A Precinct-Level Demographic Analysis of Double-Punching in the Palm Beach Presidential Vote

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1 Summary

A precinct-level demographic analysis of the November 2000 Presidential vote in Palm Beach Florida shows that overvoting – marking the ballot for two different candidates – cost Gore at least 4,270 more votes than Bush, and possibly as many as 17,710. This result is highly statistically significant.

Our statistical analysis shows that:

- Overvoting is positively related to the percentage of registered voters who are over the age of 65, Black, Hispanic, and Democrats, and is negatively related to the percentage who voted for Bill Nelson (the Democratic candidate for Senate). This equation accounts for 71% of the variation in the percentage of overvotes.

- After controlling for the above variables, both Gore and Bush lost votes due to overvoting. Our point estimate[1] is that Gore lost 0.82% votes for every 1% of overvoting, and Bush lost 0.24%.

- The impact of overvoting on the election is the effect on the difference between Gore's votes and Bush's votes. This difference is positively related to the percentage of registered Democrats and those registered to third parties, and to the percentage of votes to Bill Nelson. It is negatively related to the percentage of overvotes. This equation accounts for 98% of the variation in the difference between Gore's and Bush's votes.

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[1]These numbers do not sum to 1. In fact they sum to 1.06. This is reflective of sampling error and the fact that voters had multiple choices beyond Gore and Bush.

- Our point estimate is that Gore lost 0.58% more votes than Bush for every 1% of overvoting, holding demographic factors constant. A 99% confidence interval for this impact is $[-1.03, -0.13]$.

- Of the 19,000 ballots in Palm Beach lost due to overvoting, our point estimate is that the net cost to Gore was 11,020 votes.

- The lower bound of the 99% confidence interval for the net cost is 4,270. At a high level of confidence, we conclude that Gore lost *at least* 4,270 votes due to overvoting.

The data and programs used in this analysis are available on my webpage.

2   Data Description

The county of Palm Beach is divided into 531 voting precincts. In addition, there are 106 precincts for collection of absentee ballots. Our analysis is confined to the voting precincts.

The county of Palm Beach has posted[2] the results of the Presidential race for each precinct. At present, these are the initial count, not the recount, so our analysis is with the initial voting count.

The county of Palm Beach has also posted[3] precinct-level information on the demographic characteristics of its voting population. This information is taken from voter registration forms. The information includes a breakdown of the voters by race, gender, party affiliation and age.

Some listed precincts reported zero votes. Others had just a few. I deleted all precincts which reported less than 20 votes. This left 494 observations.

All our variables are percentages; that is, are ratios multiplied by 100.

The variables *Overvotes*, *Bush*, and *Gore* are the percentage of votes which were over-votes (double-punched), for Bush, and for Gore, respectively. The total number of votes to form these ratios is the total votes cast for president including overvotes.

The variable *Nelson* is the percentage of votes cast in the senate race for Bill Nelson.

The demographic variables Age_{18-29}, Age_{65}, *Black*, *Hispanic*, *Female*, *Democrat*, and *OtherParty* are expressed as percentages of the number of registered votes in the precinct.

3   Regression Analysis

Our first equation is a linear regression of *Overvotes* on the above variables.

$$Overvotes = \begin{array}{c} -3.44 \\ (3.06) \end{array} - \begin{array}{c} 0.017 \\ (0.028) \end{array} Age_{18-29} + \begin{array}{c} 0.041 \\ (0.007) \end{array} Age_{65} + \begin{array}{c} 0.089 \\ (0.010) \end{array} Black$$

$$+ \begin{array}{c} 0.205 \\ (0.038) \end{array} Hispanic + \begin{array}{c} 0.064 \\ (0.046) \end{array} Female + \begin{array}{c} 0.099 \\ (0.034) \end{array} Democrat$$

$$+\ \ 0.028\ \ OtherParty\ -\ \ 0.044\ \ Nelson$$
$$(0.064)\qquad\qquad\qquad (0.032)$$

$$R^2 = 0.71 \qquad \hat{\sigma} = 1.81 \qquad n = 494$$

Heteroskedasticity-consistent standard errors are reported in parenthesis.

This equation shows that overvoting is highly predictable from demographic variables. The most important variables appear to be $Hispanic$, $Democrat$, and $Black$. The other variables are not particularly important in predicting overvoting.

Our second and third equations estimate nearly identical regressions for $Bush$ and $Gore$, except that $Overvotes$ is added. I do not write out the equations here. Each equation has an R^2 above 0.97. $Bush$ is negatively related to $Nelson$, $OtherParty$, and $Democrat$. $Gore$ is positively related to these same variables. Both $Bush$ and $Gore$ are negatively related to $Overvotes$, with a coefficient of -0.24 for $Bush$, and a coefficient of -0.82 for $Gore$.

Our final regression is the equation for the difference between the votes, and takes the same form.

$$Gore - Bush\ \ =\ \ -110.1\ -\ \ 0.071\ \ Age_{18-29}\ -\ \ 0.040\ \ Age_{65}\ -\ \ 0.035\ \ Black$$
$$(3.9)\qquad (0.084)\qquad\qquad\quad (0.022)\qquad\qquad (0.023)$$

$$-\ \ 0.182\ \ Hispanic\ +\ \ 0.045\ \ Female\ +\ \ 0.306\ \ Democrat$$
$$(0.107)\qquad\qquad\quad (0.081)\qquad\qquad (0.084)$$

$$+\ \ 0.632\ \ OtherParty\ +\ \ 1.771\ \ Nelson\ -\ \ 0.578\ \ Overvotes$$
$$(0.116)\qquad\qquad\quad (0.076)\qquad\qquad (0.137)$$

$$R^2 = 0.98 \qquad \hat{\sigma} = 4.09 \qquad n = 494$$

The key variable is $Overvotes$. It has a negative coefficient and has a t-ratio of -4.2. This enables us to reject the hypothesis that overvoting had an equal cost on Gore and Bush, in favor of the hypothesis that Gore lost more votes than Bush. As described in the summary, the vote cost to Gore is about 0.58% for every 1% of overvotes.