

Voter Characteristics and Distance in Voting Patterns: Cecil Field NAS

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An alternative view of Tiebout's original thesis is that individuals currently in a local area facing positive moving costs will reflect their satisfaction or dissatisfaction by their votes on public issues that significantly impact their welfare. We uniquely explore this issue by examining the election results for a 2006 county wide referendum seeking the re-opening of Cecil Field Naval Air Station in Jacksonville, Florida. Precinct level voting results are examined linking these to zip code based socio-economic and demographic data. Regression analysis explores the role of socio-economic and demographic characteristics and the proximity to Cecil Field in voter behavior.

Tiebout (1956) presents the now well known argument that voters express their satisfaction or dissatisfaction with the provision of local public goods relative to the taxes extracted from them through their movements into or out of a given area. Further, through the expression of their desires via elections and 'voting with their feet' citizens influence local governments to adjust to this by modifying the mix and quality of local services provided. An alternative view presents itself when individuals are essentially place-bound due to their investment in real property, but face an opportunity to vote on public issues that would significantly impact their welfare. Examples of such decisions are voting on the placement of landfills, public schools, et cetera. Economists have commonly argued that such decisions are susceptible to the "not in my back yard" problem. This paper explores these issues by examining the results of voting on a local referendum to re-open Cecil Field Naval Air Station in Jacksonville, Florida. The paper analyzes the role of socio-economic and demographic characteristics, along with distance from the base, as determining factors in explaining voter behavior.

Section I provides a brief history of the issue surrounding Cecil Field Naval Air Station leading up to the 2006 referendum and a generalized discussion of the outcome. A brief summary of the key literature and its linkage to our research is presented in Section II. Section III provides a description of the data and presents the empirical analysis. Section IV presents a conclusion with suggestions for further research.

Section I

Three naval installations have historically been located in the Jacksonville area in northeast Florida: Mayport Naval Base, Naval Air Station Jacksonville, and Cecil Naval Air Station. The situation changed during the 1990s as a result of the Base Realignment and Closure Commission (BRAC) decision in 1993 to recommend the closure Cecil Field Air Station. Subsequently, the Navy slated Cecil Field for closure and the base was decommissioned on September 10, 1999 ending a 58 year on again, off again career as a Navy jet base. (Pinzur, 1999) At its closure, Cecil field consisted of 30,000 acres of land, numerous buildings and a complete airport facility. (Pinzur) Following the closure, the land was separately deeded to the city of Jacksonville, the Jacksonville Port Authority, and Clay County. Thus, Cecil Field began its second life as a commercial and recreational facility.

In 1995 the BRAC questioned the continued viability of Oceana Naval Air Station in Virginia Beach, Virginia due to neighborhood encroachment and fears of citizen complaints regarding noise associated with the jet operations. Suddenly, the re-opening of Cecil Field as a Navy base seemed possible. Following several years of discussion and public debate, a citizens' group was able to place a referendum on the ballot directing the city of Jacksonville to pursue returning the base to the Navy (DeCamp, 2005).

The public debate over the issue was intense with particularly strong division between neighborhoods that had developed near Cecil Field post closing and other community groups and business interests who saw potentially greater economic development resulting from the return of the Navy. Of note was the strong support for the referendum expressed by a number of black ministers strongly arguing that the base

would mean more jobs for the people in their communities (Piatt, 2006). In addition to the public debate, legal challenges also arose as the City went to court to argue that the referendum was invalid. The issue was actually undecided at the time of voting, with the judge ruling that there was insufficient time to hear arguments before the election, but the issue would be examined after the election should the referendum be approved (Piatt, 2006). Media reports leading up to the day of the election suggested the referendum was likely to pass (Hansen, 2006).

As this issue evolved, we became interested in it as an opportunity to better understand the underlying factors that determine voting on such a referendum. Of particular interest were the issues of proximity to Cecil Field and concentrations of Navy personnel residing in a voting precinct. We see this issue as a variation on the Tiebout “voting with their feet” hypothesis.

Section II

Tiebout’s theory that consumer-voters actively seek out communities that satisfy their preferences of public goods and that the government will adjust to this pattern of preference is the back bone of our research (Tiebout, 1956, p. 418). The hypothesis that individuals who had vested interests in the newly developed Cecil Field area of Duval County would be the most opposed to the return of the Navy while individuals who lived farther from the proposed base location (and consequently avoid any negative externalities such as noise pollution) would be attracted to the proposed economic benefits of a large military base. The concentration of Yes votes on the Cecil Field Referendum would then grow increasingly larger as the voting population’s distance from Cecil Field increased.

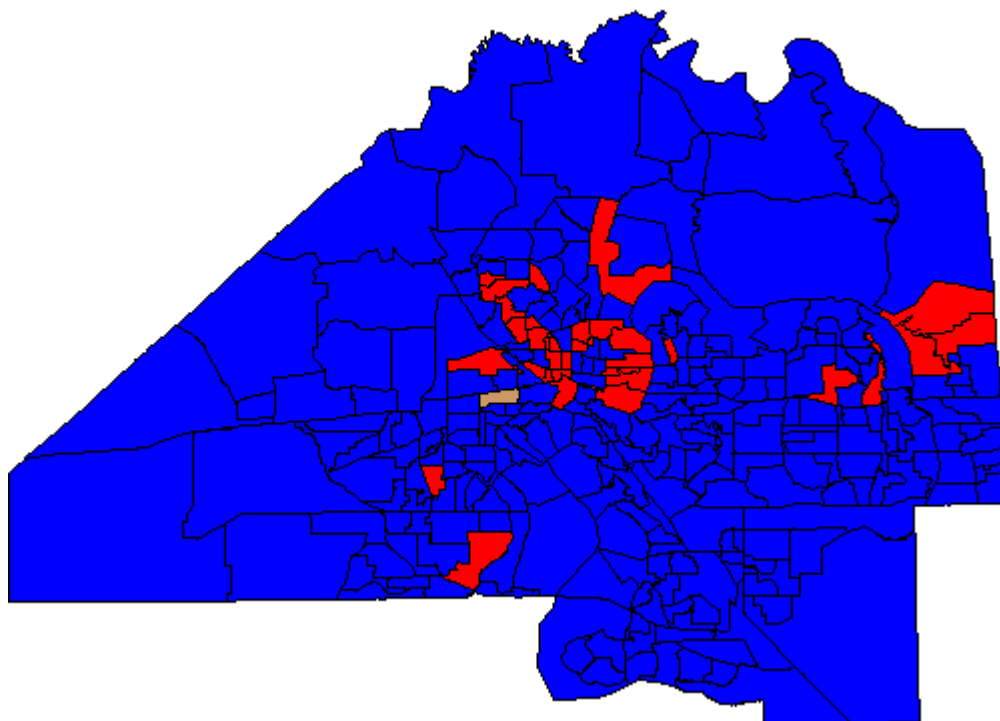
In his paper “On Local Finance and the Tiebout Model” Oates criticizes what he describes are “unrealistic” expectations of the public sector particularly regarding the fluidity that individuals could literally move with regards to real estate (Oates, 1981, p. 93). Relevant to this study, Oates argues that there is enough diversity in the public sector to permit various levels of demand for public goods, which for Oates translates into a willingness to be taxed for these various services (1981, p.94). A similar argument was brought up in Nechyba’s “Existence of Equilibrium and stratification in local and hierarchical Tiebout economies with property taxes and voting” which stressed that the vote for tax rates was equivalent to the vote for public goods, citing the necessary relationship between taxation and distribution of public goods (Nechyba, 1997, p. 279).

Unlike Oates, Nechyba does subscribe to Tiebout’s theory of geographic relocation to the extent that individuals who desire a certain tax rate and set quantity of public goods will very likely reside in the same geographic area and thus influence other individuals (1997, p. 285). Although a change in taxation for the public sector was not mentioned in the debates over Cecil Field there were significant concerns over the proposed costs to the city if the base reopened. The city would be responsible for costs associated with relocating businesses established at the Cecil Field Business Park. Considering the “myopic” nature of the voter, these tremendous financial undertakings that only had partial benefits likely played a determining factor as to how seriously the voter felt about the reopening of Cecil Field (1997, p. 281).

Cecil Field was represented on the ballot as a nonbinding straw referendum, not very effective for policy but very effective to observe Tiebout. According to Kollman, Miller, and Page (2003) the democratic referendum is a relatively stable environment to observe voter preference and allows for political instability so that voters can align themselves more freely in accordance with their preferences (2003, p. 200). This provided ample opportunity for voters to increase their aggregate utility in theory by supporting or rejecting the referendum.

Section III

We initially intended to analyze the election results by examining the underlying characteristics of precincts voting yes versus those voting no. This was complicated when, much to everyone's surprise, the referendum failed with 59.76% of the electorate voting no and over 80% of the precincts voting no. The following map shows the geographic distribution of the precinct results showing the overwhelming number of precincts voting no (Brumley, 2006). The results offered encouragement that our



Cecil Field Referendum

Choice	Total Votes	Color
YES	85,832	Red
NO	127,547	Blue
Tie		Brown
Has Not Reported		Tan
Not Participating		Grey
		White

Map only represents Election Day precincts reporting. Map and numbers from [Duval County Supervisor of Election's Web site](#)

a priori thinking about the impacts of the naval personnel and African American populations might be substantiated. The yes precincts to the far south and east are near the other naval installations in Jacksonville. The concentration near the center is in the downtown and northside areas which are heavily African American and lower income. (Brumley) Given these results, we modified the dependant variable to be the percentage of yes votes cast in each precinct.

Socio economic and demographic data were not directly available for the precincts. These data were obtained from the Jacksonville Chamber of Commerce by zip codes and cross-referenced this against the precinct locations. Where precincts overlapped zip codes, we used the data from the zip code area in which the greatest portion of the precinct lay. In cases where there was an even division, which occurred more than once, we averaged. We believe that the resulting average was a fair approximation of both zip codes.

A multiple regression model was constructed to investigate the hypothesized relationship between the percentage of yes votes on the Cecil Field referendum by precinct and the independent variables discussed previously. The initial formulation of the model had eight independent variables which are described in Table 1.

Table 1: Independent Variables in the Multiple Regression Model

Name	Description
DCF	Distance from precinct to Cecil Field in miles
MPNAS	A binary variable set equal to one if the precinct is within 2 miles of Mayport Navy Base or Naval Air Station, Jacksonville, 0 otherwise
POP	Precinct population (in thousands)
W	Precinct percent white
M	Precinct percent male
ED	A binary variable set to 1 if the proportion of the precinct population with college degrees is greater than 50%, 0 otherwise.
AGE	Precinct median age
I	Precinct median household income

The estimation of the regression equation was conducted on a sample of 285 precincts located in Duval County. The initial results showed that three of the independent variables theorized to play a role in determining the value of the dependent variable should not be included in the model, since they had p-values considerably larger than 0.05. The variables excluded from the final regression equation are ED (p-value = 0.531), AGE (p-value = 0.338), and I (p-value = 0.485).

The final form of the estimated equation follows. \hat{Y} is the predicted percentage of yes votes on the Cecil Field referendum in a precinct, given values for DCF, MPNAS, POP, W, and M.

$$\hat{Y} = 23.1 + 0.359 \square DCF + 6.35 \square MPNAS + 0.136 \square POP - 0.219 \square W + 0.436 \square M$$

The adequacy of the model is examined by appealing to the F statistic, its corresponding p-value, and the value of adjusted r^2 . The value of F for the regression equation is 46.56, and the corresponding p-value is 0.000. This suggests that the final form of the multiple regression model has significant explanatory power. Furthermore, adjusted r^2 is 44.5%. Approximately 45% of the variation of the percentage of yes votes by precinct on the Cecil Field referendum is explained by the model constructed for this purpose.

A more detailed look at the results of the estimation procedure can be found in Table 2. This table lists the estimated coefficients, standard errors, t-statistics, and p-values for the independent variables in the final model.

Table 2: Estimated Coefficients, Standard Errors, T-Statistics, and P-Values for Variables in the Model

Variable	Est. Coef.	Std. Error	T-statistic	P-value
Constant	23.1	5.61	4.11	0.000
DCF	0.359	0.06	6.42	0.000
MPNAS	6.35	2.76	2.30	0.022
POP	0.136	0.03	4.90	0.000
W	-0.219	0.02	-13.81	0.000
M	0.436	0.12	3.71	0.000

All the variables in the final model have p-values less than 0.05. The probability that the sample results were achieved by chance and not because of an underlying population relationship between these variables and the dependent variable is quite remote.

The results are quite strong and supportive of the initial hypotheses. Distance from Cecil Field is positive and significant supporting the a priori expectation that those living in closer (farther) proximity to Cecil Field would be more (less) likely to feel the negative impacts of a return of the navy base, thus increasing the likelihood of no (yes) votes. Similarly, those neighborhoods located near the two existing naval bases were significantly more likely to vote yes on the referendum. In fact, a review of the election map shows these as some of the few precincts to vote yes overall. While we do not know precisely how many naval personnel live in these areas, it is reasonable to assume a greater concentration within those neighborhoods in closer proximity to the bases. Also, while we cannot definitively state that such individuals would always vote in favor of a referendum such as this, the information available in local media clearly suggested significantly greater support for re-opening CFNAS from the local military population. Race as measured by the percentage of white population is significant and has the expected sign indicating the split suggested by the intense politicking in the black communities. We believe that race is also serving as a proxy for education and income given known information about the distributions of these variables across race in the Jacksonville community. Additionally, gender was examined as a simple hypothesis that men may be more likely to view a naval base as contributing to a stronger military and would thus be more supportive of the referendum.

The significance of the population variable is at first puzzling. However, upon further reflection and review of the precinct maps, we believe that this is really measuring population density. If true, this would likely be serving as additional proxies for education and income. The concentration of yes precincts in the center of Jacksonville suggests that this may be true in concert with the race and education variables. The yes precincts in the center of the election generally have greater population density, are more African American and have lower levels of educational attainment than those in the more suburban areas.

SECTION IV

Jacksonville, Florida held a referendum on returning a former naval air base to the Navy for re-activation as a naval jet base. This election offered a significant opportunity to examine the role of distance and various other variables expected to be important to voters in making their decision.

Similar to Tiebout's view that individuals may move to acquire more desirable public services relative to their tax payments, we considered distance as a proxy for consumers' satisfaction with the benefit/cost analysis associated with this referendum; essentially viewing being far from Cecil Field as the equivalent of "moving" from a non-desirable area.

Overall our analysis suggests that those individuals who saw the return of the navy base as either not impacting them directly (distance), significantly adding to economic opportunity (race, population), or as contributing significantly to national defense (MPNAS, gender) were significantly more likely to vote yes.

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