Supplementary Materials for "African American Turnout and African American Candidates"

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1 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 2. Parts of the treated counties have been represented by Lynmore James, 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.

2 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 1 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 1: 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 was directly transcribed from the website `https://www.opensecrets.org`. Election results were directly transcribed from official election returns at `http://history.house.gov/Institution/Election-Statistics/Election-Statistics/`.

Table 2 contains details on the electoral environment in the post-treatment (post-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 2: 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 was directly transcribed from the website `https://www.opensecrets.org`. Election results were directly transcribed from official election returns at `http://history.house.gov/Institution/Election-Statistics/Election-Statistics/`

3 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 3 contains estimates from our matching estimator for African American voters in

Table 3: Matching Estimates of Turnout Levels for Cobb County

	Whites	African Americans
2002[a] General	-2.1*	-2.7
	(0.8)	(2.1)
N	36568	8124
2006 General	-1.5	0.9
	(1.13)	(2.1)
N	44086	14334
2008 General	-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. [a]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.

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 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 4 contains the results from our longitudinal analysis where the estimates are generally consistent with those in Table 3. 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 4 do not provide compelling evidence that turnout behave changed after redistricting. We now turn to the results from the two split precincts in Cobb County.

Table 4: Turnout for Elections in Cobb County Among Voters With Identical Voting Rates in 2002

African American Voters						
	2002[a]		2006		2008	
	Control	Treated	Control	Treated	Control	Treated
	63.3	60.0	66.0	64.9	94.4	91.9
	Difference		Difference		Difference	
	-3.3		-1.1		-2.5	
χ^2	6.04*		0.68		13.02*	
White Voters						
	2002[a]		2006		2008	
	Control	Treated	Control	Treated	Control	Treated
	70.7	68.0	72.1	67.8	92.7	90.3
	Difference		Difference		Difference	
	-2.7		-4.3		-2.4	
χ^2	5.85*		15.28*		13.11*	

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. [a]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. Sample size for African Americans is 4806 and for Whites is 4638.

3.1 Sensitivity Analysis

Given that our identification strategy is selection on observables, we need to probe whether our results would be sensitive to bias from a hidden confounder. In a sensitivity analysis, we

quantify the degree to which a key assumption must be violated in order for our inference to be reversed. Note that a sensitivity analysis is identical to a partial identification strategy, and thus is an identification strategy in and of itself (Keele 2005). While there are a number of different methods of sensitivity analysis, we use a method of sensitivity analysis designed for matching estimators and discussed in Rosenbaum (2002, ch. 4). We first apply randomization inference as our mode of statistical analysis (see Keele, McConnaughy and White (2012) for a basic introduction to randomization inference.) After matching, we apply Wilcoxon's signed rank test, which is an appropriate randomization test for paired data with a continuous outcome. Based on Wilcoxon's signed rank test, we estimate a point estimate and an associated 95% confidence interval via the method of Hodges-Lehmann (Hodges and Lehmann 1963).

Under randomization inference, we assume that within matched pairs, receipt of the treatment is effectively random, conditional on the matches. Formally, in our analysis, there are I matched pairs, $i = 1, \ldots, I$, with two subjects, $j = 1, 2$, one treated and one control or $2I$ total subjects. If the j^{th} subject in pair i receives the treatment, write $D_{ij} = 1$, whereas if this subject receives the control, write $D_{ij} = 0$, so $D_{i1} + D_{i2} = 1$, for $i = 1, \ldots, I$. In our study, each matched pair consists of one municipality with at least one African-American candidate and one municipality without any African-American candidates. We assume that matching on observed covariates $\mathbf{x}_{ij}$ made cities and towns the same in their chances of being exposed to the treatment. To formalize this idea, define π_{ij} as the probability that municipality j in pair i receives the treatment. For two matched cities in pair i, say j and j', because they have the same observed covariates $\mathbf{x}_{ij} = \mathbf{x}_{ij'}$, we assume that after matching that $\pi_{ij} = \pi_{ij'}$. If this condition holds, our estimates are valid causal effects since we controlled for all relevant covariates.

However, we may have failed to match on an important unobserved covariate. Assume that this unobserved covariate is a binary covariate u_{ij} such that $\mathbf{x}_{ij} = \mathbf{x}_{ij'} \; \forall \; i, j, j'$, but possibly $u_{ij} \neq u_{ij'}$. If so, unlike in a randomized experiment, the probability of being

exposed to treatment may not be the same within matched pairs due to the fact that we failed to match on a relevant covariate. If true, that would imply that $\pi_{ij} \neq \pi_{ij'}$, and our estimates will be biased. Rosenbaum (2002, ch. 4) shows that if two matched units differ in the probability of being treated due to an unobserved covariate, $u_{ij} \neq u_{ij'}$, then these two units may differ in their odds of being exposed to the candidate race treatment by at most a factor of $\Gamma \geq 1$ such that

$$\frac{1}{\Gamma} \leq \frac{\pi_{ij}/(1-\pi_{ij'})}{\pi_{ij'}/(1-\pi_{ij})} \leq \Gamma, \quad \forall\, i, j, j', \text{ with } \mathbf{x}_{ij} = \mathbf{x}_{ij'}.$$

This inequality is useful since it shows that we can place bounds on quantities like point estimates for different possible levels of confounding due to u_{ij}. For example, if $\Gamma = 1$, then $\pi_{ij} = \pi_{ij'}$, and our point estimate for the effect of a black candidate is identified. Under selection on observables, we assume that this is true. However, if $\Gamma > 1$ due to some level of confounding from u_{ij}, then the true value of the point estimate is bounded by a known interval.

In a sensitivity analysis, we exploit this fact by using several values of Γ to compute bounds on the quantities of interest for the treatment effect. For example, say we observe that the estimated treatment effect is two percentage points. This estimate assumes $\Gamma = 1$, that is the unobserved confounder does not change the odds of treatment within matched pairs. If we make $\Gamma > 1$, we can place bounds on this point estimate. Specifically, we increase Γ until the bounds on the point estimate include zero. If the bounds include zero for a relatively small value of Γ, we can conclude that a confounder with a small effect on the treatment odds would change our conclusions. In other words, if the bounds include zero when the value of Γ is small, then we have little confidence in the results since a relatively small amount of confounding could overturn our conclusions. However, if the value of Γ is large when the bounds include zero, then we can greater confidence that a confounder would not change the conclusions of the statistical analysis. Thus the sensitivity analysis indicates the magnitude of bias due to an unobserved covariate that would need to be present to alter

the conclusions reached under the selection on observables assumption.

4 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 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 5 contains the results from our analysis. Table 5 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 or a modest decrease in registration, 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 5: Percentage of Registered Voters Registering in Year of Election

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

Note: [a]Placebo estimates.

Table 6: Sample Sizes for NC U.S. District 1

	Whites	African Americans
1998		
Unadjusted	10910	2959
Match 1	2589	1589
Match 2	2346	1228
2002 Primary		
Unadjusted	16805	2375
Match 1	1970	356
Match 2	2346	1228
2002 General		
Unadjusted	12970	3474
Match 1	3255	966
Match 2	2346	1228
2004		
Unadjusted	14493	3210
Match 1	3798	1952
Match 2	2346	1288
2006		
Unadjusted	15690	4204
Match 1	3562	1179
Match 2	2346	1288

5 Sample Sizes

Here we report on the sample sizes used in each analysis, so that the reader can fully understand how many units were removed in the matching process. Recall that in the first matching analysis we may have lost treated units due to exact matching on the precinct level propensity score. In the second matching analysis, we may have lost treated units due to the use of a caliper which was used to enforce the placebo test in the baseline year. Note that the tables contain the number of treated units used in each analysis. The unadjusted estimates are often based on much larger geographic areas, while the matched data use precinct level propensity scores to prune the data. We do not report the sample sizes for the split precinct analysis, since in almost every instance we used all treated observations.

Table 7: Sample Sizes for NC U.S. District 12

	Whites	African Americans
1998		
Unadjusted	20443	5310
Match 1	587	512
Match 2	1403	776
2002		
Unadjusted	23391	6023
Match 1	638	537
Match 2	1403	776
2004		
Unadjusted	26379	8845
Match 1	1116	685
Match 2	1403	776
2006		
Unadjusted	28427	9981
Match 1	1198	796
Match 2	1403	776

Table 8: Sample Sizes for GA U.S. District 2

	Whites	African Americans
2002		
Unadjusted	60925	27999
Match 1	5286	2913
Match 2	2838	2212
2004		
Unadjusted	70600	33594
Match 1	–	3581
Match 2	2838	2212
2006		
Unadjusted	79612	37852
Match 1	7194	4148
Match 2	2838	2212
2008		
Unadjusted	97596	52522
Match 1	9087	6110
Match 2	2838	2212

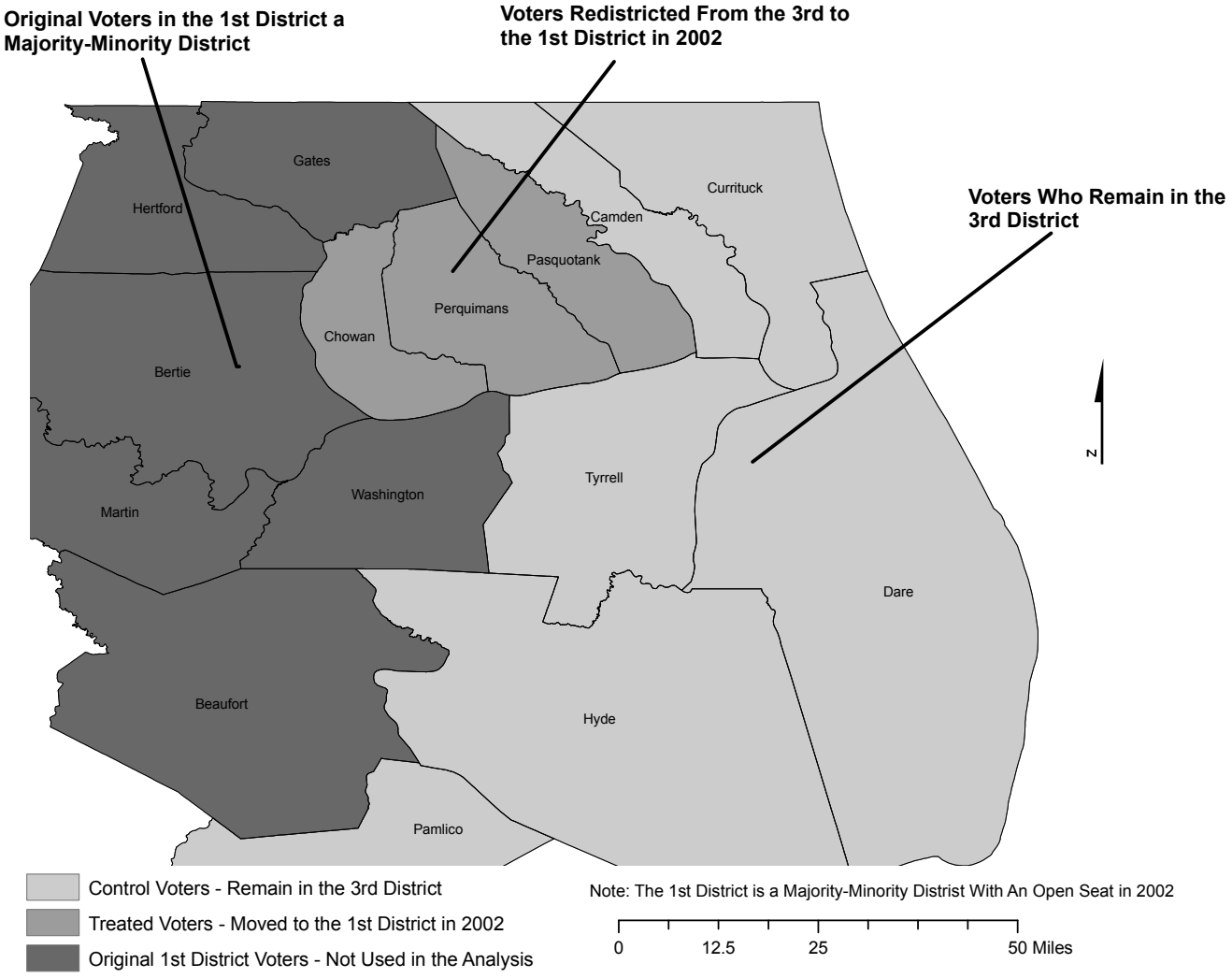

Figure 1: Change in district boundaries for North Carolina House Districts 1 and 3 from 2000 to 2002

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 Ballance an African American Democrat. Both won easily in 2002.

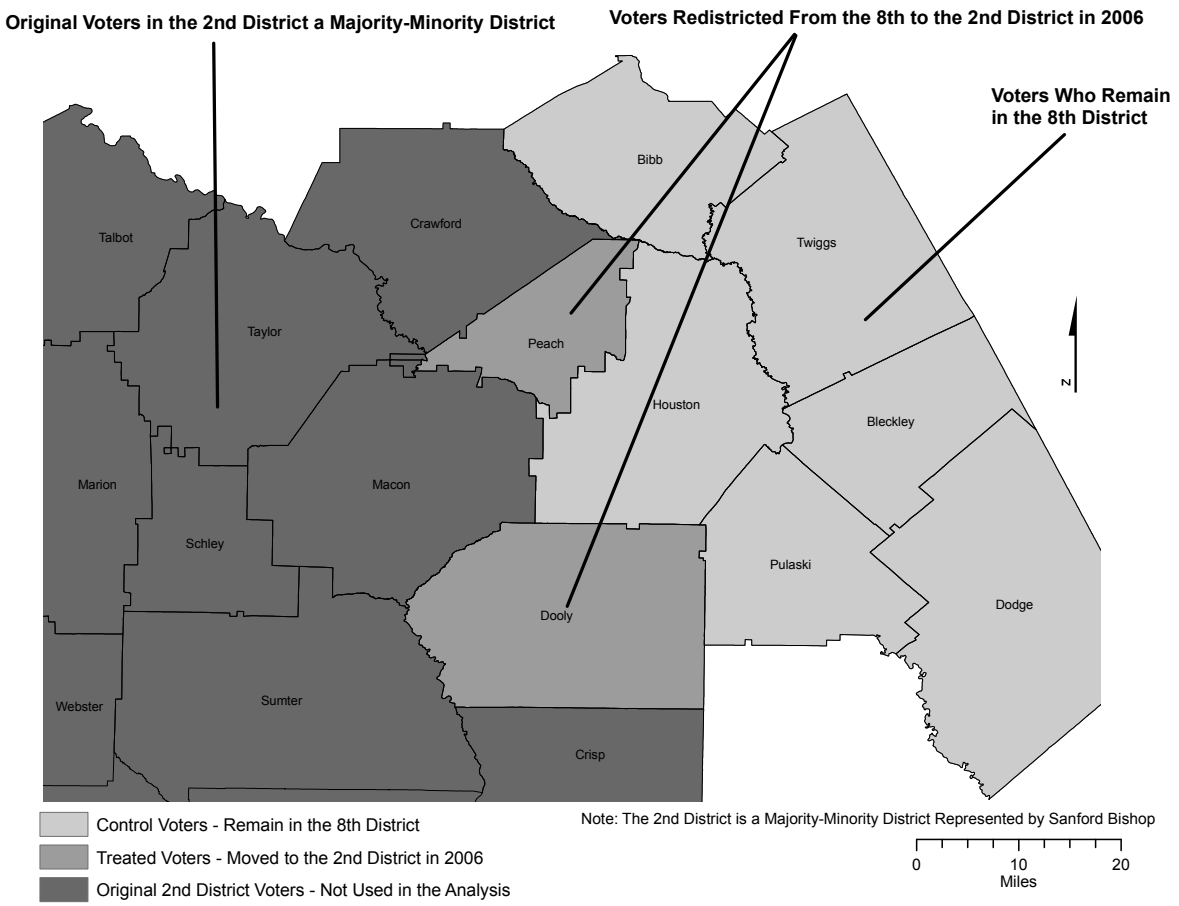

Figure 2: Change in district boundaries for Georgia House Districts 2 and 8 from 2004 to 2006

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.

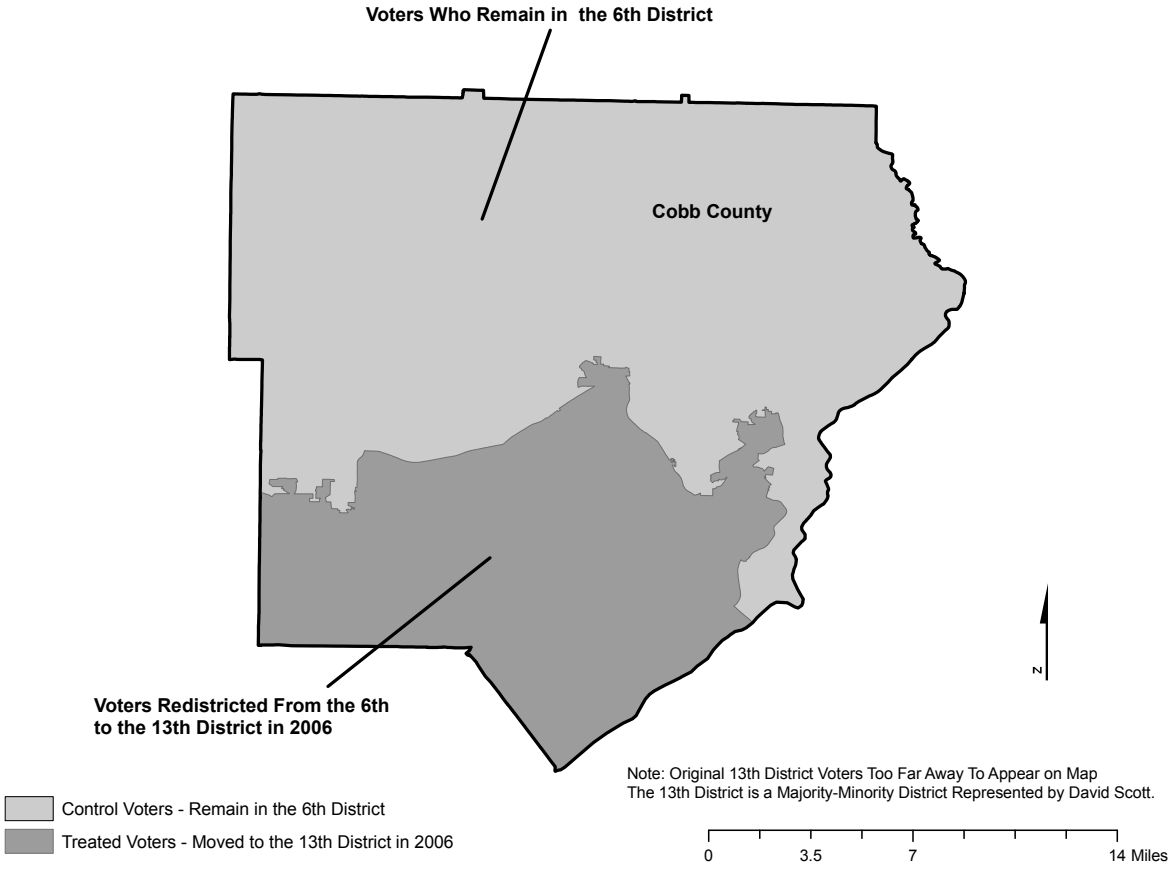

Figure 3: Change in district boundaries for Georgia House Districts 6, 11 and 13 from 2004 to 2006

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.

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