

# African American Turnout in Majority-Minority Districts\*

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## Abstract

The 1965 Voting Rights Act has been a central part of Federal efforts to increase minority participation in the U.S. The latest phase of enforcement under the Voting Rights Act has been the creation of majority-minority Congressional districts. To fight vote dilution, these districts are drawn so that a majority of the voting age population are minorities. One open question about minority-majority districts is whether they increase citizen participation in the form of turnout. While much of the empirical literature on this question has produced inconclusive answers, recent studies suggest that residing in one of these districts can significantly increase minority turnout. We argue that much of the variability in these findings can be attributed to the different design choices of previous researchers. In this study we address the weakness of previous research designs and offer a new design that exploits the redistricting process to gain additional leverage on this question. Unlike previous research, our design accounts for possible variation in treatment specification by ensuring that voters who were moved into minority-majority districts through the redistricting process are comparable to voters that remained in existing districts. Our use of the redistricting process also allows us to correctly model the selection process that leads voters to be moved into minority-majority districts. We find little evidence that minority voter turnout increases when minority voters are moved into these districts.

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Since its passage, the 1965 Voting Rights Act has outlawed discriminatory practices responsible for disenfranchising African Americans and language minorities (Latino Americans in particular) in many parts of the country. Not only has the Act effectively done away with blatantly discriminatory restrictions on minority voting such as literacy tests but provisions of the Act have also resulted in the creation of majority-minority congressional districts that many have suggested are vital to the continued protection of African American and Latino electoral participation. While, advocates of majority-minority districts as well as many members of the courts view the creation of such districts as effective tools for increasing minority electoral participation, the exact impact of these districts on registration and turnout rates among minorities remains unclear. Efforts by social scientists to assess the effects of living in majority-minority districts on minority electoral participation have produced somewhat mixed results, with the bulk of these studies observing only slightly higher rates of voter turnout among those African Americans who reside in these districts compared to those who do not.

In this paper we will revisit the question of, “do majority-minority districts increase African American electoral participation,” and offer a new research design that leverages the redistricting process in a way that accounts for many of the analytical challenges (i.e., problems with selection effects, variation in treatment specification and treatment effect heterogeneity) that have plagued previous researcher’s efforts. By focusing on the effects of majority-minority districts on those who were moved, through the redistricting process, from a non-majority-minority district to a majority-minority district we are able to offer a more precise test of how these districts affect individual level electoral behavior. We find strong evidence to suggest that residing in a majority-minority district has little or no effect on African American voter turnout. In fact, in some cases moving from a non-majority-minority district to a majority-minority district appears to decrease in African American voter turnout. We also examine turnout rates for white voters that are also moved and find similar patterns. We conclude that while the creation of majority-minority districts

has significantly increased representation of minorities in Congress, these special electoral districts appear less effective at inspiring continued African American involvement in the electoral process.

## 1 Minority Turnout and Majority-Minority Districts

The creation of majority-minority Congressional districts is an advanced phase of minority voting rights protection under the Voting Rights Act (VRA). Early efforts under the VRA focused on increasing registration rates among African Americans particularly in covered jurisdictions in the American South. Only three years after the passage of the VRA, black voter registration rates in the South increased by over 30% and black voter turnout in the South increased by about 18% (Bullock and Gaddie 2009). As registration rates among African Americans grew quickly, Southern resistance often came in the form of vote dilution via redistricting efforts, switching from single member to multi-member districts, or annexation of white areas. Efforts by the Justice Department to combat these tactics stalled due to the Supreme Court's ruling in *Mobile v. Bolden* which established that claims of racial discrimination under the VRA must prove intent to discriminate on the basis of race (Issacharoff, Karlan and Pildes 2007). In 1982, however, Congress amended section 2 of the VRA, which removed intent to discriminate as a criterion for proving vote-related discrimination. With the newly amended VRA and the Supreme Court's ruling in *Thornberg v Gingles* in 1986, which barred vote dilution under redistricting even if one could not prove discriminatory intent, enforcement of the VRA began to shift away from a strict focus on legal and physical barriers to challenges aimed at state and local institutions that diluted minority voting strength (Issacharoff, Karlan and Pildes 2007). Many states were now required to create majority-minority Congressional districts in order to achieve preclearance from the Justice Department. The creation of a series of majority-minority districts, following the 1990 census, resulted in a second wave of blacks elected to the U.S. Congress. From the late 1980's to the mid-1990's the percentage of blacks elected to Congress increased by

roughly 80%, with the bulk of the new additions coming from Southern states where explicit majority-minority districts were created.

While increasing turnout was not an explicitly stated goal under the 1982 amendment to the VRA and *Thornberg v Gingles*, an influential study by Bobo and Gilliam (1990) provided reason to suspect that majority-minority Congressional districts might increase minority turnout. Bobo and Gilliam (1990) found that African Americans in cities with African American mayors displayed higher rates of political efficacy and participation than African Americans in cities with white mayors. One explanation for this finding was a theory of racial political participation known as empowerment, which states that when an office holder shares the citizen's race this generates a psychological benefit that increases political participation (Bobo and Gilliam 1990; Gilliam 1996; Gilliam and Kaufman 1998). More specifically, it is thought that a heightened sense of political empowerment occurs when minorities live in places where they witness political power held by members of their racial in-group (Barreto, Segura and Woods 2004; Bobo and Gilliam 1990; Browning, Marshall and Tabb 1984; Gilliam and Kaufman 1998; Leighley 2001). Here, a co-racial or co-ethnic candidate in political office sends a signal to the minority group that they have a stake in the political process and can influence policy. While originally tested using mayors, the theory has been extended to minorities who live in majority-minority districts created under the VRA (Barreto, Segura and Woods 2004). Thus, it is thought that racial minorities living in majority-minority districts will exhibit higher levels of turnout than those who do not.<sup>1</sup>

Of course, empowerment may not be the only possible mechanism that might explain why

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<sup>1</sup>It is important to note that the original empirical theory of minority empowerment, as described by Bobo and Gilliam (1990), focuses on the effects of black office holders specifically mayors on minority political participation - including but not limited to voting. Other research, however, focusses mostly on the effects of minority candidates on minority political participation and centers almost exclusively on turnout (Barreto, Segura and Woods 2004). While all of these researchers cite empowerment as motivation for participation none actually directly test the mediating effects of efficacy on participation. What is clear, however, is that both lines of empowerment research imply a similar conclusion: that witnessing in-group members either running for or holding office will likely result in increased political participation among racial minorities. Thus, the only question that remains is would we expect efficacy and consequently turnout to be different when a minority is running for office as opposed to holding office? Ultimately, this is an empirical question that to this point is untested and thus until it is, we would argue, that there remains very little reason to believe that there is any real conceptual distinction between the two flavors of empowerment.

minority turnout would increase in majority-minority districts. Minority candidates should view minority voters as a natural voting bloc that is easily mobilized. Under this mechanism, minority turnout may increase since minority candidates will have a strong incentive to turnout co-racial voters. As such, minority candidates may use targeted mobilization efforts aimed specifically at minority voters (Toure and Hamilton 1992).

While current theory has been devoted to understanding why we might expect an increase in minority participation, we would argue that there are plausible counter-arguments as well. Many elections may not be visible enough for minority voters to feel empowered. For example, the VRA has primarily focused on increasing representation in the U.S. House and state legislatures. Public ignorance of politics is well documented, and these offices may not be visible enough to engage citizens' interest. Moreover, the seats created under the VRA tend to very safe. The lack of competition may work to undermine voter interest, and candidates will have little need to expend efforts on mobilization or voter outreach. Finally, other research has found that empowerment may wear off after one or two election cycles and thus no longer mobilize minority voters (Gilliam and Kaufman 1998).

Despite expectations that majority-minority districts increase minority turnout, the empirical evidence has been mixed (Barreto, Segura and Woods 2004; Brace et al. 1995; Gay 2001; Griffin and Keane 2006; Tate 1991, 2003; Voss and Lublin 2001; Washington 2006; Whitby 2007). Some early work using precinct level data found little evidence of increased turnout (Brace et al. 1995; Gay 2001). Later studies such as Voss and Lublin (2001) used precinct level data in Florida and Georgia and did find higher turnout when a black congressional incumbent is on the ballot. Barreto, Segura and Woods (2004) find rather strong support for the idea that majority-minority districts have a positive net effect on minority turnout - in their case Latino turnout. Washington (2006) aggregates individual level data from across 20 years and hundreds of elections and also finds an increase in turnout among African Americans when there is an African American candidate.

One reason for the mixed results may be that the quantity of interest has been defined in

different ways. For the sake of brevity, we refer to the statistical quantity being estimated as the treatment. Primarily researchers have defined the treatment either in terms of majority-minority districts or minority candidates. For example, Brace et al. (1995) and Barreto, Segura and Woods (2004) define the treatment as residing in a majority-minority district with one or more minority candidate on the ballot. On the other hand, Gay (2001) defines the treatment as an African American candidate for the U.S. House. She pools both candidates from districts created by the VRA and candidates from areas with large black populations. Washington (2006) defines the treatment as a black candidate for the U.S. House, Senate or governor. While Barreto (2007) defines the treatment as a Hispanic mayoral candidate. Thus some treatments may be stronger than others and thus easier to detect.

Second, there are methodological reasons that may account for these mixed results. None of the existing work has accounted for selection, the process by which voters are selected for treatment. As we explore below, there are systematic reasons why we should expect that voters in these districts systematically differ from voters outside of these districts. Unless we account for such selection effects, estimates from standard regression models will be biased (Heckman 1979). Finally, we must account for heterogenous responses to the treatment. That is, when voters are treated, they must respond in the same way for a statistical model to produce consistent parameter estimates. One existing study, for example, pools all House, Senate, and gubernatorial races from 1982 to 2000 (Washington 2006). Here, we have to assume that response to a House candidate is the same as the response to a Senate candidate. Even in Barreto, Segura and Woods (2004), where the type of office is constant it is possible that responses differ across congressional districts. Why does this matter? When there is response heterogeneity, least squares estimates of the treatment effect converge to a consistently estimated parameter, but this parameter does not represent a meaningful treatment effect (Angrist and Pischke 2009). With plausible theoretical arguments for and against the participatory effects of these districts, and a number of design issues at stake, considerable attention needs to be paid to the research design, so that a sharp test of the

theory can distinguish between these competing claims. We turn to research design issues next.

## 2 Research Design

Our basic research question is fairly simple but developing an answer to this question raises thorny statistical issues. These issues require a carefully developed research design before we can have much confidence in any answers that we might provide. In our study, as in any study, we face a trade-off between internal and external validity. By internal validity, we mean the credibility of the estimates of the causal effect of interest, and by external validity we mean the generalizability of the causal effect to other populations. Our design seeks to maximize internal validity, but this must be done at the expense of external validity. As the reader will see, we focus on local populations in Georgia and North Carolina that we think are more comparable. Thus we must limit our inference to specific areas in these two states. We think this limitation is worth the gain in internal validity.

To understand the issues that we face, we start with some basic notation.<sup>23</sup> Let  $D_i \in \{0, 1\}$  be an indicator of treatment that is 1 if the individual is in a majority-minority district and 0 otherwise and  $Y_i \in \{0, 1\}$  records whether an individual votes or not. We define the average causal effect as  $E[Y_i|D = 1] - E[Y_i|D = 0]$ . Of course for  $E[Y_i|D = 1] - E[Y_i|D = 0]$  to be a valid estimate of the causal effect of the treatment  $D_i$ , we need to be confident that  $E[Y_i|D = 1] = E[Y_i|D = 0]$  *before*  $D = 1$  goes in to effect. In our context, we need this to be true *before* the creation of a majority-minority district. In other words, we need to identify a good counterfactual for African American voters in the majority-minority districts, since we know that voters are not randomly selected by state legislators for inclusion in these districts.

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<sup>2</sup>Our outline here is based on the potential outcomes framework from the treatment effects literature (Holland 1986; Rubin 1974, 1990). Here, we imagine that for each individual  $i$ , there exists a pair of potential outcomes:  $Y_i(1)$  for what would occur if the individual were exposed to the treatment and  $Y_i(0)$  if not exposed. In this framework, we define the causal effect of the treatment as the difference:  $Y_i(1) - Y_i(0)$ . The fundamental problem is that we cannot observe both  $Y_i(1)$  and  $Y_i(0)$ . Instead we must estimate average effects of treatments over populations:  $E[Y_i(1) - Y_i(0)]$  or  $E[Y_i|D = 1] - E[Y_i|D = 0]$ .

<sup>3</sup>In the analyses that follow, we actually estimate average treat on the treated:  $ATT = E[Y_i(1) - Y_i(0)|D_i = 1]$ .

In fact, it might be the case that state legislators draw boundaries to perhaps include African American subpopulations that are more or less likely to vote. For example, assume state legislators believe that the creation of a majority-minority district creates a safe Democratic seat while perhaps making other districts more competitive for Republican candidates. Let's further assume that legislators must select one of two counties both of which are 40% black for inclusion into the majority-minority district. In county 1, African American turnout averages 60% while in county 2 African American turnout averages 40%. If legislators are trying to create a safe Democratic seat, county 1 is much more likely to be included in the district rather than county 2 since this will further aid in the creation of the safe Democratic seat. Selection of this type makes it unlikely that  $E[Y_i|D = 1] = E[Y_i|D = 0]$  holds and thus invalidates  $E[Y|D = 1] - E[Y|D = 0]$  as an estimator of the causal effect.

If we assume that selection has occurred in the process of drawing majority-minority districts what can we do? First, we must rule out any design that does not have a longitudinal component. With a longitudinal design, we can at least compare turnout behavior before the creation of any majority-minority districts in question. This will serve as an important validity check on our counterfactual. If we find that turnout differed before the treatment goes into effect, we will need some further adjustment strategy.

One possibility is to collect data on (pre-treatment) variables that potentially confound treatment status and the outcome. One might use this data with either matching estimators or regression models to adjust for these confounders. Once the observed differences (in these confounders) between the treatment and control groups have been taken into account, we can estimate causal effects. This strategy requires an additional assumption that is sometimes referred to as “selection on observables” (Barnow, Cain and Goldberger 1980).<sup>4</sup> Under this assumption, the researcher asserts that all relevant variables that predict treatment are observed by the researcher. In statistical terms, we must assume that we have perfectly specified models for both turnout and selection into the treatment. Undoubtedly, this is

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<sup>4</sup>Other names for this assumption include “conditional ignorability” and “ignorable treatment assignment.”

a very strong assumption that we wouldn't expect to be true in general. We exploit the redistricting process after the 2000 Census as strategy for satisfying this assumption.

## 2.1 Redistricting

Our research design builds on other uses of redistricting to estimate the effect of incumbency advantage (Ansolabehere, Snyder and Stewart 2000; Sekhon and Titiunik 2011). Specifically, we utilize a research design based on redistricting first developed by Sekhon and Titiunik (2008) and utilized to also study Hispanic turnout (Sekhon, Titiunik and Henderson 2010). In this design, we use a simple comparison created by redistricting: we compare African American voters that after the 2000 Census are moved into a majority-minority district to African American voters that remain with a white Member of Congress. To help the reader understand how we use redistricting, Figure 1 contains a map of one of the areas we study in North Carolina. In this example, some voters were moved from the 5th district represented by Republican incumbent Brad Miller to the 12th district represented by African American incumbent Mel Watt around the city of Winston-Salem in Forsyth county North Carolina. In this case, we have a number of precincts that move from the 5th district to the 12th. Voters in the precincts that move are our treated voters as they are moved into a majority-minority district with an African American representative for the first time. For these voters, the House candidate changes, but all voting costs are held constant as polling places remain the same. Other work has shown that if the cost of voting increases in terms of moving the polling place, turnout will decrease (Brady and McNulty 2011). To that end, we ensured that the voters in our study did not face any change in their polling location after redistricting. Voters that remain in the 5th, we use as controls as they remain under a white incumbent. These voters are suitable controls since they share a similar voting history and for them nothing changes after redistricting. We do not use any voters that are already in the 12th district in the analysis, since Sekhon and Titiunik (2011) prove this comparison requires additional assumptions for identification. The appendix contains similar figures for

the other geographic areas included in our study.

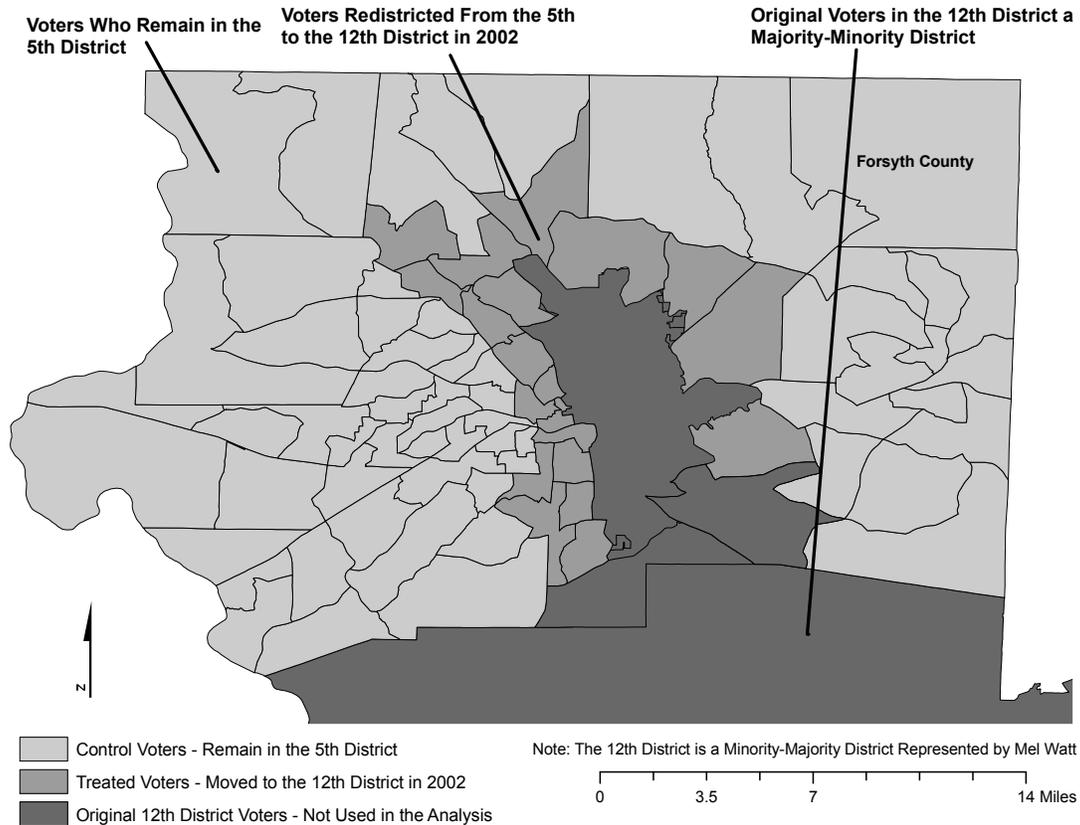


Figure 1: Change in district boundaries for House Districts 5 and 12 from 2000 to 2002

Note: Precincts are moved from the 5th district represented by white Republican incumbent Brad Miller to the 12th district represented by Democratic incumbent Mel Watt, an African American. Both won easily in 1998 and 2002. All voters reside in Forsyth county North Carolina.

A design based on redistricting provides us with a number of advantages. First, when analysts believe that selection has occurred and wish to account for it, they must ask themselves who are the decision makers in charge of selection and what criteria did they use in the selection process (Rubin 2008)? In the redistricting process, we are able to identify the decision makers in the selection process as state legislators. Moreover, we can know the criteria by which state legislators select geographic areas into Congressional districts. That is state legislators have access to census data on measures like race, education and income

as well as voter and election data like registration levels, turnout rates, and vote returns. Recent media reports note that legislators pay particular attention to presidential vote share as measure for drawing district lines (Cooper and Medina 2011). As such, we have good reason to believe that the specification of our statistical models will be nearly correct since we can simply model the selection process that occurs when states redistrict. Moreover, as Sekhon and Titiunik (2011) note another strength of designs based on redistricting is that district boundaries are drawn by public officials, not voters. Thus, redistricting shares an important aspect of experiments: the individuals in charge of assigning treatment are separate from the population that receives the treatment. As such, while state legislators rely on observable measures such as as vote share, and census variables, they do not consider any individual-level characteristics of voters that are not available to us. Importantly, this implies that unobservables should not play an important role in the selection process. In short, redistricting increases the credibility of our design since it gives us confidence that once we condition or control for observable characteristics, units may be comparable in terms of their unobservable characteristics as well.

Second, under redistricting we can exactly pinpoint the timing of the process. This allows us to compare turnout levels between those moved into a majority-minority district and those left behind *before* voters are moved. This will allow us to exploit something called a placebo test to assess the quality of our counterfactual and understand the role of statistical adjustment in the creation of our counterfactuals. Causal theories do more than predict the presence of an effect; they also predict the absence of an effect in the absence of treatment. For example, if we compare turnout before redistricting and find that turnout levels differ, any post-redistricting effects are suspect. Thus, for any statistical model we develop, we apply it before redistricting occurred to ensure there is no difference between those who are later moved into the majority-minority district and those that remained behind after redistricting.

## 2.2 The Estimand and Other Design Issues

We now address a number of issues that arise both from the use of redistricting and the study of turnout in majority-minority districts. First, we consider the estimand: the quantity being estimated in our research design. The estimand depends directly on how we define  $D_i$ . As we noted above, definitions of  $D_i$  have varied significantly in the extant literature. While it may be possible to separate the effect of African American candidates and whether the district is majority-minority or nearly majority-minority, we assume the two are fused and impossible to separate. For our study, the treatment is being moved into a majority-minority district with a African American candidate for the U.S. House.<sup>5</sup> Formally,  $D_i = 1$  for voters that are moved from a white incumbent to a African American Democrat in a majority-minority district. Our estimand is narrow, but it is also well defined.

One thing we cannot control in our design is the electoral environment that occurs in the two districts after redistricting. Clearly, the treated voters have been moved to a new Congressional district while the control voters remain in a district with a different campaign. We would prefer the campaigns in the two districts to be identically competitive in terms of mobilization and political interest. The key worry is that a competitive election in the control district may cause African American voters to turnout at unusually high rates which would then obscure any increase in turnout by voters that have moved to the majority-minority district with an African American candidate. Of course, this problem is endemic to the research question. In any design based on redistricting, a counterfactual comparison has to be made across two different Congressional districts where different elections occur simultaneously. In general, we seek to account for this concern by using areas where voters are moved from one uncompetitive environment to another. That is, we specifically look for areas where voters move from a district with a white Republican candidate who wins easily and has done so for sometime. Thus we can contrast voters facing a white Republican

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<sup>5</sup>Our treatment is quite similar to that in Barreto, Segura and Woods (2004) except that they also make comparisons at the level of the state legislature. We only focus on the U.S. House and hold state offices constant by making sure they generally match across treated and control areas.

candidate who is expected to win easily with voters who now have a chance to vote for an African American candidate in an equally uncompetitive election. Below we provide summaries of the ex-post electoral environment for each area that we study.

In some cases, we will compare voters from entire counties that are moved into a majority-minority district to voters in counties that were not moved. In other instances, we will focus on a single county where some precincts from that county are moved from a district with a white candidate to a majority-minority district with a African American candidate or incumbent. We designate this second design as a within-county design since county is held constant. Where possible, we attempt to use within-county designs. That is we attempt to hold county constant if possible. The reason we prefer the within-county design is that in many states, especially in the South, election administration is done by county governments. Thus some county governments may make it more difficult or easier to vote depending on the number of polling locations used or the number of voting machines at each polling location. In the within-county design, factors of this type will be held roughly constant.

It is also possible that there may be some time lag to the treatment effect. That is, there may be some delay before the representative can publicize himself or herself via casework or town meetings in these newly added areas. If so, voters may not be fully aware of having been moved into a district with minority representation at the first election. To account for this, we estimate effects for two to three elections after redistricting occurs. This allows us to observe any possible delay in the onset of the treatment. Finally, we must account for heterogenous treatment effects. That is, it might be the case that the effect of African American representation in majority-minority districts differs from district to district. For example, it may be the case that in urban areas with higher levels of socio-economic status, African American voters are more likely to be empowered by this new form of representation. We account for heterogeneity by looking at districts in separate analyses. We are unable to examine every district, but we select a representative set of districts for our study. We now turn to the states and districts that we selected for our investigation.

## 2.3 Redistricting Case Selection

Data availability for the majority-minority districts created after the 1990 census is poor. To that end, we focus on voters that are moved into these existing districts after the 2000 census. While we cannot, then, directly examine behavior after the creation of these districts, if the empowerment theory holds that should not matter. Table 1 contains a list of the districts that were created after the 1990 census along with descriptive measures from the 2000 census. As we outline below, we focus on districts in Georgia and North Carolina. We found data availability and reliability to be highest in these two states. These states also allowed us to examine districts that range from rural and suburban to urban.<sup>6</sup>

Table 1: Majority-Minority Districts Created Under Voting Rights Act Preclearance After the 1990 Census

State	District	% Black	% HS Degree	% College	Median Income	% Poverty	%Urban
Florida	3rd	49.0	71.3	12.9	29785	27.4	89.7
Florida	23rd	51.0	66.5	12.8	31309	27.4	97.9
<b>Georgia</b>	<b>2nd</b>	<b>44.5</b>	<b>70.3</b>	<b>13.9</b>	<b>29354</b>	<b>33.1</b>	<b>58.1</b>
Georgia	4th	53.0	85.4	35.9	49307	10.3	98.5
<b>Georgia</b>	<b>13th</b>	<b>40.6</b>	<b>77.8</b>	<b>19.4</b>	<b>43429</b>	<b>9.6</b>	<b>96.6</b>
Maryland	4th	56.6	86.3	32.7	57727	8.4	97.9
<b>N. Carolina</b>	<b>1st</b>	<b>50.6</b>	<b>69.2</b>	<b>12.0</b>	<b>28410</b>	<b>30.5</b>	<b>47.7</b>
<b>N. Carolina</b>	<b>12th</b>	<b>44.6</b>	<b>74.7</b>	<b>19.2</b>	<b>35775</b>	<b>21.8</b>	<b>88.5</b>
S. Carolina	6th	56.9	69.6	14.1	28967	30.5	48.0
Texas	30th	40.4	66.9	16.3	35612	24.2	98.8
Virginia	3rd	56.0	75.1	17.2	32238	26.1	92.2

Note: Districts in bold included in our analysis. Data are from the 2000 census.

### 2.3.1 North Carolina

North Carolina is somewhat famous or perhaps infamous for its redistricting in the 1990's. In that decade, North Carolina created two majority-minority districts: the 1st and 12th. The

<sup>6</sup>See the appendix for details on African American representation in the state legislature for our areas under study.

creation of these districts set off a series of lawsuits that took years to litigate (Issacharoff, Karlan and Pildes 2007; Bullock and Gaddie 2009). The redistricting process in 2000 created far less controversy. The shape of the two majority-minority districts stayed roughly the same which engendered much less litigation (Bullock and Gaddie 2009). Importantly, the population of North Carolina increased enough for the state to add one Congressional seat. The creation of this new seat changed the boundaries of several existing districts including those of District 1 and 12 the two existing majority-minority districts created in 1992.<sup>7</sup>

In North Carolina, we searched for areas where African American voters had been under white incumbents and were moved after 2000 into either Districts 1 or 12. We found two areas that met our criterion. First, we found that three rural counties: Chowan, Pasquotonk and Perquimans were moved from the 3rd district where Walter Jones, a white Republican, had held that seat since 1994 to District 1. This area is also useful since it allows us to observe when African American voters are not only moved into a majority-minority district, but one with a rare open seat. Before the 2002 election, Eva Clayton, an African American woman, held the seat in District 1 since 1992 announced her retirement. Four different candidates competed in the Democratic primary in the Spring of 2002. The winner of that primary, Frank Balance, went on to easily win the seat in the Fall of 2002.<sup>8</sup> For this district, we also include results from the 2002 primary. Figure 2 in the appendix contains a map that outlines the geographic change. The second area that we study is around the city of Winston-Salem. The center of Winston-Salem has been apart of District 12 since its creation in 1992. The map in Figure 1 demonstrates how precincts were moved in this case. Under the 2002 redistricting plan, a number of precincts around the Winston-Salem urban core were moved from the 5th district to the 12th. The 5th district seat was held by Richard

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<sup>7</sup>We should note that the litigation over many of these districts reduced the percentage of minorities in each district such that minorities were not a majority. For example, District 12 in North Carolina was nearly 60% African American when the district was first drawn. Once litigation ended, the district was nearly 45% African American. In general, however, Congressional districts that are more than 40% African American will tend to elect a African American to the U.S. House (Cameron, Epstein and O'Halloran 1996).

<sup>8</sup>Frank Balance, an African American man, later resigned due to criminal charges. His seat was filled in a special election by G. K. Butterfield who has held the seat ever since.

Burr a white Republican. For this analysis, we are able to restrict the analysis to Forsyth County and thus it is our preferred within-county design where all county level variation is held fixed. Note that Winston-Salem has never had an African American mayor.

One aspect that we cannot control is the elections that occur in the treated and control areas after redistricting. Our main concern is that one of the elections in the control areas is competitive which may cause an unusual increase in mobilization. In both cases in North Carolina, the post-redistricting campaigns were uncompetitive in both the treated and control areas. Table 14 in the appendix contains details on all post-redistricting elections in terms of vote margins and campaign spending.

### **2.3.2 Georgia**

Georgia already had a majority-minority district before 1992. Redistricting after 1990 added the 2nd and 4th as majority-minority districts. Georgia gained two Congressional seats after the 2000 census, and one of these newly created districts, the 13th, was drawn to be nearly majority-minority. The seat in the 13th district was won by David Scott a African American candidate in 2002. This district was largely created from parts of the three existing majority-minority districts. Georgia, like Texas, redistricted twice after the 2000 census. The first redistricting plan was drawn by a Democratically controlled state legislature. In 2002, however, the Republican party gained control of the state senate and governorship. Then in 2004, the Republican party captured the state house as well. With both the governorship and legislature under GOP control, state legislators proceeded to redraw the Democratic map created in 2002. On May 6, 2005, Governor Perdue signed into law the second redistricting plan since the 2000 census (Barone, Grant and Ujifusa 2005). Here, we only study voters that were moved between 2004 and 2006. We do this since we have better data for 2002 than 1998 thus giving us a better placebo test.

We study two of the four majority-minority districts in the state. Again we looked for geographic areas with substantial black populations that were moved from white incumbents to black incumbents. The large number of existing majority-minority districts made such

areas somewhat rare. That is many of the black voters that make up the newly drawn 13th district had an African American member of Congress before the 2002 redistricting. In the end, we examine two different areas. We first study when African American voters were moved from District 8, represented by Jim Marshall a white Democratic incumbent, to District 2 a seat held by Sanford Bishop, a black Democrat, who has held that seat since it was drawn to be a majority-minority district in 1992. We found only two counties, Peach and Dooley, where African American voters were moved from areas which had never had a African American representative into the 2nd District. Most of the changes to this district consisted of counties that were moved out of the district in 2002 and then were moved back in 2006. This was primarily a function of Democrats attempting to make the 8th District more competitive in their favor and Republicans moving African Americans back into the 2nd District to shift the map back in their favor for the 2006 election. Figure 3 in the appendix contains a map that outlines the geographic change in this area.

We next examine voters who are moved into District 13 represented by David Scott an African American Democrat in Cobb County after the redistricting in 2005. Cobb County after the 1990 redistricting process was split between the 6th and 7th Districts and was represented by Newt Gingrich until a special election in 1999 and Bob Barr another white Republican. In 2002, state legislators drew the map such that part of Cobb County remained in the 6th while the rest of the county was split between the 11th represented by longtime white Republican incumbent Phil Gingrey and the 5th represented by John Lewis an African American incumbent. The new plan drawn in 2005 left parts of Cobb County split between the 6th and the 11th districts but added a substantial portion of the county to the 13th District while the 5th District no longer covered part of the county. In our analysis, we compare voters in Cobb County who were moved into District 13 but before were part of either the 6th or 11th before 2005. We exclude any voters that were part of the 5th for the two elections where the county was included in that district. Using the changes to Cobb County has several advantages. First, it allows us to maintain a within-county design. The area

also represents a place where a suburban county shifted from a primarily white, conservative area to one with a growing African American population. Figure 4 in the appendix contains a map of the area along with the district boundaries.

Finally, we also found a unique opportunity to control confounding factors via design in Cobb County. State legislators split a number of precincts in Cobb County when they completed the redistricting plan in 2005. That is, they split precincts across two Congressional districts that make up the county. Of these split precincts, we found two precincts that were split across District 11 where Phil Gingrey the white Republican was the incumbent and District 13 where David Scott an African American Democrat was the incumbent.<sup>9</sup> Thus within these two precincts, some of the voters were in a House district with a white incumbent and some voters were able to vote for a black candidate for the first time in 2006. Thus we can compare black voters who were voting at the same location, but some were given ballots for a white candidate and some for a black candidate. This design allows us to hold all precinct level covariates constant and as such is superior to the within county design as a large number of factors are held constant by the design of the study. For voters in these precincts, we will simply adjust for the individual level covariates in the voter file.

In sum, we examine four different majority-minority districts each with different overall profiles. Both District 1 in North Carolina and District 2 in Georgia contain no large metropolitan areas and are by and large rural districts. The counties in these districts tend to be poorer and less well-educated. The part of District 12 in North Carolina that we examine mainly encompasses the Winston-Salem metro area, a longstanding Southern urban area with a core that is predominantly African American. The part of District 13 in Georgia that we examine, Cobb County, is predominantly suburban and has grown more recently with the rise of Atlanta. Here, the residents are largely well educated with high incomes. We think these four areas provide a reasonable representation of areas in the South with

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<sup>9</sup>Two other precincts were split across these districts as well, but these were precincts that before were part of the 5th District. Therefore 2006 would not be the first time African American voters had a chance to vote for an African American candidate.

African American voting blocs. Table 1 contains a profile of the districts created in 1992 along with the 13th district in Georgia. The data there underscore that the districts in our study are broadly representative of these districts more generally. Table 15 in the appendix presents detailed information on the post-redistricting elections in Georgia.

In both Georgia and North Carolina, precincts, which represent a single polling place, are the geographic units that are typically shifted in the creation of districts. While many of the Congressional districts in North Carolina and Georgia comprise entire counties, counties are often split in the drawing of Congressional districts. When counties are split, they are almost always split along precinct lines. In both states, we verified that precinct boundaries did not change as voter were moved from white to African American candidates. In many cases, the precinct identifier in both states is the name of the polling location. This allows us to know with a high degree of certainty whether polling places remained the same before and after redistricting thus holding voting costs constant. We also verified precinct boundaries using maps and GIS software. In Cobb County, we removed a few precincts from the study that were altered for the 2006 election.

## **2.4 Mechanisms**

Our design is tailored to answer a specific question: does moving African American voters in the redistricting process into a majority-minority district with an African American candidate increase turnout. This design cannot directly shed light on mechanistic questions about why turnout may or may not increase when these voters are moved. That is, it cannot tell us whether empowerment or mobilization is at work. In general, we don't think this is a flaw, since the estimation of causal effects is hard enough. Moreover, any statistical evidence about mechanisms would require a new set of stronger assumptions (Imai et al. 2011).

We do believe, however, that with an additional analysis we might be able to provide some indirect evidence on mechanisms. We would argue a key element in this study is public awareness. That is, empowerment is unlikely to play a role if African American voters do

not know that they can vote for a representative of the same race. Mobilization might be the vehicle to raise public awareness, but may not occur since the races are generally uncompetitive. Thus a basic part of understanding the mechanism is knowing whether African Americans are either aware of the fact that they live in a district or have been moved to a district with an African American representative. Data from the Black Election Study in 1996 provides some evidence. In that survey, 78% of respondents were able to correctly identify the race of their representative when that representative was African American. When the representative was white, however, 62% are able to correctly identify the race of the representative. This suggests that African Americans generally know when they are represented by another African American. Of course, this survey data tells us nothing about the voters in our study.

For more direct evidence, we leverage white voters. While we are focusing on how turnout among African Americans changes after redistricting, of course, a number of white voters are also moved by redistricting into these majority-minority districts. We expect that whites moved into a district with a African American representative will feel little empowerment and may even react negatively due to racial resentment. Thus, for whites, we expect turnout to either stay constant or decline. If we find that turnout among whites uniformly declines this suggests that whites are turning out at lower rates given a negative reaction to being represented by an African American. If we find evidence of a decline in turnout for whites that would be consistent with past studies (Gay 2001). A decline in turnout among whites also suggests that whites are aware that they have been moved to a district with an African American representative. If political awareness is roughly constant across white and African American voters, this suggests that African American voters should also be aware of the move to a representative that is African American. In short, if whites appear to react negatively to being moved to a majority-minority district, we can probably assume that African Americans are also aware of being moved. If turnout does not increase under this scenario, we can rule out the empowerment mechanism which also suggests that a lack of mobilization may be to

blame.

### 3 Data

Another advantage of relying on redistricting after 2000 instead of after 1990 when many majority-minority districts were created is data availability. For the period before and after 2000, we can obtain individual level data on turnout. To avoid an analysis with aggregate data, we use the voter files from both North Carolina and Georgia. The voter files contain whether registered voters voted in each election. There are a few other important covariates in the voter file as well including gender, age, race, and party registration. In all the analyses that follow, we focus only on citizens in the voter file that are African American and are registered Democrats as compared to white voters that are registered as either Democrats or Republicans. Restricting the analysis to Democrats among African Americans reduces the sample by less than 3%. Use of the voter file, of course, limits our analysis to registered voters. While this limits our inference somewhat, we think the tradeoff is worth it to avoid running afoul of the ecological inference problem.

For our analysis, we combined the individual level data in the voter file with two other data sources at the precinct level. The first data source is Census data from 2000. While the Census obviously contains many different covariates, we used the following Census measures: percentage of African Americans, percentage of African Americans that are of voting age, percentage with a college degree, percentage with a high school degree, percentage unemployed, percentage below the poverty level, percentage of housing that is renter occupied, and median age.<sup>10</sup> We also collected precinct level data from both state election boards. Specifically, precinct level election data allowed us to measure partisan support for Federal offices, turnout, and the percentage of African Americans that are registered to vote. These are all measures that we expect state legislators to use when redistricting, thus we seek to

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<sup>10</sup>Census data in 2000 was collected at either the block or blockgroup level. We hired a GIS analyst to either aggregate the block level data to the precinct geography or estimate precinct level measures from the blockgroup since in North Carolina and Georgia precincts typically differ by less than 1% in terms of population. Thus all census measures were used as precinct level covariates.

ensure that these measures are comparable across our treated and control groups.

## 4 Analysis

We conduct two different but related analyses. We believe that the internal validity of our estimates increases with each analysis. Both analyses are based on matching estimators. In the matching, we use a precinct level propensity score. Here, we estimate a logistic regression with  $Pr(D_i = 1)$  as the outcome variable and using all the precinct level Census, election, and turnout measures as predictors. We also match on the individual level covariates from the voter file. As we noted above, race and party identification are held constant by stratification and thus we do not match on these measures. In the matching, we pay special attention to voter history by matching on it exactly. This means that people who didn't vote in last two elections are exactly matched to citizens who didn't vote and vice versa. Since we have voting history for two elections, voters are matched exactly in a four level combination. Exact matching on past outcomes implies that our analysis is equivalent to a nonparametric differences-in-differences (DID) estimator (Athey and Imbens 2006).

In the first matching analysis, we stratify the precinct level propensity score and exactly match within these propensity score subclasses. This is equivalent to a matching analysis with propensity score subclassification (Rubin 2008). We use ten propensity score subclasses, we tend to lose some observations as overlap decreases but the bias adjustment should be greater.<sup>11</sup> We also match on voting history as described above. We use genetic matching to form our matched samples (Sekhon and Diamond 2005; Sekhon 2011). With the matched data, we then estimate the turnout rate with a regression model adjusting for age and gender with clustering on precincts to account for within precinct correlations. We implement this analysis, before and after redistricting occurred. We expect it to return no effect in the election before redistricting. In the placebo test analysis, for North Carolina, we exact match on turnout in 1996 and 1994; in Georgia this means we exact match on turnout in

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<sup>11</sup>We also used five propensity score subclasses but generally found better results in terms of the placebo test with ten subclasses.

2004 and 2002. If we fail this placebo test, we have decreased confidence in the estimates after redistricting since the groups were not comparable before the treatment occurred.<sup>12</sup>

The second matching estimator is built around the placebo test and has the highest level of internal validity. Here, we started with a basic matching analysis in either 1998 for North Carolina or 2002 for Georgia, again using genetic matching. As before, we exact match on voter history, but we also match on age, gender, and the precinct level propensity score. In these analyses, we should find effects close to zero. To build our inference directly on this placebo test, we simply tracked the turnout behavior of the matched voters who pass the placebo test in the subsequent treated elections after redistricting. In short, we are only willing to declare treated and control voters comparable if they pass the placebo test, and we then limit our inference to these voters by following their voting records through later elections. In the treated elections, we simply calculate the difference in turnout percentages across the treated and control voters. We use a  $\chi^2$  test to calculate whether this difference in percentages is statistically significant. In North Carolina, we track these voters during the 2002, 2004, and 2006 elections and calculate turnout rates in each year. In Georgia, we track voters through the 2006 and 2008 elections. This analysis requires us to exclude anyone that registered to vote between the placebo election and the election after redistricting. It is possible that citizens will be motivated to register and vote given the redistricting treatment, but they, by definition, cannot be included in the placebo test. The distribution of these voters might differ from those in the placebo test. We capture newly registered voters in the first matching analysis.

Often we find that the analysis with all the registered voters does not pass the placebo test. When this occurs, we search for a subset of voters for whom the placebo test holds. We accomplish this by enforcing a caliper on the precinct level propensity score. A caliper is a matching rule that stipulates that two matched pairs must be some minimum distance or they will not be matched. Application of a caliper invariably discards some treated observations.

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<sup>12</sup>In every case, we estimate the average treatment effect on the treated not the average treatment effect. More specifically, we estimate  $E[Y_i(1) - Y_i(0)|D = 1]$ .

This makes the inference more local but reduces bias in the estimated treatment effect if it allows us to pass the placebo test. We enforce the caliper on the precinct level propensity score, since we know that assignment to treatment is based on these covariates. We started with a caliper distance of .2 times the standard deviation of the propensity score; this caliper distance is a useful starting point (Rosenbaum 2010). If we observe no differences in turnout under this caliper distance, we increased the caliper distance to observe whether we could increase the number of observations used while still maintaining a zero order placebo effect. We iterated this process until we found a caliper distance that produced a point estimate that passes the placebo test but drops the smallest number of observations. If a smaller caliper was necessary, we repeated the process until we found a subset of voters that satisfied the placebo test.

We also report unadjusted voter turnout rates for those that were moved by redistricting and those who remained in the existing district. It is this comparison that represents the correct counterfactual quantity, but it does not correct for any selection. Conducting this analysis before redistricting occurs forms a simple placebo test that allows us to understand whether we need to correct for selection.

## 5 Results

### 5.1 North Carolina

Table 2 contains unadjusted turnout levels for House District 1 in North Carolina. The control units are voters that remained in District 3 with a white Republican incumbent. The treated units are voters that were moved from District 3 to the open race with a African American candidate in District 1. The estimates in Table 2 show that treated and control are not comparable without adjustment. There is also little evidence of large increase in turnout after redistricting. Next, we turn to the first matching analysis.

Table 3 contains estimates in two columns by racial category. We first examine the results from the placebo test in 1998 to understand whether our statistical adjustments are

Table 2: Unadjusted Turnout Levels for U.S. House District 1

	African American Voters		White Voters	
	Control Counties	Treated Counties	Control Counties	Treated Counties
	Turnout (%)	Turnout (%)	Turnout (%)	Turnout (%)
<i>1998<sup>a</sup> General</i>	59.8	50.3*	59.8	61.6*
<i>2000<sup>a</sup> General</i>	73.4	65.2*	80.3	77.6*
<i>2002 Primary</i>	43.4	27.5*	36.0	29.4*
<i>2002 General</i>	61.1	42.4*	68.1	58.4*
<i>2004 General</i>	73.1	67.6*	80.0	76.6*
<i>2006 General</i>	45.8	30.6*	57.1	40.9*

Note: Voters in treated counties were moved by redistricting from white incumbent to open race won by an African American Democrat. Voters in control counties remain with white incumbent. <sup>a</sup>Placebo estimates: all counties in same congressional district with white incumbent for these years. First election for which redistricting was effect was 2002. \*  $p$ -value < 0.05

successful. For the placebo test, we wish to do more than simply find an estimate that is not statistically significant, the closer the estimated difference in turnout is to zero the greater confidence we have in our adjustments. As we can see in the first row of Table 3, the placebo test results are better for African Americans than whites. For African Americans, the estimate is less than a single percentage point, while for whites the difference is one and half percentage points. As we mentioned before we might expect this primary to be singularly competitive since the seat is open and might energize African American voters who have been newly shifted into District 1. However, we find a large decline in turnout for both racial categories. That is for African Americans who were moved into District 1, the majority-minority district, turnout was around 13 points lower in both the primary and general election. In the 2004 general, turnout is basically the same for both sets of voters. In 2006, however, African American turnout in District 1 was again lower by more than five percentage points.

Next, we turn to the longitudinal analysis in Table 4. While this analysis excludes citizens that registered to vote between 1998 and 2002, it allows us to exactly track voters who voted at similar rates before redistricting. The general pattern from the previous analysis repeats itself. In 1998, we observe a difference of around one percentage point that is not statistically

Table 3: Matching Estimates of Turnout Levels for U.S. House District 1

	Whites	African Americans
<i>1998<sup>a</sup> General</i>	-1.5 (3.3)	0.7 (3.0)
N	5178	3178
<i>2002 Primary</i>	-11.2 (7.7)	-13.2* (6.1)
N	3940	712
<i>2002 General</i>	-16.6* (3.4)	-13.7* (2.8)
N	6510	1932
<i>2004 General</i>	-2.5 (2.1)	-0.4 (3.7)
N	7596	1952
<i>2006 General</i>	-20.8* (3.9)	-11.4* (3.5)
N	7124	2358

Note: Cell entries are the treated minus control difference in turnout with standard errors in parenthesis. Treated voters are those moved by redistricting from a white Republican incumbent in 2000 to an African American candidate in 2002. <sup>a</sup>Placebo estimates: all voters are in the same congressional district in this year and estimates should be zero by construction. Adjustment is via exact matching on voter history and on ten precinct-level propensity score subclasses. Adjustment for age and gender via regression. Standard errors adjusted for precinct-level clustering. Estimates represent difference-in-difference estimates. We omit 2000 as a placebo test since the first treated year is 2002 a midterm election. \*  $p$ -value < 0.05

significant for African Americans and less than a half a percentage point for whites. When we recalculate the turnout rate for this same subset of voters in 2002, where the treated voters are now in a majority-minority district with an African American candidate in an open race, we find that turnout is lower by nearly 12 points and 20 points. Turnout for the treated voters remains lower in both 2004 and 2006. Thus all the evidence, we have seen so far indicates that political participation by African American moved to a majority-minority district actually declines, and the behavior of whites mirrors that of minorities. We next turn to our second area of analysis in North Carolina.

Table 4: Turnout for Elections in U.S. House District 1 Among Voters With Similar Voting Rates in 1998

African American Voters										
1998 <sup>a</sup>		2002 Primary		2002 General		2004		2006		
Control	Treated	Control	Treated	Control	Treated	Control	Treated	Control	Treated	
63.6	62.5	48.2	36.7	68.5	54.6	80.0	74.6	57.0	46.7	
Difference		Difference		Difference		Difference		Difference		
-1.1		-11.5		-13.9		-5.4		-10.3		
$\chi^2$	0.34	21.59*		50.29*		10.42*		25.89*		
White Voters										
1998 <sup>a</sup>		2002 Primary		2002 General		2004		2006		
Control	Treated	Control	Treated	Control	Treated	Control	Treated	Control	Treated	
64.7	64.9	66.4	46.4	72.2	64.2	81.3	82.4	62.2	48.3	
Difference		Difference		Difference		Difference		Difference		
0.2		-20.0		-8.0		1.1		-13.9		
$\chi^2$	0.023	117.7*		34.73*		0.97		25.89*		

Note: Cell entries are the estimated turnout percentages for treated and control groups. Treated voters are those moved by redistricting from a white Republican incumbent in 2000 to an African American candidate in 2002. <sup>a</sup>Placebo estimates: all voters are in the same congressional district in this year and estimates should be zero by construction. Adjustment in 1998 analysis is via exact matching on voter history, age, gender, and precinct-level propensity score with caliper applied. We then track the same set of voters from 1998 through subsequent elections. That is, we track the turnout rates for voters with similar voting rates in 1998. \*  $p$ -value < 0.05

Table 5 contains the unadjusted estimates before and after redistricting for District 12 in North Carolina. We see that the precincts that were moved into District 12 tended to vote at lower rates before being moved to the majority-minority district. The difference is not as large as in District 1 but the differences remain substantial. These rates remain lower after the redistricting treatment.

Table 5: Unadjusted Turnout Levels for U.S. House District 12

	African American Voters		White Voters	
	Control Precincts	Treated Precincts	Control Precincts	Treated Precincts
	Turnout (%)	Turnout (%)	Turnout (%)	Turnout (%)
<i>1998<sup>a</sup></i>	63.8	56.2*	66.9	69.8*
<i>2000<sup>a</sup></i>	77.1	71.3*	81.7	81.0
<i>2002</i>	65.7	56.7*	67.6	67.7
<i>2004</i>	84.8	74.5*	84.5	80.1*
<i>2006</i>	38.4	28.6*	50.8	48.8*

Note: Voters in treated counties were moved by redistricting from white incumbent to a race won by an African American incumbent. Voters in control counties remain with white incumbent. <sup>a</sup>Placebo estimates: all voters in same congressional district with white incumbent for these years. First election for which redistricting was effect was 2002. \*  $p$ -value < 0.05

We repeat the same two matching analyses for voters in Forsyth county, who were moved from a Republican in the 5th House District to a African American incumbent in District 12. The analysis, here, has the advantage of being a within-county design, so all county level factors related to election administration are held constant. The other key difference between here and District 1 is that we are now studying an urban area instead of a largely rural area. Table 6 contains our estimates after we matched on individual level covariates and used subclassification on the precinct level propensity score. Here, we find our corrections work better than in District 1. For African Americans, the placebo difference is a tenth of a percentage point, and for whites the placebo difference is less than a percentage point. The results do differ between racial categories. For African Americans, we find very little difference between the controls who stayed with a white candidate and the treated units that moved to an African American candidate. In each election between 2002 and 2006, the estimated difference never exceeds half of a percentage point. For whites, however, the differences are clearly negative in the post-treatment period, though these do not reach statistical significant once we adjust for clustering at the precinct level.

Table 7 contains estimates for the voters that we tracked from 1998 to subsequent elections. First, we review results for African American voters. In 2002, the placebo difference is mere tenth of a percentage point. In 2004 and 2006, we observe minor differences that are

Table 6: The Effect of House Candidate Race and Redistricting in U.S. House District 12

	Whites	African Americans
<i>1998<sup>a</sup> General</i>	-0.8 (2.6)	-0.1 (2.3)
N	1174	1024
<i>2002 General</i>	-3.4 (22.3)	0.1 (3.3)
N	1276	1074
<i>2004 General</i>	-2.9 (3.1)	-0.4 (4.3)
N	2232	1370
<i>2006 General</i>	-8.6 (5.7)	0.06 (2.3)
N	2386	1592

Note: Cell entries are the treated minus control difference in turnout with standard errors in parenthesis. Treated voters are those moved by redistricting from a white Republican incumbent in 2000 to an African American candidate in 2002. <sup>a</sup>Placebo estimates: all voters are in the same congressional district in this year and estimates should be zero by construction. Adjustment is via exact matching on voter history and on ten precinct-level propensity score subclasses. Adjustment for age and gender via regression. Standard errors adjusted for precinct-level clustering. Estimates represent difference-in-difference estimates. We omit 2000 as a placebo test since the first treated year is 2002 a midterm election. \*  $p$ -value < 0.05

not statistically significant. Thus the pattern for voters moved to District 12 differs from that of voters moved into District 1. Here, we find that when African American voters are moved into a majority-minority district with an African American candidate little changes in terms of turnout behavior. Once we adjust for selection, turnout levels stay constant despite being moved into a majority-minority district. The difference in the results suggest that our concerns about treatment heterogeneity were justified. That is the effect may differ from place to place. For white voters, there is little evidence of any change since subsequent estimates are quite close to the estimate placebo difference. These results suggest little change occurred among white voters. We now turn to Georgia.

Table 7: Turnout for Elections in U.S. House District 12 Among Voters With Similar Voting Rates in 1998

African American Voters								
1998 <sup>a</sup>		2002		2004		2006		
Control	Treated	Control	Treated	Control	Treated	Control	Treated	
71.8	70.9	74.5	74.6	88.8	88.1	56.1	54.9	
Difference		Difference		Difference		Difference		
-0.9		0.1		-0.7		-1.2		
$\chi^2$	0.154	0.003		0.158		0.211		
White Voters								
1998 <sup>a</sup>		2002		2004		2006		
Control	Treated	Control	Treated	Control	Treated	Control	Treated	
73.5	71.7	72.8	71.1	86.5	83.9	57.4	56.3	
Difference		Difference		Difference		Difference		
-1.8		-1.7		-2.6		-1.1		
$\chi^2$	1.12	1.10		3.87		0.372		

Note: Cell entries are the estimated turnout percentages for treated and control groups. Treated voters are those moved by redistricting from a white Republican incumbent in 2000 to an African American candidate in 2002. <sup>a</sup>Placebo estimates: all voters are in the same congressional district in this year and estimates should be zero by construction. Adjustment in 1998 analysis is via exact matching on voter history, age, gender, and precinct-level propensity score with caliper applied. We then track the same set of voters from 1998 through subsequent elections. That is, we track the turnout rates for voters with similar voting rates in 1998. \*  $p$ -value < 0.05

## 5.2 Georgia

We begin with the results from the 2nd House District in Georgia. Like District 1 in North Carolina, this congressional district is either rural or made up of small towns. As we mentioned earlier, we rely on the second redistricting in Georgia. Thus, we use results from 2002 as our placebo estimates. That is we compare voters who were moved to an African American candidate in 2006 and had been able to vote for an African American House representative at anytime before then. We were careful to not include any areas that were moved to an African American member of Congress in 2002, but were then moved out of that district in 2005. Here, we examine voters that were moved from a white Democratic incumbent to an African American incumbent.

Table 8 contains the unadjusted results for House District 2. Surprisingly, the unadjusted estimates pass the placebo test in 2002. That is the unadjusted difference in voting rates was a mere 0.6 of a percent. We next observe that in 2006 turnout did actually increase for those moved to the majority-minority district. This increase did not last long, however, as turnout in the control group was actually higher in 2008. The full analysis largely match the pattern in the unadjusted estimates.

Table 8: Unadjusted Turnout Levels for U.S. House District 2

	African American Voters		White Voters	
	Control Voters Turnout (%)	Treated Voters Turnout (%)	Control Voters Turnout (%)	Treated Voters Turnout (%)
<i>2002<sup>a</sup></i>	58.1	58.7	71.7	75.7*
<i>2004<sup>a</sup></i>	77.6	79.6*	87.1	88.3*
<i>2006</i>	48.9	54.0*	64.1	67.5*
<i>2008</i>	80.9	78.7*	83.1	82.6

Note: Voters in treated counties were moved by redistricting from white incumbent Democrat to race won by an African American incumbent. Voters in control counties remain with white incumbent. <sup>a</sup>Placebo estimates: all voters in same congressional district with white incumbent for these years. First election for which redistricting was in effect was 2006. \*  $p$ -value < 0.05

Table 9 contains estimates for voters in both racial categories. Readers should note that

turnout in 2008 was very high among African Americans undoubtedly due to the presence of Obama on the ballot. We find this is true in all the results we present. Given that the presence of Obama was constant across all states this should not bias our estimates. First, we review results for African Americans. Strictly speaking, we pass the placebo test in 2002 since the estimates are not statistically significant, but the point estimate is fairly large at 3.8 percent. Given this poor result, we also estimated a placebo test for 2004. In 2004, the placebo results are much better with estimated differences of less than one percent. This implies that we should have greater faith in the estimates for 2008 than 2006. Here, we do observe a small increase in turnout in 2006; it is over three percentage points. In both cases, we cannot rule out that zero is contained within a 95% confidence interval. In 2008, we observe that turnout for those moved is lower relative to those that were not moved. Thus we see some weak evidence for an increase in turnout due to voters moving to a majority-minority district. Whatever increase we observe, however, it appears to be temporary. Moreover, in 2008 when the estimates pass a placebo test, we observe a decline in turnout among the treated. For whites, the placebo difference again is rather large at just under two percentage points. The estimates in 2006 and 2008 are negative but small in magnitude and are small relative to their estimated standard errors.

Table 10 contains the results from our longitudinal analysis. The pattern here is nearly identical to that in Table 9. For African Americans, the results from the placebo test are improved but not perfect as we observed a difference of 1.2 percentage points. In 2006, however, turnout increases just over seven percentage points. Importantly, this is the first evidence we have found of an increase in turnout for voters moved to an African American candidate. In 2008, however, turnout in the treatment group is lower by one percentage point. Thus, the increase we observed in 2006 appears to be temporary. For white voters, the placebo difference is improved at half a percentage point. We find no evidence of change in post-treatment elections as both differences are small and not statistically significant.

Finally, we present the results from Cobb County. Cobb County forms a fourth type

Table 9: The Effect of House Candidate Race and Redistricting in U.S. House District 2

	Whites	African Americans
<i>2002<sup>a</sup> General</i>	1.9 (1.8)	-3.8 (2.3)
N	10572	5826
<i>2004<sup>a</sup> General</i>	–	-0.7 (2.3)
N		7162
<i>2006 General</i>	-0.41 (1.7)	3.4 (2.7)
N	14388	8296
<i>2008 General</i>	-1.2 (1.2)	-3.4 (1.4)
N	18174	12220

Note: Cell entries are the treated minus control difference in turnout with standard errors in parenthesis. Treated voters are those moved by redistricting from a white Democratic incumbent in 2004 to an African American incumbent in 2006. <sup>a</sup>Placebo estimates: all voters are in the same congressional district in this year and estimates should be zero by construction. Adjustment is via exact matching on voter history and on ten precinct-level propensity score subclasses. Adjustment for age and gender via regression. Standard errors adjusted for precinct-level clustering. Estimates represent difference-in-difference estimates. \*  $p$ -value < 0.05

Table 10: Turnout for Elections in U.S. House District 2 Among Voters With Similar Voting Rates in 2002

African American Voters						
2002 <sup>a</sup>		2006		2008		
Control	Treated	Control	Treated	Control	Treated	
55.8	57.0	56.0	63.1	89.2	88.2	
Difference		Difference		Difference		
-1.2		7.1		-1.0		
$\chi^2$	0.670	23.12*		0.902		
White Voters						
2002 <sup>a</sup>		2006		2008		
Control	Treated	Control	Treated	Control	Treated	
74.3	74.8	73.5	74.1	91.6	90.9	
Difference		Difference		Difference		
0.5		0.6		-0.7		
$\chi^2$	0.182	0.233		0.972		

Note: Cell entries are the estimated turnout percentage in treatment and control groups. Treated voters are those moved by redistricting from a white Democratic incumbent in 2004 to an African American incumbent in 2006. <sup>a</sup>Placebo estimates: all voters are in the same congressional district in this year and estimates should be zero by construction. Adjustment in 2002 analysis is via exact matching on voter history, age, gender, and precinct- level propensity score with caliper applied. We then simply track the same set of voters from 2002 through subsequent elections. That is, we track the turnout rates for voters with identical voting rates in 2002. \*  $p$ -value < 0.05

of geographic area. It is a fast-growing suburb of Atlanta with high levels of education and income. In the 2000 Census median family income in the county exceeded \$67,000 and 28% of residents above the age of 25 had a college degree. Compare that to Dooley County one of the counties in our District 2 analysis. In Dooley County median income was just over \$35,000 and less than six percent had a college degree. We might expect African Americans with high levels of SES, as in Cobb County, to respond to the opportunity to vote for a African American candidate. The analysis, here, again represents our preferred within-county design. We report the results from full county analysis in the appendix. The full county results are consistent with what we have found thus far. That is, for African Americans that are moved into District 13, turnout either does not change or declines. For white voters, turnout declines by around three percentage points. Here, we report results for the two split precincts, where voters in the same precinct were in different Congressional districts.

For these two precincts, we have voters in the same area voting at the same polling place, but some reside in a majority-minority district with an African American candidate and others reside in a district with a white Republican incumbent. For these analyses, all precinct level covariates are held constant by the design, as such we only use covariates from the voter file. To that end, we match on age and gender with an exact match on voting history. We use the county designated precinct names of Marietta and Oregon. Table 11 contains the unadjusted results for the two split precincts in Cobb County. Again, we find that the voters who are moved into the majority-minority district have lower turnout rates before and after redistricting.

Table 12 contains the results after exactly matching on voter history and matching on age, age-squared, and gender. For African Americans, in both of the split precincts, the empirical pattern is similar. First, we are able to produce perfect placebo outcomes. That is voting rates before redistricting were identical. In the Marietta precinct, we observe no change in 2006 and a slight decline in 2008. In the Oregon precinct, turnout declines in

Table 11: Unadjusted Turnout Levels for Cobb County - Split Precincts

Marietta Precinct				
	African American Voters		White Voters	
	Control Voters Turnout (%)	Treated Voters Turnout (%)	Control Voters Turnout (%)	Treated Voters Turnout (%)
<i>2002<sup>a</sup></i>	57.9	53.6	73.7	71.2
<i>2004<sup>a</sup></i>	84.6	81.1	91.5	85.0*
<i>2006</i>	46.9	46.3	69.6	61.0*
<i>2008</i>	81.2	79.4	88.6	79.8
Oregon Precinct				
	African American Voters		White Voters	
	Control Voters Turnout (%)	Treated Voters Turnout (%)	Control Voters Turnout (%)	Treated Voters Turnout (%)
<i>2002<sup>a</sup></i>	60.0	49.2	65.0	70.1
<i>2004<sup>a</sup></i>	79.5	75.7	91.9	87.3
<i>2006</i>	48.9	37.1	67.4	59.4*
<i>2008</i>	89.7	76.6*	85.8	80.2

Note: Treated voters were moved by redistricting from white incumbent to an African American incumbent, while control voters remain with white incumbent. Each precinct was split across Congressional districts, and all voters voted at the same polling place. <sup>a</sup>Placebo estimates: all voters in same congressional district with white incumbent for these years. First election for which redistricting was effect was 2006. \* $p$ -value < 0.05

both subsequent elections. For white voters, the results are quite different in that for both precincts there is some evidence of a decline in turnout. In the Marietta precinct, the placebo difference is satisfactory at less than a percentage point. In the Oregon precinct, however, the placebo difference is quite large, but in both districts we observe large declines in turnout for both 2006 and 2008. In the Oregon precinct, we see a large reversal as the difference in 2002 is 9.1 points but is -6.2 points in 2006, a substantial reversal, though there isn't enough power to rule out the possibility that zero is contained with the confidence interval.

Table 12: Turnout Levels After Matching for Cobb County - Split Precincts

Marietta Precinct					
African American Voters					
	Control Voters Turnout (%)	Treated Voters Turnout (%)	Difference	N	
<i>2002<sup>a</sup></i>	57.9	57.9	0	38	
<i>2006</i>	46.9	46.9	0	64	
<i>2008</i>	81.2	79.2	-2	96	
White Voters					
	Control Voters Turnout (%)	Treated Voters Turnout (%)	Difference	N	
<i>2002<sup>a</sup></i>	72.0	71.2	-0.8	950	
<i>2006</i>	68.4	61.3	-7.1*	1252	
<i>2008</i>	88.0	79.9	-8.1*	1570	
Oregon Precinct					
African American Voters					
	Control Voters Turnout (%)	Treated Voters Turnout (%)	Difference	N	
<i>2002<sup>a</sup></i>	60.0	60.0	0	50	
<i>2006</i>	48.9	42.2	-6.7	90	
<i>2008</i>	89.7	80.9	-8.8	136	
White Voters					
	Control Voters Turnout (%)	Treated Voters Turnout (%)	Difference	N	
<i>2002<sup>a</sup></i>	65.0	74.1	9.1	286	
<i>2006</i>	67.4	61.2	-6.2	356	
<i>2008</i>	85.8	81.4	-4.4	408	

Note: Cell entries are the turnout percentages after adjustments via matching. Treated voters are those moved by redistricting from a white Republican incumbent in 2004 to an African American incumbent in 2006. Each precinct was split across Congressional districts, and all voters voted at the same polling place. <sup>a</sup>Placebo estimates: all voters are in the same congressional district in this year and estimates should be zero by construction. Adjustment is via matching on voter history, age, and gender. \* $p$ -value < 0.05

Table 13 contains results from our longitudinal analysis. The pattern, here, is quite clear.

In three of the four analyses, the placebo results are good to excellent with two of them being exactly zero. In all cases, however, we observe declines of four percentage points or more in 2006. In 2008, the estimates are split evenly between negative and positive without any clear pattern. In general, we observe good placebo estimates followed by either a one or two election decline in turnout rates. There is, however, no evidence of turnout increasing.

### 5.3 Omnibus Test

We conduct one final analysis, which serves two purposes. First, we have presented a large number of estimates and tests across four geographic areas, when we have a general hypothesis that we would like to test. Therefore, it is useful at this point to conduct an omnibus test that summarizes our results. Second, we have conducted our analyses at the individual level. The treatment however generally occurs at the precinct level or one might even argue at the county level. However, insofar as precincts are split, the treatment is at the individual level. That said, generally, one could argue that our inferences should occur at a more aggregate level. Here, we perform an omnibus test and account for aggregation with the sign test.<sup>13</sup>

How does the sign test work? Let us say that the status quo hypothesis is that African American candidates from VRA created districts increase turnout. To make an inference about this hypothesis, we can treat each non-placebo test in our analysis as a trial, and we might infer that each positive treated minus control difference serves as evidence for the status quo hypothesis. Under the null hypothesis, however, positive and negative estimated turnout differences are equally likely. For the total number of tests, we can: ask how likely is it that we observe this number of positive differences if the null hypothesis is true? Thus we formulate the following hypotheses about  $p$ , the probability of a positive difference for each trial:

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<sup>13</sup>Readers should note that sign test is a special case of the exact binomial test where the probability is fixed at 0.5. This sign test can also be used to test for differences in medians as an alternative to a rank based test. The trials are not strictly independent, but we think this still serves as a useful summary of the overall results.

Table 13: Turnout for Elections in Cobb County Among Voters With Similar Voting Rates in 2002 - Split Precincts

Marietta Precinct						
African American Voters						
2002 <sup>a</sup>		2006		2008		
Control	Treated	Control	Treated	Control	Treated	
57.9	57.9	63.2	57.9	94.7	100	
Difference		Difference		Difference		
0.0		-5.6		5.3		
$\chi^2$	0.108	0.110		1.027		
White Voters						
2002 <sup>a</sup>		2006		2008		
Control	Treated	Control	Treated	Control	Treated	
72.6	71.2	77.9	69.1	93.7	89.1	
Difference		Difference		Difference		
-1.4		-8.8		-4.6		
$\chi^2$	0.255	9.52*		6.46*		
Oregon Precinct						
African American Voters						
2002 <sup>a</sup>		2006		2008		
Control	Treated	Control	Treated	Control	Treated	
60.0	60.0	64.0	48.0	96.0	88.0	
Difference		Difference		Difference		
0.0		-16		-8.0		
$\chi^2$	0.083	0.731		.271		
White Voters						
2002 <sup>a</sup>		2006		2008		
Control	Treated	Control	Treated	Control	Treated	
65.0	70.6	72.7	68.5	88.8	90.9	
Difference		Difference		Difference		
5.6		-4.2		2.1		
$\chi^2$	1.02	0.607		0.345		

Note: Cell entries are the estimated turnout percentage in treatment and control groups. Treated voters are those moved by redistricting from a white Republican incumbent in 2004 to an African American incumbent in 2006. <sup>a</sup>Placebo estimates: all voters are in the same congressional district in this year and estimates should be zero by construction. Adjustment in 2002 analysis is via exact matching on voter history, age, and gender. We then track the same set of voters from 2002 through subsequent elections. That is, we track the turnout rates for voters with similar voting rates in 2002.

\* $p$ -value < 0.05

$$H_0 : p = \frac{1}{2} \text{ vs } H_a : p > \frac{1}{2}$$

In our analyses, we conducted 15 different tests based on the stratified matching estimator and 15 different tests based on the longitudinal matching estimator. We count the number of times, for each estimator, that the difference in turnout percentages is positive. We don't record the magnitude of the difference, just whether the difference was positive. Of course, this feature of the test disadvantages the alternative hypothesis, since any positive difference no matter how small counts as evidence against the null hypothesis.

We start with the results for African Americans. For the stratified matching estimator, we count four positive differences and one that is exactly zero and is dropped. For the longitudinal matching estimator, we count three positive differences. Assuming each trial is from a binomial distribution with probability of success equal to 0.5, the  $p$ -value for the two sign tests are .971 and .996, respectively. Thus there is little evidence to would allow us to reject the null hypothesis. However, if we change the alternative hypothesis to be one where African American candidates from VRA created districts *decreases* turnout, the  $p$ -values are 0.089 and 0.018 for the stratified and longitudinal estimators respectively. Thus we are able to reject the null under this alternative hypothesis in one case and narrowly avoid rejecting it in another depending on the level of the test. For whites, the results are even more stark. For the stratified matching estimator, we count zero positive differences out of 15 tests. For the longitudinal data, there were 3 positive estimates out of 15 tests. Using the sign test, that implies  $p$ -values of 1 and 0.99 respectively. If we were to test for a negative effect, our  $p$ -values would be 0.000 and 0.018. In sum, the sign test provides little evidence of an increase in turnout and better evidence for a decrease in turnout.

One weakness of the sign test is that it does not consider the magnitude of the estimated differences, only whether the signs are positive or negative. As a robustness check, we also used the Wilcoxon signed rank test, which does account for the magnitude of treated and control differences. Since the signed rank relies on ranks of the treated and control differences,

it will not be influenced by the large negative effects in parts of North Carolina. We found the results from the signed rank test to be perfectly consistent with those from the sign test.

## 6 Discussion

We think our study offers both substantive and methodological insights. One methodological insight to be drawn from our study is the clear evidence of treatment heterogeneity. While we generally find no effects, we find a large negative effect in one instance and a small positive effect in another. As we noted earlier, one existing study pools over 4,000 elections (Washington 2006). Pooling such a large number of diverse districts and races almost surely leads to inconsistent estimates. Also it is clear that selection needs to be accounted for when modeling turnout. Districts are clearly drawn to suit greater political purposes. Thus we must expect that state legislators will draw districts strategically. If our empirical estimates do not account for this, we may be misled. While our research here says nothing about how Hispanics might respond in majority-minority districts, other work using the same research design in Hispanic districts finds results consistent with what we present here (Sekhon, Titiunik and Henderson 2010).

Substantively, we find there is little evidence that the districts created under the VRA increase turnout. That is, while turnout may have increased when these districts were created, we, however, find little evidence that turnout increases when African American voters are moved into the district. We also present results in the appendix, where we show that registration also doesn't increase among African American voters. What we do observe is that turnout generally declines when white voters are moved into these districts, reflecting perhaps a racial backlash. Why might African American voters not respond when moved to a majority-minority district with an African American representative? One reason may be that voters are unaware that they have been moved into a district that is represented by an African American. We would argue that since turnout almost always declines among whites this is unlikely. That is, unless we think awareness is lower among African Americans

than whites there is little reason to think that whites should respond negatively to being redistricted but African Americans would be unaware. Moreover, as we noted earlier, in the Black Election Study a large percentage of respondents can correctly identify the race of their Congressional representative especially when that representative is African American.

One could perhaps argue that the redistricting process itself depresses turnout. While that is a possibility, other research has found that turnout does not decline when voters are moved from one district to another after redistricting (Keele and White N.d.). Our conjecture is that the lack of competition is the key factor. Without competition, there is no need for mobilization of voters and little reason for newly imported voters to express themselves at the polls. While our study cannot distinguish between these different mechanisms, we believe it does provide strong evidence against the hypothesis that these districts increase participation. While it is clear these districts help minorities gain office, they do not appear to increase participation or at least not anymore.

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# Appendices

## A State Level African American Representation

In our study, we defined the treatment as being moved into a (nearly) majority-minority district with represented by an African American Member of Congress. Of course, U.S. House districts overlap with state legislative districts that may also have African American representatives. Barreto, Segura and Woods (2004); Barreto (2007) argue that each additional level of co-racial representation further boosts turnout. That is, turnout will be highest in areas with African American representation in the state house, state senate, and U.S. House. Here, we note whether any of our treated areas overlapped with African American representation in the state legislature.

We start in North Carolina with District 1. This area was covered by a single state Senate district that did not at any time have an African American representative. Until 2004, none of the treated counties were part of any N.C. House districts with African American representatives. In 2004, Perquimans county, one of the three treated counties, was added to NC House district 5 which was represented by Howard Hunter an African American. The other area we studied in North Carolina, Forsyth County also did not at any time have an African American representative for the State senate. One state house district in the county, the 71st, did have an African American representative. This district, however, did not overlap with any of our treated or control areas. Thus in North Carolina, in 2004, we have a joint state house and U.S. House treatment for one county.

In Georgia, we first focus on the two counties that were moved into U.S. House District 1. Parts of the treated counties have been represented by James Lynmore, an African American, since 1992. The treated area of Cobb County in our study has had a more complicated pattern of African American representation in the Georgia House of Representatives. A very small area in the treated part of the county was represented by Billy McKinney until 2002 when he lost to a white Democrat named John Noel. Noel later lost to an African American

in 2004 who has represented the district since then. In 2002, Alisha Thomas won the the 33rd House District in our treated area and has represented that area since then. Thus in 2006, when our treatment occurs about half of the treated area had African American representation in the Georgia House. None of the treated or control areas in Georgia ever had African American representation in the state senate.

We see no reason any of these patterns should affect on our results. Additional African American candidates should either increase turnout further or have no effect at all. That is, we cannot envision any scenario where having an African American representative in the state house decreased turnout when these areas were moved to U.S. House districts with an African American representatives. Moreover, most of the areas we study did not have any African American representation the year they were treated.

## **B Post Redistricting Campaign Data**

Here we present detailed information on the post-redistricting elections. Our main concern is that one of the elections in the control areas is competitive which may cause an unusual increase in mobilization. Table 14 contains details on the electoral environment in the post-treatment (post-redistricting) elections in North Carolina for the four districts we use in our analysis. We have nearly ideal conditions in 2002, the first election after redistricting. In both cases, the African American voters that do not move to the majority-minority district experience an election where the Republican incumbent in unopposed. The only instance where the control voters face a competitive environment are in 2004 and 2006 when the seat is open in the 5th District. The Republican wins but not by a huge margins. Interestingly, however, the Democratic challenger in these elections spends very little, which suggests that large scale mobilization probably did not occur. Moreover, the African American candidate, Mel Watt, spends more than half a million dollars despite vote margins of more than fifteen points. Thus treated votes may have experienced mobilization during the election.

Table 15 contains details on the electoral environment in the post-treatment (post-

Table 14: NC Districts Post-Redistricting Profile and Environment

	Case 1		Case 2	
	Treated Moved To	Control Remained In	Treated Moved To	Control Remained In
District	1	3	12	5
Party	Dem	Rep	Dem	Rep
First Election in New District	2002	2002	2002	2002
2002 Vote Share	64%	100%	65%	100%
2004 Vote Share	65%	71%	67%	59%
2006 Vote Share	100%	69%	57%	57%
2002 Campaign Spending	.626	.462	.358	.420
2002 Opponent Campaign Spending	.012	0	.003	.012
2004 Campaign Spending	.422	.639	.579	1.1
2004 Opponent Campaign Spending	.039	.012	.105	.383
2006 Campaign Spending	.387	.553	.503	1.4
2006 Opponent Campaign Spending	0	.065	.442	.139

Note: Spending in millions of dollars. Spending data from Center for Responsive Politics. Open seat in District 1 in 2002. Open seat in District 5 in 2004.

redistricting) elections in Georgia for the four districts we use in our analysis. Here, we are unable to only compare uncompetitive districts. In one case, voters who were moved to District 2 from District 8 were moved to hurt the electoral prospects of the Democratic incumbent in the 8th. Thus, in the 8th we might expect mobilization to occur among the African American voters who were not moved to the African American incumbent. Since the Democratic candidate was in an extremely competitive election, we must expect some mobilization effort among African Americans. As such, it is here that we might least expect turnout to be higher among those moved to the African American candidate. Interestingly in District 13, despite the challenger losing handily, spending by the challenger exceeded spending by the African American incumbent. For the African American voters who do not move to the 13th, the challenger there spends a mere \$3,000 dollars in 2006 and nothing in 2008. Thus we can be confident voters in the control district were not mobilized by the challenger there.

Table 15: GA Districts Post-Redistricting Profile and Environment

	Case 1		Case 2	
	Treated Moved To	Control Remained In	Treated Moved To	Control Remained In
District	2	8	13	11
Party	Dem	Dem	Dem	Rep
First Election in New District	2006	2006	2006	2006
2006 Vote Share	68%	51%	69%	71%
2008 Vote Share	69%	57%	69%	68%
2006 Campaign Spending	.818	1.9	1.2	1.3
2006 Opponent Campaign Spending	.028	2.0	1.3	.003
2008 Campaign Spending	1.0	1.8	1.4	1.6
2008 Opponent Campaign Spending	.008	1.2	5.2	0

Note: Spending in millions of dollars. Spending data from Center for Responsive Politics.

## C Full Cobb County Results

Here, we report the results for all moved areas in Cobb County. To reprise, here voters moved from District 11 under Republican incumbent Phil Gingrey to District 13 under African American David Scott. Table 16 contains the unadjusted results for Cobb County. Here, we find that turnout was lower among treated voters in both 2002 and 2004. While the differences are not large at three and a half percentage points in 2002 and one and a half percentage points in 2004, they indicate the need for statistical adjustment.

Table 17 contains estimates from our matching estimator for African American voters in Cobb County. In Cobb County, the placebo results for both racial groups are poor. In both cases, the pretreatment differences are more than two percent and are statistically significant for whites. However, given what we observe in 2006 and 2008, we would argue that we can still reasonably conclude that the move to a majority-minority district did not increase turnout. That is in 2006, for whites we see a small decline in turnout and for African Americans a slight increase. In 2008, we observe statistically significant declines of around three percent for both racial groups. Readers should keep in mind that these matching

Table 16: Unadjusted Turnout Levels for Cobb County

	African American Voters		White Voters	
	Control Voters Turnout (%)	Treated Voters Turnout (%)	Control Voters Turnout (%)	Treated Voters Turnout (%)
<i>2002<sup>a</sup></i>	62.8	59.3*	70.8	69.2*
<i>2004<sup>a</sup></i>	85.9	84.4*	91.2	88.2*
<i>2006</i>	52.1	51.9	63.1	61.8*
<i>2008</i>	83.4	81.7*	87.0	81.7*

Note: Voters in treated counties were moved by redistricting from white incumbent to a race won by African American incumbent. Voters in control counties remain with white incumbent. <sup>a</sup>Placebo estimates: all voters in same congressional district with white incumbent for these years. First election for which redistricting was effect was 2006. \* $p$ -value < 0.05

Table 17: Matching Estimates of Turnout Levels for Cobb County

	Whites	African Americans
<i>2002<sup>a</sup> General</i>	-2.1*	-2.7
	(0.8)	(2.1)
N	36568	8124
<i>2006 General</i>	-1.6	0.9
	(5.4)	(2.1)
N	44086	14334
<i>2008 General</i>	-2.8*	-3.3*
	(0.8)	(1.3)
N	56098	22774

Note: Cell entries are the treated minus control difference in turnout after adjustments via matching and regression with standard errors in parenthesis. Treated voters are those moved by redistricting from a white Republican incumbent in 2004 to an African American incumbent in 2006. <sup>a</sup>Placebo estimates: all voters are in the same congressional district in this year and estimates should be zero by construction. Adjustment is via exact matching on voter history and on ten precinct-level propensity score subclasses. Adjustment for age and gender via regression. Standard errors adjusted for precinct-level clustering. Estimates represent difference-in-difference estimates.

estimates are equivalent to difference-in-difference estimates. Thus the point estimates for 2006 and 2008 account for overtime change among the two groups. Thus in 2006 one might conclude there was a minor uptick in turnout that increase is gone by 2008.

Table 18 contains the results from our longitudinal analysis where the estimates are generally consistent with those in Table 17. The placebo estimates are slightly improved from the matched analysis. However, we treat the placebo estimate as a baseline difference and look for deviations from this baseline. For white voters, we observe a decline in turnout in 2006 and for African Americans a possible increase, but not one that is statistically distinguishable from zero. In 2008, we observe a return to the baseline estimate in 2002. In general, the results in Table 18 do not provide compelling evidence that turnout behavior changed after redistricting. We now turn to the results from the two split precincts in Cobb County.

## **D Voter Registration Rates**

Here, we present one additional analysis. We might also expect that when state legislators move African American citizens into majority-minority districts that this will attract new voters. This should be reflected in voter registration rates that is we might expect an influx of new voters. Of course, a flood of newly registered voters should also be reflected in turnout rates, which, as we have shown, did not appear to increase. As one final empirical analysis, we explore whether registration rates might also have been affected by the move into a majority-minority district. As we outlined earlier, our analysis is based on the so-called voter file a database which contains records on all citizens that are registered to vote. The voter file contains data on the date each citizen registered to vote. We calculated the percentage of registered voters that registered in the year of the election before the closing date in each state. In North Carolina, the closing date is 25 days before the election. In Georgia, the closing date is the fifth Monday before the election. As a rule of thumb, we counted all the voters that registered before October 1st of the election year. Thus we can

Table 18: Turnout for Elections in Cobb County Among Voters With Identical Voting Rates in 2002

African American Voters						
2002 <sup>a</sup>		2006		2008		
Control	Treated	Control	Treated	Control	Treated	
63.0	61.0	65.5	64.3	94.5	91.6	
Difference		Difference		Difference		
-2.0		-1.2		-2.9		
$\chi^2$	2.12	0.76		14.44*		
White Voters						
2002 <sup>a</sup>		2006		2008		
Control	Treated	Control	Treated	Control	Treated	
69.3	67.6	70.5	67.1	92.8	91.5	
Difference		Difference		Difference		
-1.7		-3.4		-1.3		
$\chi^2$	1.44	6.42*		3.05		

Note: Cell entries are the estimated turnout percentage in treatment and control groups. Treated voters are those moved by redistricting from a white Republican incumbent in 2004 to an African American incumbent in 2006. <sup>a</sup>Placebo estimates: all voters are in the same congressional district in this year and estimates should be zero by construction. Adjustment in 2002 analysis is matching on voter history, age, and gender. Exact matching is applied to voter history. We then track the same set of voters from 2002 through subsequent elections. That is, we track the turnout rates for voters with similar voting rates in 2002.

observe whether a higher percentage of voters registered right before the first chance to vote for an African American as compared to areas that were not moved to a majority-minority district. We present unadjusted estimates, since we have almost no covariates to use for statistical adjustment. Table 19 contains the results from our analysis. Table reftab:registr also contains placebo estimates for each area in both states. The placebo estimates are reasonable close particularly for District 13 in Georgia. In North Carolina, we observe either a modest increase in registration in 2002, the first year of treatment. In Georgia we see minor increases, but these increases are also found among control voters. Noticeably, in 2008 in Georgia, registration rates were higher in majority-minority districts. Perhaps House candidates led registration drives in concert with the Obama campaign.

Table 19: Percentage of Registered Voters Registering in Year of Election

<i>North Carolina</i>				
<i>District 1</i>				
	<b>1998<sup>a</sup></b>	2002	2004	2006
Control	5.0%	4.1%	4.9%	2.6%
Treated	4.2%	4.5%	8.8%	3.1%
<i>District 12</i>				
	1998 <sup>a</sup>	2002	2004	2006
Control	5.1%	3.8%	7.9%	4.2%
Treated	4.4%	4.1%	6.8%	3.1%
<i>Georgia</i>				
<i>District 2</i>				
	<b>2002<sup>a</sup></b>	2006	2008	
Control	3.8%	4.9%	17.9%	
Treated	2.8%	4.9%	23.5%	
<i>District 13</i>				
	2002 <sup>a</sup>	2006	2008	
Control	7.5%	10.2%	18.5%	
Treated	7.8%	10.3%	21.0%	

Note: <sup>a</sup>Placebo estimates.

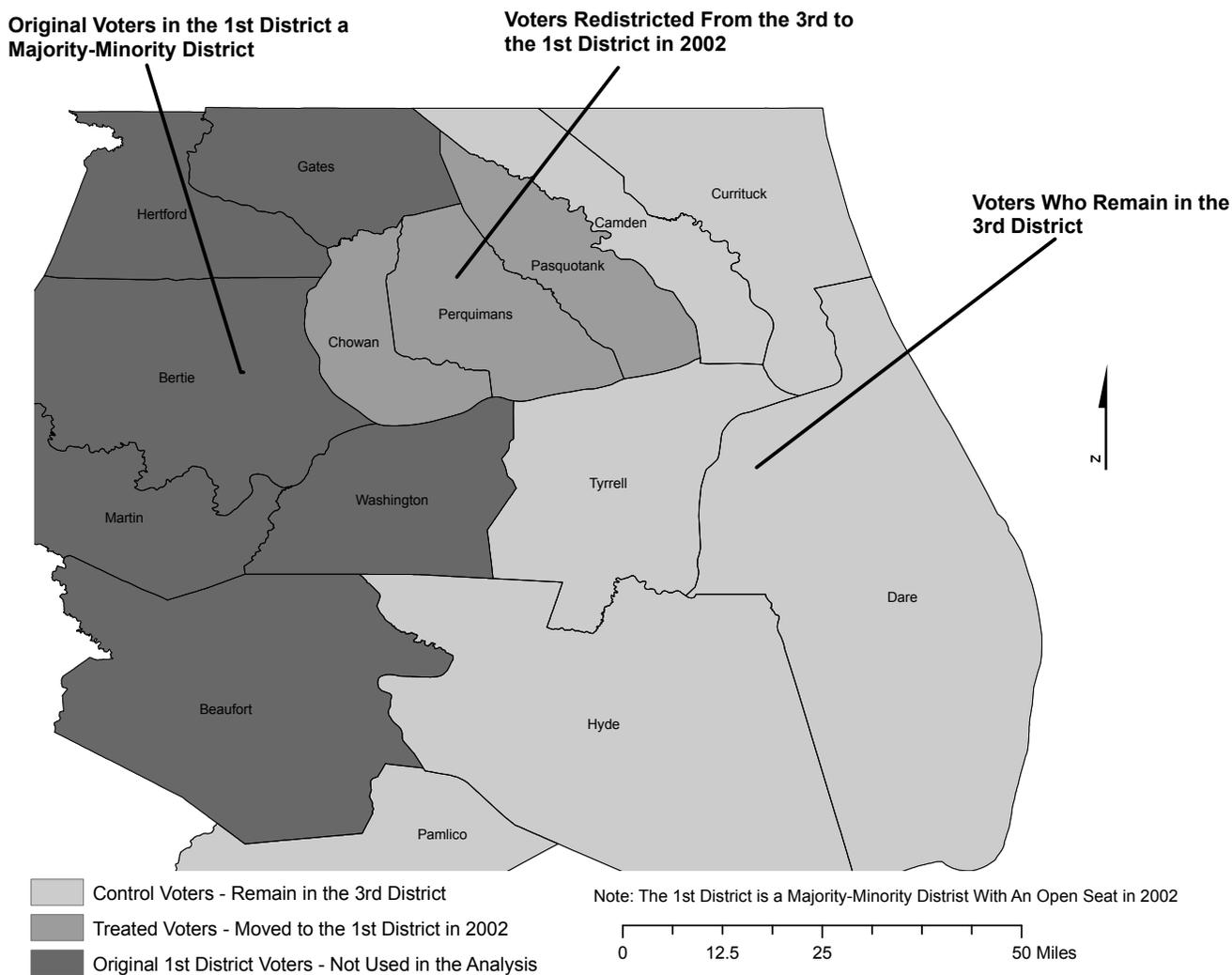


Figure 2: Change in district boundaries for North Carolina House Districts 1 and 3 from 2000 to 2002

Note: Counties are moved from the 3rd district represented by white Republican incumbent Walter Jones to the 1st district in 2002 where the seat was open. The seat in the 1st district was won by Frank Balance an African American Democrat. Both won easily in 2002.

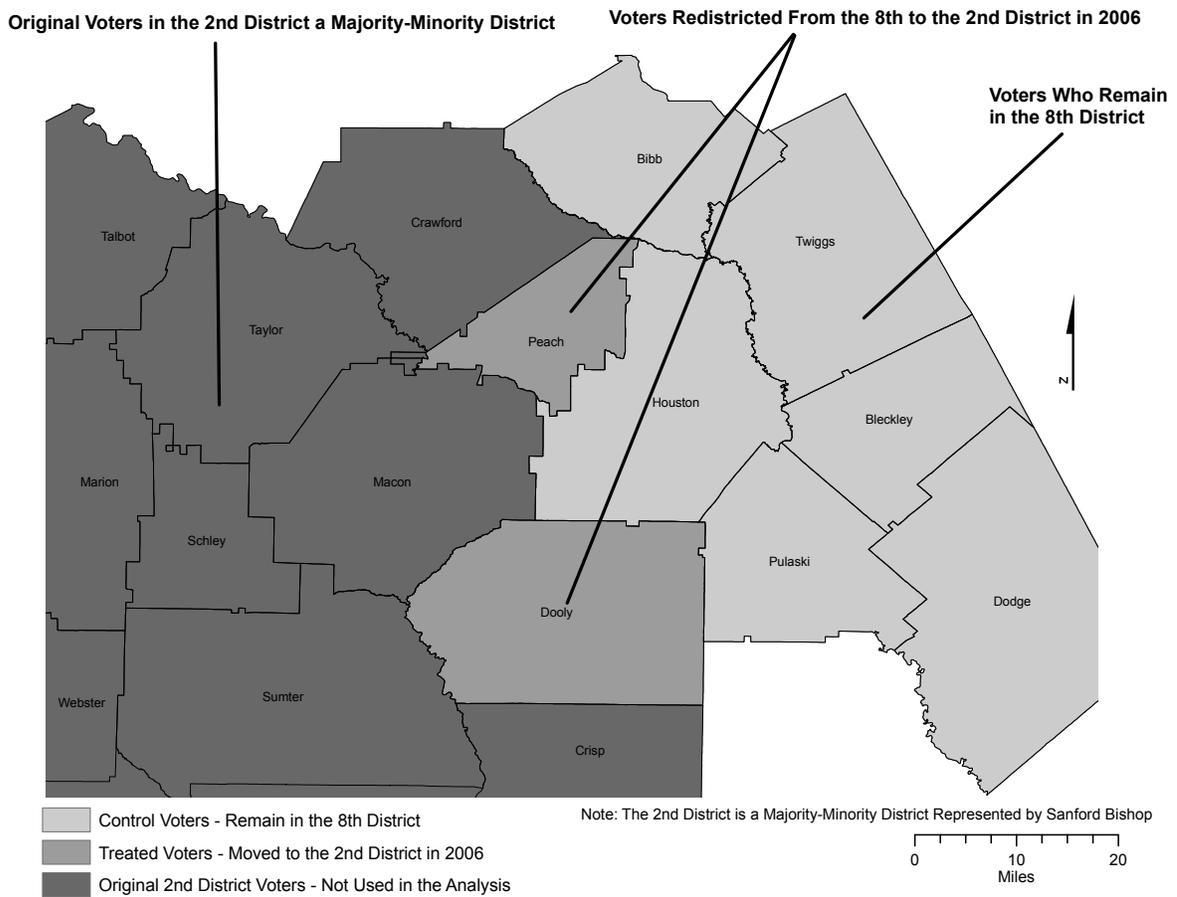


Figure 3: Change in district boundaries for Georgia House Districts 2 and 8 from 2004 to 2006

Note: Precincts are moved from the 8th district represented by white Democrat incumbent Jim Marshall to the 2nd district represented by Sanford Bishop an African American Democrat. Both won easily in 2006.

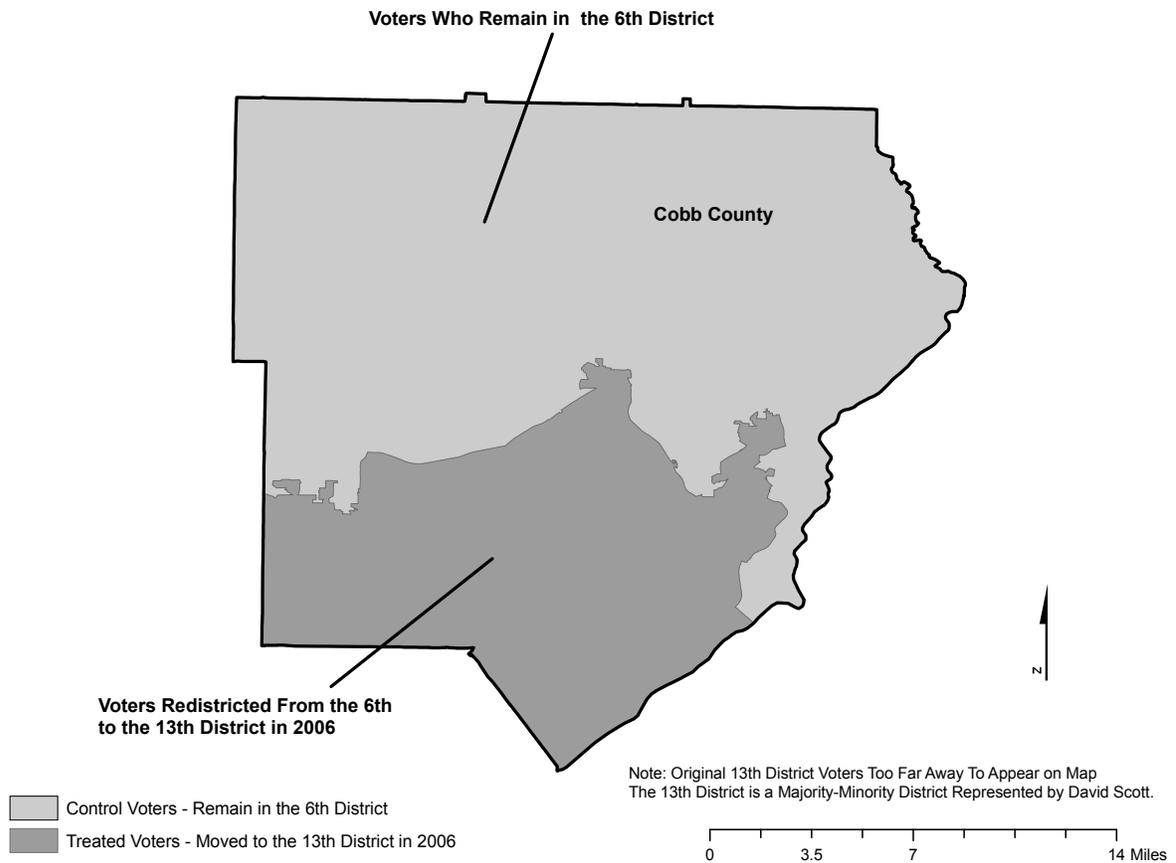


Figure 4: Change in district boundaries for Georgia House Districts 6, 11 and 13 from 2004 to 2006

Note: Precincts are moved from either the 6th or 11th district represented by white Republican incumbent to the 13th district represented by David Scott an African American Democrat. All candidates won easily in 2006. All voters reside in Cobb County.