The Effect of Geography-Based Group Threat on Voter Mobilization: A Field Experiment [1]

DRAFT: PLEASE DO NOT CITE WITHOUT PERMISSION

Ryan D. Enos[2]

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[2]Department of Political Science, University of California, Los Angeles; renos@ucla.edu.

Abstract

The effect of group threat on voter mobilization has been tested using observational data across a number of different geographies and units of analysis. Previous studies have yielded inconsistent findings. To date, no study of voter mobilization has directly manipulated group threat using a controlled experiment. I take advantage of the unique racial geography of Los Angeles County, California, which brings different racial/ethnic groups into close, yet spatially separated, proximity. This geography allows for a randomized, controlled field experiment to directly test the effects of stimulating racial threat on voter turnout. A test of 3,666 African American and Hispanic voters shows an average treatment effect of 2.3 percentage points. The effect is 50% larger for African Americans than Hispanics. These results suggest that even low propensity voters are aware of the geographic proximity of other groups and can be motivated to participate by this awareness.

Racial threat, or more generally, group threat, is a psychological theory first identified by Key (1949), which hypothesizes that voters are motivated to participate by the presence of voters of another race in close spatial proximity. I test this theory by using a randomized field experiment to stimulate racial threat during the June 3, 2008 California Primary Election. I sent letters to voters from a sample of 3,666 African American and Hispanic [1] registered voters in Los Angeles County, California. The letters contained maps of the voters' neighborhoods and highlighted the voting rates on their block compared to another block nearby. The treatment group voted in the election at a rate 2.3 percentage points greater than the control group. Additionally, some voters had their voting turnout compared to the turnout of voters from the same racial/ethnic group, while others had their turnout compared to voters of a different racial/ethnic group. The turnout of those who were compared to a racial/ethnic group different than their own was larger than the turnout of those who were compared to their own racial/ethnic group. Further, the estimated effect of treatment for African Americans is larger than the estimated effect of treatment for Hispanics.

The results augment the literature on voter mobilization methods and are a unique field-experimental test of group threat.

1 Motivation for the Experiment

With this experiment, I use recent innovations in experimental techniques within political science to add clarity to long standing debates about group threat. That intergroup conflict affects behavior is well-established in laboratory findings (Tajfel, Billig, Bundy, & Flament 1971). However, the effect of group threat on real-world behavior is more controversial. With this experiment, I manipulate group threat using a relatively minor intervention to demonstrate the potential influence of group-threat based motivations on real-world political behavior. The intervention in this experiment is the sending of a letter to voters

[1] I purposely use the term Hispanic, rather than Latino or other nomenclature. In the surname analysis, which I explain below, the ethnic categorization is done by Hispanic surnames, as defined by the Census. I am unable to make a more nuanced delineation which may include the use Latino or other group identities.

comparing the turnout of their group to the turnout of another group. The letter never explicitly identifies the groups, rather it only identifies a city block; so the observed effect may demonstrate that individuals are aware of their spatial relationship to other groups.

Direct mail appeals for participation generally have small positive effects on turnout. Tests that appeal to some sort of social pressure, rather than patriotic duty or other appeals have the greatest positive effect (i.e. Gerber, Green, & Larimer (2008)). To the extent that this experiment finds a larger effect of treatment than the typical direct mail experiment, this may be attributable to the effects of group threat. That the effect of comparing a voter to another group is greater than the effect of comparing a voter to her own group, may be further evidence of group threat.

1.1 Voter Mobilization Experiments

Beginning with Gerber & Green (2000), direct mail experiments have experienced a resurgence of scholarly interest after a long hiatus following Gosnell (1927). [2] The effects of direct mail voter mobilization experiments have been very limited compared to effects of other forms of mobilization. As Green & Gerber (2004) summarize about direct mail in their guide to mobilizing voters, "none of the nonpartisan messages stood out as particularly effective" (p.59).

Recently, some mail experiments have specifically targeted racial minorities with messages tailored to appeal to those groups (Green 2004, Ramirez 2005, Trivedi 2005, Wong 2005). Green (2004) finds no effect when targeting almost one million African American households with multiple mailings. Ramirez (2005) targets low-propensity Latino voters across multiple geographies and, on average, finds no result from multiple mailings. Although, Ramirez finds no effect in Los Angeles County, in some other locations he finds a statistically significant effect. Wong (2005) treats Asian American voters in Los Angeles County, with some subjects receiving their mailings in a language other than English. On average, this experiment

[2] But see also Eldersveld (1956) and Miller, Bositis, & Baer (1981).

produces about a 1 point effect. [3]

In general, the research on direct-mail non-partisan mobilization efforts, including those targeting racial minorities, have demonstrated that small effects, if any, are expected (but, see Gerber, Green, & Larimer (2008)).

1.2 Group Threat

Key (1949) observed that white voters in Southern counties with a high proportion of African Americans voted at higher rates than whites in counties with fewer African Americans. Blumer (1958) proposed a general theory of "power-threat" behavior in which individual racial animosity is a function of out-group threats to the dominance of an individual's social position. Since these initial theoretical forays, there have been many observational studies of both the attitudinal and behavioral manifestations of group threat. There are numerous conflicting findings in these studies, which calls for a controlled test of the group threat hypothesis.

Key's (1949) findings were based on simple correlations. Since then, political scientists have attempted to apply more rigorous methods to test Key's hypothesis, with conflicting results. Matthews & Prothro (1963) find that levels of white voter registration at the county level in the South is related to levels of African American voter registration. Several studies expand Key's hypothesis to consider, not only turnout, but vote choice as well. Carsey (1995) uses exit polls and finds that the proportion of African Americans at the precinct level is positively correlated with white support of an African American candidate. Giles & Buckner (1993) use aggregate election results and claim that proximity to African Americans at the county level made whites in Louisiana more likely to vote for the openly racist David Duke. Voss (1996) criticizes Giles & Buckner's (1993) methodology and finds no relationship between African American proximity and Duke support. Glaser (1994) finds that the proportion African American at the county level is negatively correlated with white support

[3] See also Trivedi (2005), who finds no significant effect in making an direct-mail ethnic-identity based appeal to Indian Americans in Queens, NY

for racially liberal public policy.

With the increasing electoral importance of minority groups other than African Americans, an important update to these tests comes from Leighley & Vedlitz (1999). They include Asian Americans and Mexican Americans in their models, in addition to whites and African Americans. However, their results do not necessarily bring clarity to the debate. They use individual survey data and find that, in Texas, racial threat, as measured by proportion of all out-groups at the zip code level, has a *negative* effect on white participation, and no effect on African American, Asian American, or Mexican American participation. However, the sample size in this study calls into question the reliability of the null findings.

Theories of group threat and voter mobilization usually presume that threat is caused by group animosity. Observational studies of the effects of proximate out-groups on racial animosity are mixed. Fossett & Kiecolt (1989), Quillian (1995), Taylor (1998), and Wright (1977) find that whites' out-group animosity is increased by larger percentages of out-group neighbors, while Brewer & Miller (1988), Ellison & Powers (1994), Fitzpatrick & Hwang (1992), Sigelman & Welch (1993), and Welch, Sigelman, Bledsoe, & Combs (2001) find the opposite. Notably, Oliver & Wong (2003) find a negative correlation between racial animosity and out-group proximity and, when published, this piece was one of the only studies to measure the attitudes of non-white respondents. Gay (2006), in a study of African Americans and Latinos in Los Angeles, finds increased negative stereotypes by African Americans towards Latinos conditional on economic inequality between the groups.

1.3 Group Threat and Demographic Change

Intergroup competition is often considered to be strongest when one group, especially in a dominant political or social position, feels threatened by another group. This version of group threat is often called the "power-threat" or "real conflict" hypothesis (Key 1949, Blumer 1958, Blalock 1967, Bobo & Hutchings 1996). Observers noticed behavior consistent with this theory when the dominant white populations of American cities were displaced by

African Americans in the 1950's and 60's (see, for example, Rieder (1985)).

Ironically, African Americans in south Los Angeles County are in a situation somewhat analogous to white city-dwellers in the United States in the mid-twentieth century. African Americans displaced whites from South Los Angeles and the surrounding communities such as Compton and Lynwood beginning in the 1940's (see, for example, Sides (2004)). Since the 1960's these communities have been the geographic core of the African American population in Los Angeles County and have produced some of its most powerful political figures, including Representative Maxine Waters. The African American population here was a vital component of Tom Bradley's coalition during his five terms as Mayor of Los Angeles (Sonenshein 1993).

Since the early 1990's, the population in these communities has become increasingly Latino, to the point that the famously African American communities of Watts and Compton are now majority Latino. The political and social consequence of this demographic shift and the racial tensions that have accompanied it are a major theme in Los Angeles politics (Sonenshein & Drayse 2006). That African American voters could feel politically threatened by the increasing Latino population seems very likely and this phenomenon could be responsible for the larger effect of the stimulus on African Americans in my experiment. In future work I exploit this possible mechanism, as well as variation in economic inequality, as explored by Gay (2006), by comparing the effects of a treatment, similar to that used in this paper, on African Americans that live in racially stable neighborhoods to the effect on African Americans that live in neighborhoods that are experiencing racial change (Enos 2008).

With mixed results from the observational evidence, it appears that intergroup attitudes and behaviors deserve further study. Not only are there inconsistencies in correlations between attitudes and out-group proximity, but the empirical evidence on the behavioral consequences of these attitudes remain unsettled as well. In this study, I am able to reconnect the literature on attitudinal manifestations of group threat with behavioral consequences in

the form of voter participation. Additionally, by using a controlled experiment, I am able to make more definitive claims about causality than is usually possible with observational studies.

2 Experimental Treatment

Figure 1 is an example of the treatment that was sent to 1,381 African American and Hispanic registered voters in racially mixed areas of Los Angeles County prior to the June 3, 2008 California Primary Election. [4] I selected voters for the experiment if they lived in racially homogenous city blocks, specifically if the block was homogenously African American or homogenously Hispanic. Subjects receiving the letter had the voting rates of their city block compared to the voting rates of "another block nearby". The "block nearby" was randomly selected to be either a block of voters of the same race as the recipient or a block comprised of voters from the other racial group. The latter comparison is intended to prime group threat.

3 Expectations

This study is a controlled experiment and, therefore, should be free of any bias associated with unobserved variables. However, this study presumes to stimulate group threat, but there is no way of knowing how directly or effectively that particular psychological mechanism is stimulated. This may be a relatively weak treatment. So, to the extent that treatment with a simple letter, in the face of all the other competing influences on behavior, does affect behavior, it speaks to the potentially powerful influence of group threat on real-world behavior.

Consistent with other mail experiments, I expect that the participation of the treatment

[4]Note that the letter depicted in the figure has been modified to protect privacy and shows a commercial area in the Hollywood district of Los Angeles. The voter participation rates here are created for exemplary purposes. The actual letters contained real voting rates.

group will be greater than the participation of the control group. Additionally, as a test of group threat, I expect that the participation of African Americans (Hispanics) that are compared to Hispanics (African-Americans) will be greater than the participation of African Americans (Hispanics) that are compared to African Americans (Hispanics).

4 Selection of Sample and Creation of Treatment

Voter mobilization experiments normally require that the researcher use basic voter information such as demographics and the voters' addresses to assign and implement treatment. However, this experiment was designed to stimulate mechanisms associated with the racial identity of the voter and her spatial relationship to other voters. Neither of these pieces of information are readily available in the public voter files used by researchers [5] so several preliminary steps had to be undertaken before the sample was identified and the treatment letters were created and mailed. To begin, I gathered voter names and information of all registered voters in California from the California Secretary of State. [6]

4.1 The Right Geography

I chose Los Angeles County to implement the experiment because the racial geography is well-suited for testing the relationships between individual and group identity, space, and political mobilization. Los Angeles is one of the most diverse counties in the United States and has both a large African American population and a large Hispanic population.

Los Angeles County is also highly segregated. As measured by the Dissimilarity Index, which is a common measure of segregation, Los Angeles is the 19^{th} most segregated metropolitan area in the United States for African Americans and the 6^{th} most segregated for Hispanics or Latinos. [7] This blend of diversity and segregation makes Los Angeles County

[5] Race is included in the voter files of some states due to compliance requirements of the 1965 Voter Rights Act.

[6] I used the voter file that was published in December 2007.

[7] http://www.census.gov/hhes/www/housing/housing_patterns/

the right geography for this experiment. Los Angeles County has many communities, both within the City of Los Angeles and in its outlying areas, in which African Americans and Hispanics live in close proximity, within the same neighborhood for example, but are still separated on different city blocks. Many of these communities, such as Watts on the south-east corner of the City of Los Angeles, contain neighborhoods in which a city block might be entirely African American and an adjacent city block might be entirely Hispanic.

As noted in Section 1.3, starting in the last decades of the 20th century, historically African American communities experienced an in-migration of Hispanics (Charles 2006). As Hispanics move into these historically African American communities, the geographic pattern of segregated blocks in close proximity is similar to that which repeated itself across many cities in the United States during the post-War migration of Southern African Americans into traditionally white areas of cities (see, for example, Massey & Denton (1993)). I exploit this geographic phenomenon in this experimental design.

4.2 Neighborhoods Selection

I identify voters as eligible for the sample if they live in racially mixed neighborhoods in Los Angeles County. I use Census Block Groups to approximate neighborhoods. [8] There is no agreed upon definition of a racially mixed neighborhood, so I chose neighborhoods that were in the top quartile of Los Angeles County Block Groups in terms of African American and Hispanic population and the top quartile in African American population alone. The selection of these neighborhoods provides an adequately large sample of voters in neighborhoods that are racially mixed. [9]

[8] Other studies have used other areal units, for example Census Tracts, to approximate neighborhoods. As a smaller unit, Block Group intuitively strikes me as a better measure of neighborhood for the purposes of an area in which a subject is asked to have specific geographic knowledge about their neighbors. It is also a conservative choice of neighborhood in regard to finding racially heterogeneous neighborhoods, in that, all else equal, smaller neighborhoods are necessarily more homogenous.

[9] This means Block Groups in which the total population was at least 86% both African American and Hispanic and at least 10% African American. Because African Americans make up a much smaller portion of Los Angeles County than Hispanics, it is necessary to set a minimum threshold on the proportion of African Americans to ensure that they comprise a reasonable portion of the neighborhood. The specification of the

In order to place the voters in Census Block Groups, each voter's address had to be matched with address files from the U.S. Census. I did this by sending each address to the Census Bureau website and retrieving the returned information on the Census Tract, Block Group, and Block of each voter. After combining this information with the voter file, I was able to match the voter file with geographic based demographic data provided by the Census. With these data, I was able to identify the initial subset of voters that live in appropriate Census Block Groups.

4.3 City Block Selection

To be eligible for the sample, voters also had to be in a city block that was relatively homogenous and comprised of their own racial group. This was to maximize the potential for intergroup competition. City blocks are not an official Census designation, but are common geographic identifiers in everyday life. If a voter lives at 126 Broadway in Los Angeles, then her city block is "100 Broadway, Los Angeles". I manipulated the voter file to provide a city block identifier variable for each voter. I determined the homogeneity of a city block by analyzing the surnames of registered voters living on the block (the method is described below). City blocks could be selected if voters on their block had, on average, a .70 probability of being from one racial/ethnic group or another. So if a city block had residents that, based on their surname, had a .70 probability of being Hispanic on average or, similarly, if a city block had residents that, based on their surname, had a .70 probability, on average, of being African American, then voters on the block were eligible for the sample. [10]

In the actual sample obtained, the city blocks are much more homogenous than the minimum threshold required. In the African American sample, only 13% of the blocks have

neighborhood may have implications for the effect of the treatment, but there is no way to know this a priori and no way effective way to test the counterfactual, in a single iteration of the experiment.

[10] It is, of course, true that a person in the United States can be both Black and Hispanic. There is no way to avoid this confounding in name analysis. However, in Los Angeles County, Hispanics that identify as Black make up only about 1% of the Hispanic population.

an average probability of being African American of less than .80 and the mean is .89. For city blocks in the Hispanic sample, the average probability of being Hispanic is .84. Thirty-five percent of the city blocks in the sample have an average probability of being Hispanic of less than .80.

4.4 Subject Selection

Registered voters within these blocks were all potential subjects if I could determine their identity to be African American or Latino with a reasonably high probability of success. I, somewhat arbitrarily, defined the necessary threshold of probability of success as .70. That is, based on voters' surnames, I can be 70% confident that I have included them in the correct racial/ethnic group. The initial probability that a person is a particular race or ethnicity can be determined by looking at the probability that their surname is associated with a particular race or ethnicity according to U.S. Census counts of names by race. Bayesian updating, based on the demographics of an areal unit (in this case Census Blocks) can then be used to update this prior probability. The posterior probability that a person with a given surname, S, is of a particular racial group g_i is:

$$Pr(g_i|S) = \frac{Pr(S|g_i)p_i}{\sum_{j \in G} Pr(S|g_j)p_j} \tag{1}$$

where $Pr(g_i|S)$ is the probability that any given name belongs to racial group g_i, so that $Pr(S|g_i)$ is the probability that any given individual from racial group g_i has the name S. And p_i is the probability that any given individual living within a Census Block is of racial group g_i. [11]

G is the set of all available racial groups. There are six racial/ethnic categories for which the Census collects surname counts. So, for example, to calculate the probability that a

[11] Census Blocks, as the smallest possible areal unit for which racial demographic data is available, are used here to maximize the inferential power of the Bayesian function because the smaller the unit, the more likely it is to be racially homogenous, all else equal.

person with name S is African American, $j \in G$ would consist g_j = African American, plus the five other available racial group designations from the Census that are not African American. These would be white, American Indian or Alaskan Native, Asian or Pacific Islander, two or more races, and Hispanic.

The probability that a person from a racial group has a particular name, $Pr(S|g_i)$, is calculated by population counts of surnames provided by the Census Bureau. The Census lists all names that occur over 100 times in the Decennial Census. These name counts were then cross-referenced with Census demographic information and plugged into Equation 1. This allowed me to calculate the probability for every registered voter in Los Angeles County of being either African American or Hispanic.

As an example, I randomly selected a voter from my African American sample. This voter had the last name Smith. The prior probability that a person in the United States with the name Smith is African American is .222. This individual lived in a Census Block that is 74.47% African American. Putting these and the other probabilities into Equation 1 yields a posterior probability that this voter is African American of .977.

As another example, I randomly selected a voter from my Hispanic sample with the last name Gutierrez. The prior probability that a person with the name Guitierrez is Hispanic is already .924. However, this individual lived in a Census Block that was 55% Hispanic, so the posterior probability that this individual is Hispanic is a robust .998.

Similar to the selection of city blocks, the actual sample of individuals proved to exceed the minimum thresholds that I set for selection. The average voter in the African American sample has a probability of being African American of .95, while the average voter in the Hispanic sample had a probability of over .99 of being Hispanic. Only 3% of the African American sample had a probability of under .80 of being African American and only 0.3% of the Hispanic sample had a probability of being Hispanic of less than .80. For summary statistics of name probabilities in the sample, see Table 1.

If there are false positives in this process, that is individuals misidentified as either African

American or Hispanic, any bias that is created could be considered conservative in terms of testing my hypothesis.

If an individual was a registered voter and could be determined to be African American or Hispanic with .70 probability of success and lived on one of the eligible city blocks, within one of the eligible Census Block Groups, within Los Angeles County, she was eligible for the sample. [12] This yielded an initial sample of 1,973 African Americans and 3,261 Hispanics.

4.5 Creation of the Letters

Each letter includes a color map that marks the locations of the city block of each voter and a comparison block. One city block is marked with a blue line and one with a red line. The letter describes the turnout rate of each city block in a recent election. The turnout rates were found by grouping the voters on each city block in the voter file and calculating their turnout across each of the last eight elections.

Within each neighborhood, defined as a Census Block Group, two comparison city blocks were found. One city block that was homogenously African American and one that was homogenously Hispanic (see Section 4.3). The comparison city blocks that were selected were the city blocks that had the highest turnout rates in previous election. If there was a tie in turnout rates, the city block with the greatest homogeneity was selected. [13] Depending on the experimental group to which the voter was assigned (see below), the voter's letter referenced either an African American or a Hispanic city block, in addition to their own city block. So, each letter had a color map that showed approximately the Census Block Group in which the voter lived and included lines indicating two different city blocks.

To draw these lines, each address in the city block had to be geocoded with its corresponding latitude and longitude. To obtain the latitudes and longitudes, I sent the address

[12] If the voter files lists a voter as having requested ballot information and election materials in a language other than English, they were not eligible for the sample. The California Secretary of State includes information on whether the voter requests their materials in a language other than English. The languages made available, other than Spanish, vary by county. In Los Angeles County, voters can request materials in Chinese, Japanese, Korean, Spanish, Tagalog, and Vietnamese.

[13] If there was still a tie, alphabetical order was used.

of every voter in the sample and each address on every city block on which they lived to Google Maps API [14]. This service provides the latitude and longitude. On each map, the latitude and longitude points are connected by lines that trace over the city blocks.

With the geocodes in hand, I extracted the information for each subject from the voter list and I wrote a computer program [15] to combine the geocodes to create an HTML document. In each document I embedded a unique map, similar to the map that a person sees on the Internet when they search for an address at various commercial websites. The letter also includes the turnout rate of each highlighted city block and is addressed personally to the registered voter. Each of these HTML documents was then printed to create an individualized, tri-fold letter.

The letter is on laser-printer weight white paper. On the back, the letter says:

Important Voter Information

Do Not Discard

The first flap visible to the recipient says "Please read carefully". The return address identifies the sender as the Center for Governmental Studies, a non-partisan advocacy group with which I partnered to send the mailing. I sent the letters 6 days prior to the June 3, 2008 election, so most voters probably received a letter 4 days, or in some cases 3 days, prior to Election Day.

4.6 Randomization and Assignment

I divided the sample into Hispanics and African Americans based on the surname analysis described in Section 4.4. I assigned each voter a *Vote History* score of 0-8 based on their turnout in the previous 8 elections, which is all the voter history available in the California voter file. Then each voter was assigned to 1 of 9 vote history groups based on this score.

[14] http://code.google.com/apis/maps/

[15] The program was written in the Python programming language.

For the distribution of these scores across groups, see Figure 2. All groups are comprised of mostly low-propensity voters: the modal vote history is 0 votes in the last 8 elections.

Within each racial group, I randomly assigned half of each vote history group [16] to one of the two experimental conditions: the *similar* experimental condition and the *different* experimental condition.

I sent voters in the *similar* condition maps that compared their city block to a city block of the same race/ethnicity; so an African American voter was compared to a homogenously African American city block or a Hispanic voter to a homogenously Hispanic city block. The *different* condition meant voters were compared to a block of a different race/ethnicity: African American voters to Hispanics and Hispanic voters to African Americans.

An initial treatment group of 1000 voters was drawn for the Hispanic treatment group and 1000 voters was drawn for the African American treatment group. The remaining voters were assigned to the control. Some of the selected voters could not have a map created for them because of errors in the addresses. The rate of this error was about 25% across all groups. [17] Some voters were also not included in the final samples because they were not included in the updated voter file provided by the Secretary of State. [18] The final sample includes only those in the treatment groups and control groups for which a map could be produced and which were included in the updated voter file. This final N is 672 African Americans in treatment and 727 in control. The Hispanic sample consists of 709 voters in treatment and 1,558 in control [19] (See Table 2).

[16]Randomization was performed using *Postgres 8.2* structured query language (SQL) software. Postgres will randomly assign a number to each voter in the file and order the voters by these numbers. It then selects the first N voters on the list, where N is the number requested.

[17]This was because the entries were not compatible with the database that Google uses to geocode. There does not appear to be anything systematic about which addresses cannot be geocoded and simply seems to have had to do with random errors in the voter file and Google address database.

[18]I obtained the updated voter file from the Secretary of State in August 2008. This was the earliest available voter file to contain turnout from the June Primary.

[19]The rate at which voters had to be expunged from the samples due to missingness in the updated voter file was higher for African Americans than Hispanics. The rate was constant between treatment and control within each group, however. It is to be expected that the rate of missingness would be higher for African Americans than Hispanics based on the demographic turnover in the neighborhoods in which this experiment was conducted. Because the Hispanic population is replacing the African American population, the higher rate of missing African American voters probably reflected a higher rate of residential moving by African

5 Estimation Procedure

There are two parameters of interest that I estimate:

- The Intent to Treat effect (ITT): that is the effect of being assigned to the treatment condition, regardless of whether the letter was delivered.
- Differential effects: that is the ITT effect of the difference between the two experimental conditions: *different* or *similar*. That is the difference in effect of being sent a letter comparing a voter to a block of people different than her to the effect of comparing a voter to a block of people similar to her.

I estimate each of these separately for each racial group, which is appropriate for this design because the racial groups were randomized separately. The average effect across all groups can be estimated however, by including a control variable for the race of the voter.

The dependent variable is turnout in the June 3 election. The explanatory variable of interest is assignment to the treatment condition. Despite the randomized design, sampling error may cause imbalance on observable covariates between treatment and control. If there is imbalance, and these covariates are correlated with the dependent variable, and with assignment to the treatment condition, then there could be reduced precision in the estimate of the effect of the treatment. To correct for this, I test regression model specifications that include the available covariates as controls, which are *Vote History* and *Age*. While there is reason to believe that these variables may affect voters' turnout, there is no a priori reason to believe that they have been allocated to treatment and control in such a way so as to bias the estimate of the treatment effect. As such, the estimated ITT effect, β, can be estimated with the equation:

$$\beta = \widehat{V}_{treatment} - \widehat{V}_{control} \tag{2}$$

where V is the percentage of the group that votes, also called the turnout rate.

Americans.

Controls can be introduced in a regression format, so that β can be estimated by:

$$Vote = \alpha + \beta_1 Treatment + \Gamma X + \epsilon \tag{3}$$

Where X is a matrix of covariates. $Vote$ is a dummy variable coded as 1 for voting in the election and 0 if not.

The effect of each type of the treatment under the two experimental conditions: *different* and *similar* can be measured by introducing variables for each condition into the model:

$$Vote = \alpha + \beta_2 Different + \beta_3 Similar + \Gamma X + \epsilon \tag{4}$$

All estimates in this paper are generated using an ordinary least squares estimation procedure with standard errors clustered at the city block level to correct for any inter-cluster heterogeneity. [20]

6 Results

Table 3 displays the regression estimates of the ITT effects for the entire sample and for each racial/ethnic group. The cell entries in parentheses are clustered standard errors. The three columns to the left are for the entire sample. The three middle columns are for the African American sample and the three rightmost are for the Hispanic sample. The first column of each group is the basic ITT coefficient for the treatment, without covariates. The middle column is the model with controls for $VoteHistory$, Age, and Age^2 included. The rightmost column is the estimated effect of the treatment in each experimental condition, with controls included.

For the entire sample, the treatment has an average ITT effect of 2.3 percentage points.

[20] The regression models outlined above can also be estimated using a non-linear, probit model to account for the binary outcome structure of the dependent variable. The predicted values generated by the coefficient estimates from a probit model are very similar to the predicted values generated by OLS estimates. As such, only the OLS estimates are reported in this paper. Probit estimates are available from the author.

This effect is statistically significant at conventionally accepted levels ($p < .05$, one-tailed test). *Black* is a dummy variable for whether the subject is African American. Introducing controls for *Vote History*, *Age*, and Age^2 mitigates this effect to 1.7 points. The 1.7 point effect is marginally significant. This effect indicates that a single mailing comparing the participation of voters' blocks to participation of nearby blocks will raise turnout an average of 1.7 points.

Looking at the estimates for each individual experimental condition in the third column, the effect of the *different* condition, that is an African American (Hispanic) city block being compared to a Hispanic (African American) city block, is slightly greater than the estimated effect of the *similar* condition, that is an African American (Hispanic) city block being compared to another African American (Hispanic) city block. But I cannot reject the null hypothesis that the effects of these two conditions are the same.

6.1 Effects on the African American Sample

African Americans assigned to the control group turned out at a rate of .282, while turnout for those assigned to the treatment group was .314. This indicates an estimated treatment effect of 3.2 points. The regression estimates of treatment effects for the African American sample are in the middle three columns of Table 3. The effects of the treatment are consistently larger for African Americans than for Hispanics (see below).

The smaller sample makes the estimates less precise, but the size of the point-estimates are substantively large. With controls, the estimated effect of treatment is 2.0 points. The difference between the estimated effect of the two experimental conditions is larger than in the entire sample, with the effect of the *different* condition almost 1 point greater than that of the *same* condition. Once again though, the null hypothesis of no difference cannot be rejected.

6.2 Effects on the Hispanic Sample

The effects on the Hispanic sample are smaller than the African American sample, indicating the effect of the treatment may be greater on African Americans. Hispanics assigned to the control group turned out at a rate of .102, while turnout for those assigned to the treatment group was .118. This indicates an estimated treatment effect of 1.6 points.

Looking at the regression estimates in the right three columns of Table 3, the estimated ITT effect of the treatment, with controls, is still a substantively significant 1.4 points, but the estimate is relatively imprecise ($p = .15$). The difference between the two experimental conditions is also smaller than in the African American sample. This suggests that the group threat mechanism may have a greater effect for African Americans than Hispanics.

7 Discussion

This experiment demonstrates that a simple letter that calls attention to the aggregate voting habits of neighbors has a substantively large effect. The letter did not identify any individuals by name, nor did it identify any groups, other than by geography. The effect suggests that voters are aware of the geographic context of intergroup relations. Additionally, because unobtrusive stimulation of group competition has a large effect, it seems likely that group threat is a significant determinant of political behavior for some individuals.

7.1 Comparison to Other Designs

Relative to other experiments on direct mail, the effect of this type of appeal is large. Gerber & Green (2000) in their initial direct mail appeal to almost 30,000 voters achieves a treatment on the treated effect of less than 1 point while using up to three mailings that included messages about civic duty, neighborhood solidarity, and the competitiveness of the election. That their neighborhood-based appeal is relatively ineffective also speaks to the particular effectiveness of the treatment in this experiment, which is not only a neighborhood

solidarity appeal, but an appeal to neighborhood and group *competition*.

Gerber, Green, & Larimer (2008) also conduct a neighborhood-based social pressure experiment in which they compare the voting rates of voters to the voting rate of individuals in their neighborhood. The effect of their treatment was a very large 8.1 points. That my experiment can achieve a substantively large effect using the less obtrusive method of aggregate comparisons speaks to its potential usefulness as a voter mobilization method.

A more direct comparison might be to other randomized experiments that targeted similar populations. The largest direct mail experiment targeting African Americans that has been published in a major political science journal is Green (2004), which sent mail to 980,208 African American voters in several states and has no effect. Ramirez (2005) targets 87,341 Latino voters in Los Angeles County, a very similar population to that of my experiment. The ITT effect, with four mailings that were specifically designed as an appeal to the Latino population, is actually negative, although not statistically significant. The effects of my experiment indicate that the effect of direct mail on African American and Hispanic voters can be very large when the treatment primes group-threat based on geographic separateness.

This experiment was conducted during a low participation election: the base turnout was only 16%. Further work in this area should attempt to replicate the effectiveness of this method in higher-salience elections.

7.2 Effectiveness of the Treatment as a GOTV Method

In terms of cost per vote mobilized, this method is extremely effective. The total cost of the mailings of only about $1000 means that votes can be mobilized for about $13 per vote. This is extremely cost effective compared to, for example, Gerber & Green (2000), which had a cost of about $40 per vote for direct mail. [21]

[21] My estimate does not include labor costs because the preparation of the mailing was done using volunteer labor. Volunteer labor is a very common phenomenon in political campaigns, so this cost probably represents a cost not unlike what a political campaign might experience. The letters were also sent using first-class postage, which is more expensive than the bulk postage rate that is commonly used for these experiments; so, this treatment may, in fact, be even more relatively cost effective.

7.3 Comparison of Effect on African Americans and Hispanics

The effect on African Americans, based on the regression point-estimates, is larger than that for Hispanics. The estimates also indicate that for African Americans, the effect of comparison to a block that is made of Hispanics is greater than the comparison to a block that is comprised of African Americans. Additionally, the effect for African Americans of comparison to Hispanics is greater than the effect for Hispanics of comparison to African Americans. All of this suggests that, in the neighborhoods targeted for this study, inter-group competition may be more easily primed among African Americans than Hispanics. Based on the demographic changes in Los Angeles County, this is not unexpected and may have implications for understanding the political behavior of racial/ethnic minority groups in the face of continued demographic change in the United States.

Tables and Figures

Table 1: Mean and Median Name Probabilities, by racial group

	African American			Hispanic		
	All	Control Group	Treatment Group	All	Control Group	Treatment Group
Mean	.9498	.9475	.9521	.9929	.9926	.9935
Median	.9704	.9683	.9719	.9980	.9979	.9981
N	1399	727	672	2267	1558	709

Cell entries represent the means and medians of probabilities that the surnames of voters in each treatment category belong to the given racial/ethnic group. N for each group is also included.

Figure 1: Example Treatment

Dear Valdimer Orlando Key:

DID YOU KNOW THAT PEOPLE LIVING NEARBY VOTE MORE THAN YOU AND YOUR NEIGHBORS?

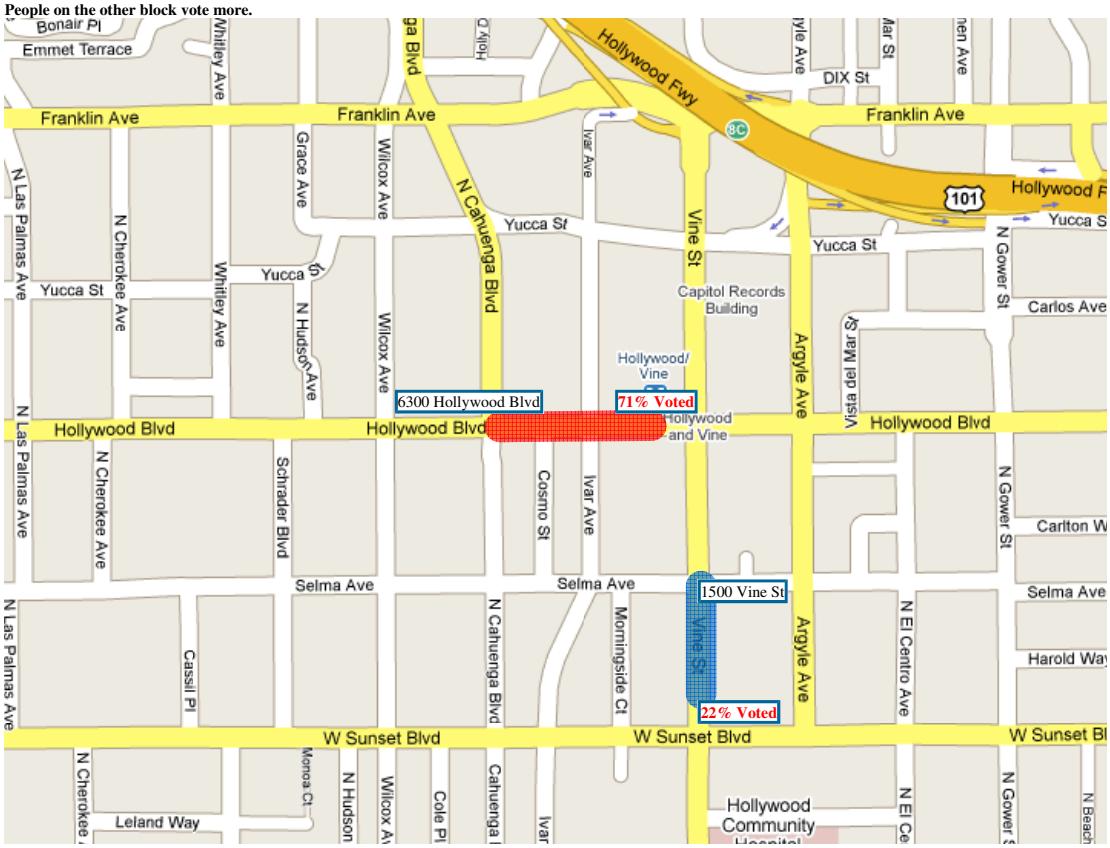
Below is a map of your neighborhood.

Your block, *1500 Vine St*, is marked in blue.
Another block nearby, *6300 Hollywood Blvd*, is marked in red.

According to public records:

On your block, **only 22% of voters** voted in a recent election.
On the other block, **71% of voters** voted in a recent election.

People on the other block vote more.



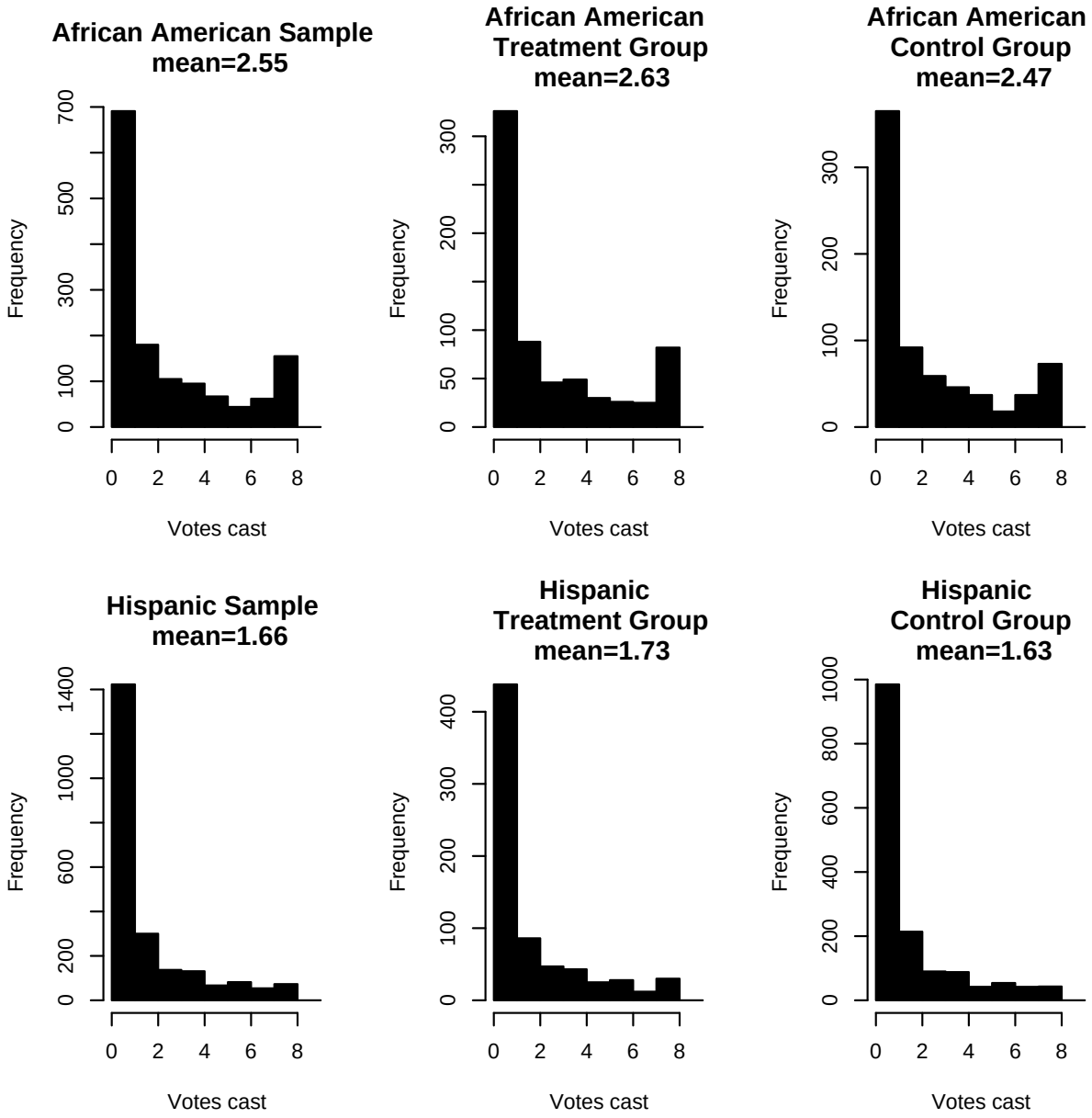
Remember, politicians listen to people who vote! Will the politicians listen to you and your neighbors, or other people?

Vote in the California Primary Election on June 3rd!

Voter Information provided by the non-profit, nonpartisan *Center for Governmental Studies*.

Note that the area and voting rates depicted on this map are for illustrative purposes only. This represents a commercial area in Hollywood, the actual letters were sent to another part of Los Angeles County.

Figure 2: Vote History Distributions



The bars represent the number of voters that voted each number of times in the last 8 elections. Top three histograms represent the African American sample. Bottom three represent the Hispanic sample. Note that the y-axis varies across histograms

Table 2: Treatment and Control Assignment, by racial group

	Control Group	Treatment Group	Total
Hispanics	1558	709	2267
Blacks	727	672	1399
Total	2285	1381	3666

Table 3: Regression Estimates, Intent to Treat

	All			African American			Hispanic		
Treatment	.0229	.0168		.0320	.0204		.0164	.0136	
	(.0135)	(.0118)		(.0251)	(.0205)		(.0146)	(.0135)	
Different			.0179			.0249			.0155
			(.0148)			(.0253)			(.0174)
Similar			.0157			.0160			.0116
			(.0150)			(.0249)			(.0174)
Black	.1863	.0985	.0985						
	(.0169)	(.0142)	(.0142)						
Vote History		.0574	.0574		.0731	.0732		.0410	.0410
		(.0031)	(.0031)		(.0042)	(.0042)		(.0041)	(.0040)
Age		.0044	.0044		.0094	.0094		.0021	.0021
		(.0008)	(.0008)		(.0012)	(.0012)		(.0013)	(.0013)
Age^2		.0000	.0000		.0000	.0000		.0000	.0000
		(.0000)	(.0000)		(.0000)	(.0000)		(.0000)	(.0000)
Constant	.1000	-.1299	-.1299	.2820	-.2404	-.2406	.1021	-.0326	-.0324
	(.0076)	(.0215)	(.0215)	(.0187)	(.0376)	(.0376)	(.0075)	(.0304)	(.0304)
F-Statistic	114.2	226.2	188.4	1.712	143.1	114.4	1.373	65.84	52.66
Degrees of Freedom	3663	3660	3659	1397	1394	1393	2265	2262	2261
N		3666			1399			2267	

Dependent variable is vote in the June 3, 2008 election. Cells are coefficient estimates from ordinary least squares regression. Cells with parentheses are standard errors, clustered at the city block level.

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