan gerrymanders, continued population shifts due to regional migration patterns, and ever stricter enforcement of the equal population rule, there is little doubt that these earlier reapportionments resulted in smaller percentages of redrawn residents.

and campaign activity (Aldrich 1993; Cox and Munger 1989; Gilliam 1985; Jackson, 1996; Nicholson and Miller 1997), an environment in which information is relatively "cheap."

Because U.S. House elections tend to be low-salience affairs, incumbency is among the most important, and useful, voting heuristics (Jacobson 2004). Though few citizens are likely to be able to identify their representative's precise policy positions, most are willing to pass judgment on his or her performance in office. According to ANES data, more than 90% of voters are familiar enough with their House incumbent to evaluate him or her (Jacobson 2004). Incumbent familiarity emerges from activities that members of Congress engage in—position taking, credit claiming, advertising (Mayhew 1974), and casework (Cain, Ferejohn, and Fiorina 1987; Fiorina 1977). All of these breed familiarity, and in many instances fondness, which translates into major advantages for incumbents (Jacobson 2004). But just as importantly, incumbent familiarity serves as an information subsidy for voters who may know relatively little about the campaign, issues, or candidates. Even if they cannot identify the challenger in a House election—the case for most people (Jacobson 2004)—citizens often have a sufficient sense of the performance of their representative to render a judgment in the voting booth.

When voters are redrawn into a new incumbent's congressional district, that familiarity is eliminated (Desposato and Petrocik 2003). Citizens who are not redrawn into new incumbents' districts do not incur the same increase in costs, since familiarity with their representative is not affected. To be sure, many voters rely on the party cue in casting a vote, but it is also the case that many voters are not partisans or are weakly attached to a party, people for whom incumbency constitutes a primary shortcut for registering a choice.

With the incumbency cue severely discounted, and entirely removed for a large percentage of redrawn constituents, one likely outcome is abstention in the House race. Research has shown that when voters feel unqualified to vote on a specific contest, they often make a conscious decision not to cast a ballot (Feddersen and Pessendorfer 1996). Indeed, as Wattenberg, McAllister, and Salvanto (2000) put it, voting is like an SAT test—abstention is preferable to making an uninformed choice on ballot items about which voters know little. Taking the analogy a step further, just as high school students are penalized for providing an incorrect answer on an SAT question, voters appear to see an uninformed vote as potentially dangerous. Rather than possibly helping to elect someone who might turn out to be less preferable than the alternative, many voters choose abstention (see Feddersen and Pessendorfer 1996).

With respect to voters who are redrawn, our argument can simply be stated as follows:

Redistricting → Lack of familiarity with new incumbent → Nonvoting in House race

Given the likelihood of future mid-decade redistrictings (Levitt and McDonald 2007), it is also important to consider the potential cumulative effects of successive, or temporally proximate, redistrictings. This is not merely a hypothetical concern; since 2001, six states have either redrawn or attempted to redraw existing congressional or state legislative maps (Levitt and McDonald 2007). As we describe below, some Texas voters were redrawn into new incumbents' districts before both the 2004 and 2006 elections. In such a scenario, the first redistricting forces these citizens to become familiar enough with a new incumbent to cast a ballot. When they are redrawn again before the subsequent election, they are forced to acquaint themselves with yet another unfamiliar politician. It is conceivable that some voters, exasperated by this volatility and unwilling to devote the energy to overcome these information costs, may be even less likely to cast a ballot in the second contest. If that is the case, then we would expect higher nonparticipation rates among voters who are redrawn into new incumbents' districts in successive elections.

In the analysis that follows, we focus on voter roll-off—whether individuals abstain from voting in a House contest after casting a top-ticket vote—to measure the participatory consequences of redistricting. This is the most precise way to gauge redistricting's effects. Because House contests are typically held simultaneously with high-profile presidential, Senate, or gubernatorial contests, voter turnout rates are related to a number of factors that have nothing to do with reapportionment. But the decision of whether to vote in a House contest once a citizen has arrived in the voting booth—a measure of “partial participation” (Vanderleeuw and Liu 2002)—can be tied directly to redistricting, since congressional races are the only federal elections affected by the redrawing of district boundaries.

The focus on roll-off is also theoretically appropriate. Though a number of studies have examined the effect on roll-off of ballot design, voter confusion, or voter fatigue (Bowler, Donovan, and Happ 1992; Darcy and Schneider 1989; Niemi and Herrnson 2003; Walker 1966), the dominant view is that information costs are the most powerful influence on roll-off rates. Formal models consistently find that as the costs of political information increase, ballot abstention becomes voters' preferred choice (see Feddersen and Pessendorfer 1996, 1999; Ghirardato and Katz 2006). Likewise, experimental (Lassen 2005) and survey-based analyses (Coupé and Noury 2004; Lassen

2005; McDermott 2005; Wattenberg, McAllister, and Salvanto 2000) show that a lack of information directly contributes to abstention.³ Other studies have shown that while African Americans tend to roll off at higher rates than whites (Darcy and Schneider 1989; Feig 2007; Vanderleeuw and Engstrom 1987; Vanderleeuw and Utter 1993), this gap can be narrowed when black candidates are on the ballot, when campaigns focus on race, when a campaign is competitive, and when mobilization efforts serve to motivate and subsidize information costs (Vanderleeuw and Liu 2002). In sum, a wide variety of studies have documented a strong relationship between voter information and roll-off.

This discussion yields two individual-level hypotheses (and one subhypothesis) and two aggregate-level hypotheses that we test in the following sections. The individual-level hypotheses (1, 2, and 2a) speak to the theory about the relationship between redistricting and candidate familiarity, and the effect of familiarity on the probability of a voter abstaining from a House vote. The aggregate-level hypotheses (3 and 4) address the expected patterns of roll-off in House elections following redistricting.

H1: Voters who are redrawn into new incumbents' districts will be less familiar with their incumbents than voters who remain in a district with the same incumbent.

H2: Voters who are redrawn into new incumbents' districts will be more likely to abstain from voting in the House election than voters who remain in a district with the same incumbent.

H2a: The effect of redistricting on voting in the House election will be mediated by incumbent familiarity.

H3: Roll-off rates will be higher in voting tabulation districts that were redrawn into a new incumbent's district than in voting tabulation districts that remained in the same incumbent's district.

H4: Roll-off rates will be highest in voting tabulation districts that were redrawn into a new incumbent's district twice in successive elections.

³For instance, McDermott (2005) uses survey data on California voters and divides them into two groups: (1) voters who are given candidate occupation labels for several statewide contests and (2) voters who are not provided occupation labels. In the absence of candidate occupation labels, gubernatorial voters were more likely to roll off in the other statewide contests. Similarly, Wattenberg, McAllister, and Salvanto (2000) use ANES data to show that presidential voters with less information relevant to their U.S. House race—for example, knowledge of party control of the U.S. House and recognition of the House candidates—were more likely to abstain in congressional contests.

TABLE 1 Redistricting and the Lack of Familiarity with U.S. House Candidates in the 1992 Elections

	% Not Recalling Name of		% Not Recognizing Name of	
	Incumbent	Challenger	Incumbent	Challenger
Redrawn	82.4 (205)	93.7 (205)	14.2 (127)	34.2 (114)
Same incumbent	66.4 (828)	90.0 (828)	2.9 (622)	41.1 (581)
Difference	16.0*	3.7	11.3*	-6.9

Note: Data are from the 1990–1992 American National Election Studies (ANES) Full Panel File (ICPSR # 6230).

Data only include contested races (Democrat vs. Republican) with an incumbent seeking reelection.

Ns of respondents in each category are in parentheses.

* $p < .001$, difference of proportions (one-tailed test).

Data

We test these hypotheses in two analyses. First, we examine data from the 1990–1992 ANES Full Panel File, comparing levels of candidate recall and recognition between redrawn and same-incumbent voters, and then estimating the effect of being redrawn on the probability that a voter will selectively abstain from a House vote.⁴ Second, we examine election returns from the 2002–2006 U.S. House contests in Texas to determine whether redistricting has an influence on rates of voter roll-off, and whether successive redistrictings increase roll-off rates above and beyond a single redrawing. Though we identify differences where appropriate, our analyses do not focus on roll-off in open seat contests.⁵

Study 1: Individual-Level Analysis

Congressional redistricting for the 1992 House elections witnessed widespread boundary changes because of large population shifts from the Frostbelt to the Sunbelt, strict enforcement of the equal population rule, and a substantial expansion in the number of majority-minority districts. Fortunately, the ANES data set includes a variable that enables us to identify those panel respondents who in 1992 were drawn into a district with a new incumbent. We distinguish these redrawn respondents from same-

⁴The study is ICPSR #6230.

⁵We restrict the focus to incumbent contests for two reasons. First, given that little attention has been paid to redistricting's participatory effects, we are interested initially in focusing on the dynamics in the most common type of contests—those with incumbents running for reelection. Second, the level of roll-off in open seats is likely to be highly variable, depending on mobilization efforts and other campaign-specific characteristics. Identifying those factors and the way they shape participation would require a different research design than the one employed in this study.

incumbent respondents, those who were represented by the same incumbent before (in 1990) and after redistricting (in 1992). In all of the analyses, the primary independent variable of interest is a dummy variable coded 1 if the respondent was redrawn into a new incumbent's district, and 0 if the respondent remained in the district with his or her previous incumbent. This allows us to operationalize the effect of redistricting on candidate familiarity and voter roll-off.

We first evaluate whether redrawn respondents are significantly less likely than same-incumbent respondents to know their incumbent (Hypothesis 1). We also test for differences in familiarity with House challengers. In both cases, we measure candidate familiarity with the recall and recognition variables provided by the ANES.

Table 1 provides cross-tabulations for the percentage of redrawn and same-incumbent respondents who were not able to recall or recognize the name of the incumbent and the challenger contesting their district in the 1992 House election. Starting with the recall question, very few respondents are capable of providing the name of their incumbent. But the central question here is whether the rate of recall is greater for same-incumbent than redrawn voters.

It is. As expected, redrawn respondents were more likely to fail to recall their incumbent's name than same-incumbent respondents, 82% to 66%. Although the candidate recognition measure on the ANES is susceptible to over-reporting, the results in the fourth column of Table 1 reinforce our expectations.⁶ Just 3% of same-incumbent respondents could not recognize the

⁶The candidate recognition question is actually measured by the response to a candidate thermometer question. Respondents are presented with a House candidate's name and then asked to rate them on a thermometer scale (0 to 100). One of the response categories is "respondent doesn't recognize name." Compared to candidate recall rates, the much higher recognition rates are

name of their incumbent, whereas 14% of redrawn respondents could not. The findings, which support Hypothesis 1, are hardly surprising, but they demonstrate the empirical foundation of our argument about the differences in familiarity with their representative for redrawn and same-incumbent voters.

For purposes of comparison, Table 1 also presents differences in challenger recall and recognition rates for redrawn and same-incumbent voters. Our argument posits no difference in this relationship, since challengers typically are not well known in House races. Indeed, the differences for challenger familiarity are small, inconsistent, and statistically insignificant, bolstering our contention that incumbent familiarity is the central informational casualty of redistricting.

To make sure the differences in candidate familiarity rates presented in Table 1 are robust, we estimate four logistic regressions predicting incumbent and challenger recall and recognition. For the first model, the dependent variable is coded 1 if the respondent recalls the incumbent's name, 0 if he or she cannot. In the second model the dependent variable is coded 1 if the respondent recognizes the incumbent's name, 0 if he or she does not. The third and fourth models estimate recall and recognition of the challenger, respectively.

The independent variable of interest is *Redrawn*. We expect redrawn respondents to be less likely to either recall or recognize the name of their incumbent. In addition, we anticipate no significant difference in challenger familiarity between redrawn and same-incumbent respondents. The models include a host of controls, described in the appendix, that may influence candidate familiarity.⁷

probably due in part to social desirability, as many respondents are likely to rate a candidate even if they do not recognize the name, in an effort to appear informed. The candidate recall question is designed specifically to determine whether the respondent knows the name of the candidate(s). The respondent is asked to tell the interviewer the name of the candidate(s) running for the House in his or her congressional district. Because the respondent has to recall candidate names from memory, without the assistance of any cues, it is almost impossible to cheat.

⁷Because the models include measures at different levels of aggregation—both the individual and the congressional district—it requires a slightly modified estimation technique. The data violate the assumption of the independence of observations, since the familiarity and roll-off rates among individuals within a single congressional district will certainly be correlated—that is, each individual's recognition or recall of his or her House candidates and propensity to vote will be affected by the same set of district-level variables (e.g., candidate spending, contestedness, and competitiveness). Even though the “intra-class” correlation among individuals within the same congressional district is low—ranging from 0.04 to 0.06, depending on which dependent variable is being used—we estimate the model with robust (Huber-White) standard errors clustered on the congressional district. This technique accounts for

Table 2 presents the results of the four models. As shown by the significant coefficients for *Redrawn* in columns two and three, redistricting exhibits a significant influence on both incumbent recall ($p < .01$) and recognition ($p < .01$). In the recognition model, holding the covariates at their mean values, the probability that a same-incumbent respondent recognizes his or her incumbent is 0.99 compared to 0.91 for a redrawn respondent.⁸ More impressive and more relevant are the differences with respect to incumbent recall. Setting the other variables at their mean values, the likelihood that a same-incumbent respondent will recall his or her incumbent's name is 0.40, whereas the probability is just 0.18 for a redrawn respondent. In other words, it is more than half as likely that a redrawn respondent will know the name of his or her incumbent.

At the same time, in the models that evaluate challenger familiarity, *Redrawn* is not statistically significant. After controlling for other factors, redistricting does not affect the likelihood that a respondent will recall or recognize the challenger's name. Confirming the results from Table 1, the effects of redistricting on candidate familiarity are limited to the incumbent.⁹

dependence among the observations and inflates the standard errors for the parameter estimates. It thus biases the model in favor of null results, but guards against the danger of a false positive. All models are estimated in STATA 10.0.

⁸All predicted probabilities in the article were calculated using CLARIFY (Tomz, Wittenberg, and King 2003).

⁹Given that the mechanism that we argue leads to voter roll-off following a redistricting is an increase in information costs, one might suspect that the impact of candidate spending for redrawn voters should be stronger than same-incumbent voters. Specifying models with interactions between candidate spending and redrawn in both the individual-level and aggregate-level models, we find mixed support for the hypothesis. In the ANES data, the interactive variables are inconsistently significant across the recall/recognition and roll-off models. And in the Texas data (see Table 6) the interactions are significant in 2002 and 2004, but not 2006. Though the models provide suggestive evidence that the effect of spending might be conditioned by redistricting, two features of the data lead us to exercise caution in drawing that conclusion. First, the ANES includes such a small sample of redrawn voters (about 15% of the observations) that the estimates from the individual-level interactive models are necessarily unstable. Thus, we are reticent to place considerable faith in those coefficients; we would be more confident in a research design that included more precise measures of contact or candidate spending targeted at redrawn voters. Second, the unusual circumstances of the 2006 election in Texas make the aggregate-level interactive models burdensomely complicated because of the various types of redrawn VTDs and the occurrence of several special elections. When we interact candidate spending with the various dummies in the 2006 model, there is such collinearity that the models are nearly impossible to interpret. While our analyses find some support for the conditional effect of candidate spending, we believe it is presently ambiguous enough to defer to future research.

TABLE 2 Redistricting and Candidate Familiarity in the 1992 U.S. House Elections

	Recall Incumbent	Recognize Incumbent	Recall Challenger	Recognize Challenger
Redrawn	-1.12** (0.28)	-2.03** (0.65)	-0.59 (0.37)	-0.11 (0.31)
Total Candidate Spending	0.01 (0.03)	0.08 (0.07)	0.05 (0.04)	0.12** (0.04)
Competitiveness	-0.05 (0.13)	0.22 (0.42)	0.46* (0.20)	0.49* (0.19)
Days Surveyed since Election	-0.03** (0.01)	-0.01 (0.01)	-0.04** (0.01)	-0.01 (0.01)
Democratic Candidate	0.53* (0.24)	1.18* (0.59)	0.20 (0.33)	-0.15 (0.27)
Black	-1.15** (0.34)	-0.74 (0.65)	-1.58 (1.09)	-0.38 (0.38)
Age	0.02** (0.01)	0.01 (0.02)	-0.01 (0.01)	-0.00 (0.01)
Education	0.21** (0.03)	0.24* (0.11)	0.28** (0.06)	0.12** (0.04)
Income	0.02 (0.02)	0.05 (0.05)	0.06* (0.03)	0.00 (0.02)
Male	0.60** (0.16)	0.38 (0.48)	0.22 (0.30)	0.19 (0.19)
Married	0.38 (0.21)	0.02 (0.46)	0.10 (0.32)	-0.24 (0.22)
Partisanship	0.31** (0.08)	0.10 (0.24)	0.38** (0.14)	0.07 (0.09)
Time in Residence	-0.04 (0.10)	0.12 (0.21)	0.05 (0.20)	0.01 (0.08)
Lives in South	0.36 (0.31)	-0.30 (0.64)	0.78* (0.40)	0.37 (0.21)
Constant	-5.11** (0.73)	-1.73 (1.90)	-8.13** (1.22)	-2.31** (0.62)
Log Likelihood	-508.16	-106.62	-274.95	-412.83
Pseudo R ²	0.16	0.20	0.23	0.11
N	764	667	764	618

Note: Data are from the 1990–1992 American National Election Studies (ANES) Full Panel File (ICPSR # 6230). Cell entries are logistic regression coefficients, with robust standard errors in parentheses. Analyses include only contested races (Democrat vs. Republican) with an incumbent seeking reelection.

**p < .01; *p < .05 (one-tailed test).

The descriptive and multivariate analyses provide strong empirical support for our contention that redistricting reduces the probability that redrawn voters will be familiar with their new incumbent. But does this affect the likelihood of voting in the House election?

To answer this question, we estimate the effect of being redrawn on the probability that a presidential voter abstains from voting for the House. Following Wattenberg, McAllister, and Salvanto (2000), we code the dependent variable 1 for respondents who reported voting

for the president but not for the House, and 0 for respondents who reported voting for the president and the House. Thus, a 1 identifies a “roll-off voter,” whereas a 0 represents a “full voter” (see Wattenberg, McAllister, and Salvanto 2000). Among presidential voters, we expect that redrawn respondents are more likely to abstain from voting for the House (Hypothesis 2).

We present three logistic regressions. In the first model, we analyze all House contests, with dummy variables for contested seats and open seats. The second

regression is limited to only those contested House races with an incumbent seeking reelection. The third model differs from the second in one important respect—we include a dummy, *Recall Incumbent*, for whether the voter was able to recall the name of his or her incumbent. Based on our argument that redistricting raises candidate information costs among redrawn voters—and that it is the lack of information that produces nonvoting in a House contest—we expect the inclusion of *Recall Incumbent* to render *Redrawn* statistically insignificant (Hypothesis 2a). In each model, we include the controls from Table 2.

Starting with the first model in Table 3, we find, as expected, that *Redrawn* is positive and significant. Compared to same-incumbent and open seat voters, redrawn voters are more likely to roll off in House contests ($p < .05$). Setting the other variables at their mean values, the roll-off probabilities are 0.04 for same-incumbent and open seat voters and 0.11 for redrawn voters. In other words, roll-off is more than twice as likely among redrawn voters as all others. For the second model, which includes only contested districts with an incumbent seeking reelection, *Redrawn* remains significant ($p < .10$). Holding the control variables at their mean values, the probability that a same-incumbent respondent abstains from voting for the House is 0.04, compared to 0.09 for a redrawn respondent. Again we find strong support for Hypothesis 2—redrawn voters are less likely to vote in House contests.

Finally, in the third model, with inclusion of *Recall Incumbent*, it is no longer the case that redistricting directly affects voter roll-off. Rather, as predicted by Hypothesis 2a, the relationship is mediated by a lack of familiarity with the incumbent, and thus an increase in information costs. *Recall Incumbent* has a strong and significant effect on the likelihood of rolling off ($p < .01$). With the other variables at their means, the probability of House roll-off is 0.08 for respondents who could not recall their incumbent's name versus 0.01 for respondents who could. There was almost no chance that respondents would abstain if they were able to recall the name of their House incumbent, a scenario that is much less likely for redrawn than same-incumbent voters.

In sum, the findings at the individual level are robust and consistently supportive of our hypotheses: redistricting influences incumbent familiarity and roll-off in House elections. The limitation of these data is, of course, that they are based on self-reports of survey respondents, which are subject to error. Moreover, these results tell us little about roll-off rates in actual election returns, the phenomenon that speaks directly to whether redistrict-

TABLE 3 Redistricting and Voter Roll-off in the 1992 U.S. House Elections

	All Districts	Incumbent Contested Districts	
Redrawn	0.91* (0.51)	0.79† (0.54)	0.53 (0.54)
Total Candidate Spending	0.00 (0.00)	0.04 (0.07)	0.04 (0.07)
Competitiveness	-0.38† (0.26)	-0.70† (0.44)	-0.70† (0.43)
Recall Incumbent Name	-	-	-2.32** (0.67)
Contested District	-1.23* (0.58)	-	-
Open Seat	0.02 (0.60)	-	-
Days Surveyed since Election	0.00 (0.01)	0.01 (0.01)	-0.00 (0.01)
Democratic Candidate	-0.57* (0.32)	-0.61* (0.34)	-0.51 (0.37)
Black	-0.16 (0.49)	0.31 (0.56)	-0.07 (0.56)
Age	-0.02* (0.01)	-0.02* (0.01)	-0.02 (0.01)
Education	-0.15** (0.06)	-0.14* (0.07)	-0.10 (0.07)
Income	-0.01 (0.03)	-0.02 (0.04)	-0.02 (0.04)
Male	-0.33 (0.30)	-0.16 (0.30)	0.05 (0.32)
Married	-0.09 (0.37)	0.03 (0.43)	0.15 (0.41)
Partisanship	-0.24* (0.12)	-0.40** (0.15)	-0.35* (0.15)
Time in Residence	-0.20 (0.23)	-0.25 (0.26)	-0.22 (0.29)
Lives in South	0.95** (0.35)	0.91* (0.39)	1.09* (0.43)
Constant	3.52** (1.31)	2.74* (1.36)	2.41 (1.32)
Log Likelihood	-181.29	-142.59	-142.59
Pseudo R ²	0.11	0.13	0.21
N	716	575	575

Note: Data are from the 1990–1992 American National Election Studies (ANES) Full Panel File (ICPSR # 6230). Cell entries are logistic regression coefficients, with robust standard errors in parentheses. Dependent variable: 1 = voted for president but not for U.S. House, 0 = voted for president and U.S. House.
 ** $p < .01$; * $p < .05$; † $p < .10$ (one-tailed test).

ing affects participation on Election Day. To gauge these effects, we turn to an aggregate-level analysis.

Study 2: Aggregate-Level Analysis

We examine roll-off in a series of elections using data from the 2002–2006 U.S. House contests in Texas. We first compare overall roll-off rates in portions of the state that were redrawn with those that remained in districts with the same incumbent. We then specify multivariate models to control for other factors that could affect roll-off, such as district competitiveness and candidate spending, and examine the effects of successive redistrictings on participation rates.

We use data from Texas for two reasons. First, the state underwent three separate redistrictings prior to each election. This gives us three cases in which to examine the effect of redistricting on political participation while holding constant the geographic locale, the socio-economic status of the state's population, and other factors that could influence participation rates. Second, we are able to track voter roll-off in portions of the state that were redrawn before both the 2004 and 2006 elections, allowing us to determine whether successive redistrictings suppress participation in House contests above and beyond the effects of a single redrawing, something that is not possible in most other states.¹⁰

It is also worth pointing out that the design of the Texas ballot rules out an alternative explanation for any roll-off we find: voter fatigue. Some research has suggested that items toward the bottom of a ballot are less likely to be voted on than top-ticket items, because voters become weary as they work their way down the ticket (e.g., Darcy and Schneider 1989). The Texas ballot, however, places federal elections at the top, with the House race in the second position, immediately following the top federal race (president or U.S. Senate) for that year. Roll-off rates, then, are unlikely to be the product of voter fatigue.

Our unit of analysis is the voting tabulation district (VTD), of which there are roughly 8,000 in the state of Texas.¹¹ A VTD is similar to a precinct but carries two important distinctions. As in a precinct, election returns are aggregated at the VTD level, but that information is also fused with VTD-level demographic data. This allows us to control for the racial/ethnic composition of each VTD, yielding a more rigorous analysis, while main-

TABLE 4 The Distribution of Redrawn, Same-Incumbent, and Open Seat Voting Tabulation Districts, 2002–2006 Texas U.S. House Elections

	2002	2004	2006
Redrawn VTDs	15.6% (1,314)	33.2% (2,868)	5.9% (506)
Same-incumbent VTDS	73.1% (6,161)	51.7% (4,470)	91.6% (7,916)
Open seat VTDs	11.3% (953)	15.1% (1,300)	2.5% (216)
Total	100% (8,428)	100% (8,638)	100% (8,638)

Note: Data are from the Texas Legislative Council. Ns of VTDs in each category are in parentheses.

taining a lower level of aggregation than in redistricting studies that rely on county- or district-level data (e.g., Winburn and Wagner forthcoming). Second, and more importantly, VTDs are the unit by which Texas' district boundaries are drawn and thus are almost never split by a congressional district line. This allows us to distinguish between VTDs that consist entirely of voters who have been redrawn into a district with a new incumbent and VTDs that consist entirely of voters who remain in a district with their same incumbent. In other words, within each VTD we refer to as “redrawn,” every voter in that VTD is facing a new incumbent. Though it does not eliminate the ecological inference problem (King 1997), that concern is ameliorated substantially. Since we know that every voter in a redrawn VTD has indeed been placed in a district with a new incumbent, we do not have to infer that some portion of the VTD was redrawn, while some portion was not.¹²

Before turning to the results, some background on the Texas redistricting saga is necessary. Each redistricting took place under different circumstances. In 2001, a federal court redrew the state's congressional boundaries after the state legislature, under divided partisan control, failed to agree on a plan. The resulting map did relatively little to alter the district lines and was, for the most part, an incumbent protection plan (McKee and Shaw 2005). As shown in the second column of Table 4, just 16% of Texas VTDs were placed into districts with new incumbents, while nearly three-quarters remained in the district of the

¹⁰Because the voting tabulation district boundaries used by the state of Texas were altered between the 2001 and 2003 redistrictings, we cannot track voters who may have been redistricted three times.

¹¹These data were compiled and provided to us by the Texas Legislative Council, the nonpartisan legal and research arm of the Texas Legislature.

¹²Four VTDs were split in the redistricting preceding the 2006 elections. Because we cannot identify which portions of the VTD ended up in new incumbent districts, we drop these cases from our analyses. Given that this represents less than one half of one percent of the VTDs in the state, their exclusion should not bias our findings.

incumbent they had before the 2000 Census. Eleven percent ended up in districts without an incumbent running for reelection.

The second redistricting took place in 2003 following the GOP's takeover of the Texas House, which gave the party control of the state legislature. At the urging of then-U.S. House Majority Leader Tom DeLay, the Republicans passed a plan to redraw the congressional district boundaries again, a map that ultimately netted the party five additional seats in the 2004 contests.¹³ The disruption of incumbents' districts in 2004 is apparent in Table 4, which shows that one-third of VTDs in the state were placed into districts with new incumbents. A slight majority remained in same-incumbent districts, and the remaining 15% were in open seats. Thus, a much larger number of voters faced elections involving unfamiliar incumbents than in 2002.

The final redistricting took place shortly before the 2006 midterms. A federal district court panel redrew the congressional boundaries for five Texas districts, arguing their configuration under the 2004 plan had violated portions of the Voting Rights Act. More than 90% of the state's VTDs were unaffected, but the reconfiguration of five districts¹⁴ caused a shift into new incumbents' districts for about 6% of the state's VTDs.

Forty-one percent (208) of these 506 VTDs were redrawn for the first time in 2006—that is, the areas had not been redrawn for the 2004 contests. The remaining 59% (298) had also been redrawn into new incumbents' districts for the 2004 elections. We refer to these VTDs as “re-redistricted.” But it is important to make the distinction between two groups within this subset of voters: those who in 2004 were placed in an unfamiliar incumbent's district before being returned in 2006 to their previous incumbent (41% of these VTDs), and those who in both 2004 and 2006 were redrawn into new, and unfamiliar, incumbents' districts (59% of these VTDs).

The distinction is important because the information costs for the two sets of voters in 2006 are very different. Consider the first category—those who were eventually returned to their previous incumbent. In 2002, a voter in this category might have been represented in District 21 by Republican Lamar Smith and then in 2004 was shifted into the 23rd District of Republican Henry Bonilla, an unfamiliar incumbent. But with the third redistricting, in

2006, the voter was returned to Smith's District 21, restoring the voter's familiarity with his or her incumbent, and enabling the use of the incumbency information shortcut.

In the second category, however, is a voter who, for example, in 2002 might have been represented by Republican Ron Paul in the 14th District. For the 2004 elections, the voter could have been redrawn into the 15th District, represented by Democrat Ruben Hinojosa. But rather than being returned to Paul's district in 2006, this voter instead was redrawn a second time, into Democrat Lloyd Doggett's 25th District.¹⁵ In contrast to the first voter, this voter's incumbent familiarity remains low for a second consecutive election, and it is among this group that we expect the costs of participation to be highest (Hypothesis 4).

We should also note that because a court ruling invalidated the March 2006 primary results that had been held under the previous map, an open “special election” in each of the five reconfigured districts was held simultaneously with the other midterms in November.¹⁶ This means voters in those congressional districts faced House elections with multiple candidates, rather than the typical dichotomous choice between a Republican and a Democrat. In each of the five districts, at least three candidates appeared on the ballot, and voters in two contests faced a choice among seven and eight candidates, respectively. We expect this choice environment may have increased information costs for both redrawn and same-incumbent voters, since the ballot lacked the simple designation of a party nominee in the House race. Thus, we control for the special election in the analyses below.

Roll-off Measure and Descriptive Results

As in the individual-level analyses, we use roll-off to gauge the effect of redistricting on participation in U.S. House contests. Our measure follows that employed by previous research (e.g., Wattenberg, McAllister, and Salvanto 2000)—the ratio of the number of House votes cast to the number of votes cast in the top race on the ballot.¹⁷ In 2002 and 2006, the U.S. Senate race in Texas was the top

¹⁵These are not the only scenarios for re-redistricted voters, but they represent examples of voters in the two different categories of “re-redistricted.”

¹⁶The special election is equivalent to the open primary held in Louisiana. There can be multiple candidates running under the same party label, and if a candidate wins a simple majority, he or she is elected. If no candidate wins a simple majority, then a runoff is held among the top two vote getters, regardless of party affiliation.

¹⁷An alternative measure would use as the denominator the total number of voters in each VTD who went to the polls. The roll-off

¹³The redistricting effort prompted a nationally publicized flight of the state legislature's Democrats to Oklahoma and New Mexico in an ultimately unsuccessful bid to stop the plan from being brought to a vote.

¹⁴The five reconfigured districts for the 2006 U.S. House contests were TX 15, TX 21, TX 23, TX 25, and TX 28.

item on the ballot; in 2004, the top item was the presidential contest. To account for differences in the voting-age population across VTDs, we calculate this measure as a proportion, and subtract it from 1. The subtraction from 1 is necessary to create a measure interpretable in terms of nonvoting—that is, the measure increases as the difference between the number of top-ticket votes and House votes increases. The measure is as follows:

$$1 - (\text{N of votes cast in U.S. House election} / \text{N of votes cast in top-ticket election})$$

For example, a VTD with 1,000 votes in the U.S. Senate contest and 900 votes in the U.S. House election has a 0.90 “full voting” rate, and a roll-off rate of 0.10. To ease interpretation, we translate this value into a percentage—10%. It should be noted that this measure can theoretically range from -100% to $+100\%$. If there are more House votes cast than Senate or presidential votes in a VTD, the measure takes on negative values. In more than three-quarters of the VTDs in 2002 and 2006, and in about 98% in 2004, the measure takes on positive values.¹⁸

Table 5 presents House roll-off rates for each election.¹⁹ We expect roll-off rates to be higher in redrawn VTDs than in same-incumbent VTDs (Hypothesis 3). In 2002 and 2004, the hypothesis is supported. The average roll-off rate in 2002 in redrawn VTDs was 8.2%, and just 6.2% in same-incumbent VTDs. In 2004, the difference

rate would then represent the proportion of citizens who turned out but did not cast a vote in the congressional contest, rather than a measure based on a comparison of top-ticket votes to House votes. We have run our analyses using the alternative measure in 2002 and 2004—the years for which we have the total number of voters in the VTDs—but the results are substantively unchanged. The overall rates of nonvoting are, of course, higher, but the effect of redistricting is the same—redrawn VTDs have higher levels of ballot roll-off. These results are available from the authors.

¹⁸The Texas Legislative Council reports VTD-level election returns only for Republican and Democratic candidates, so our roll-off measure represents the difference between the number of major-party votes in top-ticket and House elections. Since the frequency with which third-party candidates appear on the ballot is higher in Senate and presidential contests than House contests, this makes our measure a conservative one: we are not accounting for voters who prefer a third-party candidate in a Senate or presidential race but do not have the same opportunity to cast a third-party ballot in a House election. Because of that, it may be that roll-off is actually higher than we can estimate. We have also run analyses to examine whether the presence of third-party candidates on the ballot affects roll-off rates. We find no relationship.

¹⁹In each year, there is a relative handful (2–3%) of VTDs in which the number of votes cast exceeds the recorded voting-age population. These are most likely the result of clerical errors by elections officials in reporting their data to the Texas Legislative Council. But because we do not know whether it is the number of votes cast or the VAP that is incorrect in each case, we exclude these VTDs from our analysis. This is why the number of observations in the models in Table 6 is slightly smaller than the total number of VTDs presented in Table 4.

TABLE 5 U.S. House Roll-off Rates in Texas VTDs, 2002–2006

	2002	2004	2006
Redrawn VTDs	8.2%	8.6%	–
Redrawn in 2006 Only	–	–	4.1%
Re-redistricted back to Old Incumbent	–	–	7.4%
Re-redistricted with Two New Incumbents	–	–	16.1%
Same-incumbent VTDS	6.2%	8.3%	4.6%
Open seat VTDs	2.5%	11.7%	12.8% ^a
Total roll-off rate	6.1%	8.9%	5.0%

Note: Data are from the Texas Legislative Council.

^aAs described in the text, all of the open seat VTDs in 2006 are located in District 22, the seat vacated by Tom DeLay.

is slight, but redrawn VTDs have higher roll-off rates. In 2006, the picture is somewhat more complicated. Among voters redrawn for the first time in 2006, roll-off was 4.1%, slightly lower than the 4.6% in same-incumbent VTDs. The overall roll-off rate among all redrawn VTDs was 9.1%, but most of that comes from the two groups of “re-redistricted” VTDs. The “Re-redistricted back to Old Incumbent” VTDs had an average roll-off rate of 7.4%, and the mean roll-off rate in VTDs in the “Re-redistricted with Two New Incumbents” category was 16.1%, nearly four times that of same-incumbent VTDs. This finding provides support for Hypothesis 4, but because of the occurrence of the special election in 2006 described above, it is difficult to draw firm conclusions from these descriptive data.²⁰

We also examined the portion of VTDs in which the number of House votes exceeded the number of top-ticket votes—where the House election was of greater interest to voters than, for instance, the U.S. Senate race. We would expect a smaller percentage of redrawn VTDs to have such patterns of “roll-on” compared to the percentage of same-incumbent VTDs that fall into this category. If the information costs of casting a ballot for a House candidate are higher for redrawn voters, then the likelihood of their casting a ballot in the House race but not in a top-ticket contest should be low.

²⁰The high roll-off rate in the open seat category in 2006 is due to unusual circumstances in District 22, the seat vacated by Tom DeLay in June 2006 and which represented the only open seat in the state. Roll-off was high in those VTDs because in order to vote for the Republican candidate, voters had to write in her name, which presumably led many to abstain. We have also run the analyses in the article without the DeLay district, and the results are virtually identical.

This is what we find in every year. In 2002, more House than Senate ballots were cast in 29.8% of same-incumbent VTDs, but in just 11.9% of redrawn VTDs. While the raw totals are much smaller in 2004—just a handful of Texans failed to cast votes in the presidential contest—the pattern is the same: 2.1% of same-incumbent VTDs had more House votes, while just 1.7% of redrawn VTDs did. In 2006, the pattern is nearly identical to 2002—28.8% of same-incumbent VTDs saw more House votes than Senate votes cast, while just 12.3% of redrawn VTDs did. In combination with Table 5, these data provide more support for Hypothesis 3: roll-off rates are higher in redrawn VTDs than in same-incumbent VTDs.

Regression Analysis

Thus far, the descriptive statistics align with our expectations, though the 2006 patterns are not unequivocal. In this section we build on those results, presenting multiple regressions that lend further support to our claim that redistricting reduces participation rates in House elections among redrawn voters.

The dependent variable in each model is the roll-off rate in a VTD.²¹ To test whether roll-off is more likely among redrawn voters, our models include a dummy variable, *Redrawn*, coded 1 if the VTD was drawn into a district with a new incumbent, 0 otherwise. We include three variables to control for the information environment in a district—(1) the total amount of candidate

²¹As one might suspect, the dependent variable is not normally distributed. There are few observations on the left-hand side of the distribution (roll-on), a fair proportion on the right-hand side (roll-off), and a substantial number centered around 0 (indicating no or small amounts of roll-off). With such a distribution, it is possible that OLS regression could yield biased or inefficient estimates. To address this concern, we have run a separate analysis after transforming the dependent variable to create a more normal distribution. To do so, we have added 1 to the variable and then taken its log. The addition of 1 is necessary because of the large number of observations at 0, and taking the log of those observations would cause them to be dropped from the distribution. By adding 1, we lose in each year just a handful of cases (those that were at -1) and are able to create a logged variable. After transforming the variable, we have run the models presented in Table 6 with the new dependent variable and find that in all but one case, the effect of *Redrawn* on roll-off remains statistically significant. The dummy is insignificant in the first 2006 model. But we regard that as minimally problematic, since, for reasons explained in the text, the second 2006 model is the more properly specified regression. In that model, as well as the 2002 and 2004 models, the key variables remain significant. Because the results of these logged variable models are difficult to interpret—the dependent variable having lost its intuitive meaning—we present the standard models in the tables, with the assurance that the distribution of the dependent variable is not leading us to erroneous conclusions about the relationship between redrawn VTDs and roll-off rates.

spending, (2) a dummy, coded 1, if the district is contested between a Republican and Democrat, and (3) a measure for the competitiveness of the race. We also include a dummy for open seat races, since there are differences in roll-off rates (see Table 5) in these districts compared to same-incumbent and redrawn VTDs. We also control for the size of the minority population in each VTD. The measures are described in the appendix.²²

The second, third, and fourth columns of Table 6 present the results of the models. In each case, *Redrawn* is significant, indicating roll-off is higher in redrawn VTDs, with the magnitude ranging from 3% to 7%. Given the evidence from the individual-level model, this suggests that higher information costs associated with a lack of familiarity with the incumbent are leading redrawn voters to abstain from casting ballots in the House contest, even after controlling for a variety of other factors.²³

The significant effects of *Contested* support the perspective that information costs are central to the voting decision; contested races, where information is likely to be more plentiful, decrease roll-off. The absence of significance for *Total Candidate Spending* (with the exception of 2002) is perhaps surprising, but because this is a district-level variable, it is impossible to measure the extent to which candidates may be targeting redrawn voters in an effort to bring them to the polls.

The final column presents a model that parses out the effects in 2006 of the unusual circumstances created by that year's redistricting. We create dummy variables to identify three different categories of VTDs, each of which is likely to face different information costs. *Redrawn in 2006 Only* comprises VTDs that were redrawn in 2006 but had not been redrawn in 2004. *Re-Redistricted back to Old Incumbent* accounts for areas that were redrawn in 2004, and in 2006 were returned to their former incumbent's district. As in the descriptive data, we do not expect differences between this group and same-incumbent voters. *Re-redistricted with Two New Incumbents* identifies VTDs that ended up with new incumbents in both

²²We make two adjustments to the standard OLS model when we run the analysis. First, we weight the model by the voting-age population of the VTD in order to account for variations in the size of the VTDs. Second, just as in the individual-level models, we use Huber-White standard errors clustered on the congressional district to account for the fact that the models include measures at both the VTD and district level. Alternative model specifications that allow for dependence among the observations produce the same results.

²³The control variables reveal no dramatic surprises. Higher roll-off rates occurred in open seat contests and uncontested races. The absence of consistently higher roll-off in VTDs with larger minority populations runs counter to some research (e.g., Darcy and Schneider 1989) but is consistent with national data analyzed by Wattenberg, McAllister, and Salvanto (2000).

TABLE 6 Redistricting and U.S. House Voter Roll-off in Texas VTDs, 2002–2006

	2002	2004	2006	
Redrawn	3.06*	3.27**	7.16**	–
	(1.70)	(0.91)	(2.21)	
Redrawn in 2006 Only	–	–	–	–4.19
				(3.42)
Re-redistricted back to Old Incumbent	–	–	–	–2.33
				(1.68)
Re-redistricted with Two New Incumbents	–	–	–	7.86**
				(1.95)
Special Election	–	–	–	9.29**
				(2.21)
Total Candidate Spending	–0.07*	0.04	0.02	0.01
	(0.03)	(0.04)	(0.12)	(0.07)
Contested	–22.59**	–26.15**	–21.76**	–23.52**
	(1.51)	(1.98)	(1.68)	(1.40)
Competitiveness	0.11	–1.50	–3.30	–3.71
	(0.30)	(0.83)	(4.94)	(2.79)
Open Seat	2.99**	3.92*	17.17**	19.30**
	(0.58)	(1.57)	(6.00)	(3.84)
% Black VAP	0.03	–0.10	–0.05	–0.04
	(0.03)	(0.06)	(0.03)	(0.03)
% Hispanic VAP	0.01	0.02	0.01	–0.02
	(0.03)	(0.02)	(0.03)	(0.02)
% Other VAP	0.32*	0.18	0.09	0.10
	(0.15)	(0.10)	(0.09)	(0.08)
Constant	21.49**	29.19**	26.24**	28.16**
	(2.37)	(2.24)	(4.77)	(3.11)
Adjusted R ²	0.66	0.69	0.56	0.64
N	8,198	8,380	8,363	8,363

Note: Data are from the Texas Legislative Council and compiled by the authors. The dependent variable in 2002 and 2006 is U.S. House roll-off from the U.S. Senate contest. In 2004, the dependent variable is U.S. House roll-off from the presidential contest. Models are weighted by the size of the voting-age population of the VTD. Cell entries are least squares regression coefficients, with robust standard errors in parentheses.

**p < .01; *p < .05 (one-tailed test; VAP variables reflect two-tailed test).

successive redistrictings, as described earlier. This is the group in which we would expect to see the most abstention. Finally, we also include a dummy variable to identify VTDs in the five congressional districts with a *Special Election* because of the unusual ballot choices these voters faced.

The results reveal two important effects. First, *Re-redistricted with Two New Incumbents* shows that roll-off among these voters was 8% higher than among same-incumbent VTDs. It is likely that, having found themselves facing a new incumbent for the second straight election, a significant number of voters decided to leave blank their choice in the House contest. The effect, which confirms Hypothesis 4, suggests that when multiple re-

districtings occur in a short period of time, this can have deleterious effects on participation in congressional elections. Citizens who are redrawn twice into new incumbents' districts may simply throw up their hands and not vote. The absence of significant effects for voters who were redrawn back to their previous incumbent bolsters our argument as well: with the incumbency cue reinstated, information costs for these voters were minimally different from other citizens.

Second, the unusual circumstances of the special election, in which voters faced multiple candidates from the same party on the ballot, caused large numbers to abstain. Without individual-level data it is difficult to explain precisely why the special election had such an effect, but

we speculate that the absence of a single nominee from each party played a central role. The primary process serves to narrow voters' alternatives to a dichotomous choice between a Republican and a Democrat, simplifying the vote calculus. Voters in the special election in 2006 instead were forced to choose among as many as eight candidates, none of whom carried the distinction of being the lone designee of their party. Without the designation of an official party representative, the party cue was severely reduced in value, raising information costs and likely leading to abstention. Since this was true for all voters in the five affected congressional districts, the information costs we have argued beset redrawn citizens were somewhat equalized across both sets of voters in 2006. This is likely why we find no independent effect of *Redrawn in 2006 Only*. It was not that these redrawn voters in 2006 had lower information costs, but that same-incumbent voters' information costs were increased because of the special election.

Conclusion

We began our empirical testing by examining the micro-foundations of our theory: the hypothesized relationship between redistricting and incumbent familiarity, and its subsequent effects on voting in U.S. House elections. The individual-level analysis found that redrawn voters are half as likely to know the name of their incumbent and, consequently, less likely to vote in the House race. Knowing the incumbent's name means that a voter is almost guaranteed to cast a ballot, but a citizen who is not familiar with his or her representative has an 8% chance of abstaining. Faced with higher information costs, voters who have been redrawn are significantly less likely to participate in House contests.

The survey results were confirmed by our analysis of returns from the 2002–2006 U.S. House elections in Texas, each of which followed a congressional redistricting. We found roll-off in each year to be significantly higher in portions of the state that had been redrawn, with the effects ranging from 3% to 7%. Even in the midst of the unusual special election of 2006, in those areas where voters, having been re-redistricted with two new incumbents, incur back-to-back increases in information costs, the increase in roll-off attributable to redistricting was eight percentage points. The data are clear: redistricting suppresses congressional election participation among redrawn voters.

It could be argued that the differences are inconsequential. Because most U.S. House elections are uncompetitive, the abstention of 8% of redrawn voters is

likely to affect the outcome in only a handful of contests. If redistricting reduces the number of votes cast, but the same candidates are elected, the political relevance of uneven abstention rates, some might suggest, is questionable. Though we disagree with that characterization, it is worth pointing out that the size of these effects is smaller than they might be in most of the nation. Texas is one of just 17 states to offer a straight-ticket option, allowing voters to mark a single item at the top of the ballot that allocates their vote in every contest to the Democratic or Republican candidate.²⁴ Straight-ticket voters cast ballots with no roll-off, even if they know nothing about some races. Wattenberg, McAllister, and Salvanto (2000) estimate that the straight-ticket option reduces roll-off by about 2%. More importantly, the absence of a straight-party option exacerbates the differences in roll-off between the most and least informed segments of the electorate (see Feig 2007; Walker 1966), and because of redistricting, redrawn voters are disproportionately likely to fall into the latter category. In the vast majority of states, where straight-ticket voting is not possible, the differences in House voting among redrawn and same-incumbent voters are likely to be larger than what we find in Texas.

To be sure, redistricting carries many benefits for the political system. By disrupting district boundaries and severing constituents from long-time, entrenched incumbents, reapportionment boosts competitiveness in House contests (e.g., Abramowitz, Alexander, and Gunning 2006; Brunell 2008; Galderisi 2005; Mann and Cain 2005; McDonald 2007; Oppenheimer 2005). It attenuates the incumbency advantage (Ansolabehere, Snyder, and Stewart 2000; Desposato and Petrocik 2003) and provides an opening for potential challengers who otherwise might not emerge (Carson, Engstrom, and Roberts 2006; Hetherington, Larson, and Globetti 2003). Electoral responsiveness is enhanced (Gelman and King 1994), because more competitive elections provide more meaningful choices for voters and a closer approximation of the ideal of democracy (though see Brunell 2008). But the abiding focus in the redistricting literature on competitiveness and electoral outcomes has obscured the participatory effects we identify here, which deserve attention.

We are not suggesting that redistricting's benefits are outweighed by the participatory costs. But advocates of substantial disruptions to district lines in pursuit of competitiveness should recognize the trade-offs associated

²⁴This figure comes from the National Conference of State Legislatures (see http://www.ncsl.org/programs/legismgt/elect/straight_ticket.htm).

with those redrawings. In attenuating the incumbency advantage, redistricting also raises information costs for citizens, which, as we show, leads to higher abstention rates. The more disruptive the plan, the more unequal the cost of voting between redrawn and same-incumbent constituents. The decision about whether to advocate more competitiveness or more participatory equality turns on a judgment about which is more important, but this trade-off should, at a minimum, be acknowledged. More disruptive plans may produce more competitive elections, but they also may cause more slack in the connection between the people's voice and the politicians who represent them.

The institutionally induced effects we find are, of course, subject to contextual variation, and more research is necessary to determine how redistricting's impact on roll-off may vary. We suggest two potential areas of inquiry. Targeted campaign activity and mobilization—both by candidates and interest groups—could lower information costs for redrawn voters. Future work designed to parse out these effects would help clarify the circumstances under which redistricting's participatory consequences are likely to be most pronounced. In addition, just as the existing literature has found that African Americans are more likely to abstain from down-ballot elections (e.g., Darcy and Schneider 1989), it may be that those effects are amplified or suppressed when blacks are redrawn out of, or into, districts with black incumbents. Research could also explore whether similar patterns are found among Latinos and other ethnic groups. Depending on the circumstances, redistricting could serve to exacerbate or reduce existing inequalities in the American electoral system.

Given our findings, we think that the growing prevalence of mid-decade redistricting is troubling because it systematically discriminates against redrawn voters, in many cases solely as part of an effort to expand congressional majorities or consolidate party strength. Broadly put, we would agree with Walker's statement that "a system which makes full participation in public decision-making difficult and which eliminates helpful cues to rational choice is not likely to contribute to the development of a mature, responsible, democratic citizenry" (1966, 463). With the possibility of more frequent redistrictings looming on the horizon, it is important for scholars to consider the participatory repercussions of boundary changes. While the effects of redistricting on roll-off are unavoidable—any redrawing of lines will lead to an increase in information costs for some voters—they cannot continue to go unnoticed.

Appendix

Variable Information

Table 2

Dependent Variables

Recall incumbent: 1 = recall, 0 = cannot recall

Recognize incumbent: 1 = recognize, 0 = cannot recognize

Recall challenger: 1 = recall, 0 = cannot recall

Recognize challenger: 1 = recognize, 0 = cannot recognize

Independent Variables

Redrawn: 1 = redrawn into new incumbent's district, 0 = not redrawn into new incumbent's district

Days Surveyed since Election: minimum = 1, maximum = 74

Total Candidate Spending: Sum of Democratic and Republican spending totals, scaled by \$100,000 (data gathered from the Federal Election Commission)

Democratic Candidate: 1 = Democrat, 0 = Republican

Black: 1 = respondent is Black, 0 = otherwise

Age: minimum = 19, maximum = 91

Education: 18 categories of highest level of attainment, scaled low to high

Income: 24 income categories, scaled low to high

Male: 1 = male, 0 = female

Married: 1 = married, 0 = otherwise

Partisanship: 1 = pure independent, 2 = independent leaner, 3 = weak partisan, 4 = strong partisan

Time in Residence: 0 = less than six months, 1 = over six months to a year, 2 = over a year to two years, 3 = three years or more

Lives in South: 1 = lives in one of the 11 former Confederate states (AL, AR, FL, GA, LA, MS, NC, SC, TN, TX, and VA), 0 = otherwise

Competitiveness: 1 = safe seat, 2 = favors one party, 3 = leans toward one party, 4 = no clear favorite (Congressional Quarterly's measure of district competitiveness)

Table 3

Dependent Variable

Roll-off: 1 = voted for president but not for House, 0 = voted for both president and House

Independent Variables

Contested District: 1 = seat is contested by both Republican and Democratic candidates, 0 = otherwise

Open Seat: 1 = no incumbent running for reelection, 0 = otherwise

Recall Incumbent Name: 1 = recall, 0 = cannot recall

Rest of variables same as Table 2.

Table 6

Dependent Variable

Voter roll-off: 1 = (N of votes cast in U.S. House election/N of votes cast in top-of-ballot election)

Independent Variables

Redrawn: 1 = VTD was redrawn into a district with a new incumbent, 0 = otherwise

Redrawn in 2006 Only: 1 = VTD was redrawn into a district with a new incumbent in 2006 but not in 2004, 0 = otherwise

Re-redistricted back to Old Incumbent: 1 = VTD was redrawn into a district with a new incumbent in 2004 and was drawn back into the district of the former incumbent in 2006, 0 = otherwise

Re-redistricted with Two New Incumbents: 1 = VTD was redrawn into a district with a new incumbent in both 2004 and 2006, 0 = otherwise

Special Election: 1 = VTD was included in congressional district with a special election in 2006, 0 = otherwise

Total Candidate Spending: Sum of Democratic and Republican spending totals, scaled by \$100,000

Open Seat: 1 = no incumbent running for reelection, 0 = otherwise

Contested: 1 = seat is contested by both Republican and Democratic candidates, 0 = otherwise

Competitiveness: 1 = safe seat, 2 = favors one party, 3 = leans toward one party, 4 = no clear favorite (Congressional Quarterly's measure of district competitiveness)

% Black VAP: minimum = 0, maximum = 100

% Hispanic VAP: minimum = 0, maximum = 100

% Other VAP: minimum = 0, maximum = 100

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