

Question: Was there a bias in election results for Florida that depended solely on the type of voting system employed?

First one must recognize that touch-screen voting systems were more widely employed in counties with larger populations, and optical scan voting machines were more common in less populated rural counties. This leads to a bias where rural counties tend to be more conservative and vote Republican, or at least those leaning in this direction were more likely to get out and vote. However, in many cases, the total number of votes cast was within a similar range for both touch-screen and optical voting systems. So the more refined question is: Was there a bias in election results for Florida that depended solely on the type of voting system employed *for counties of similar voting population sizes*? The answer seems to be yes:

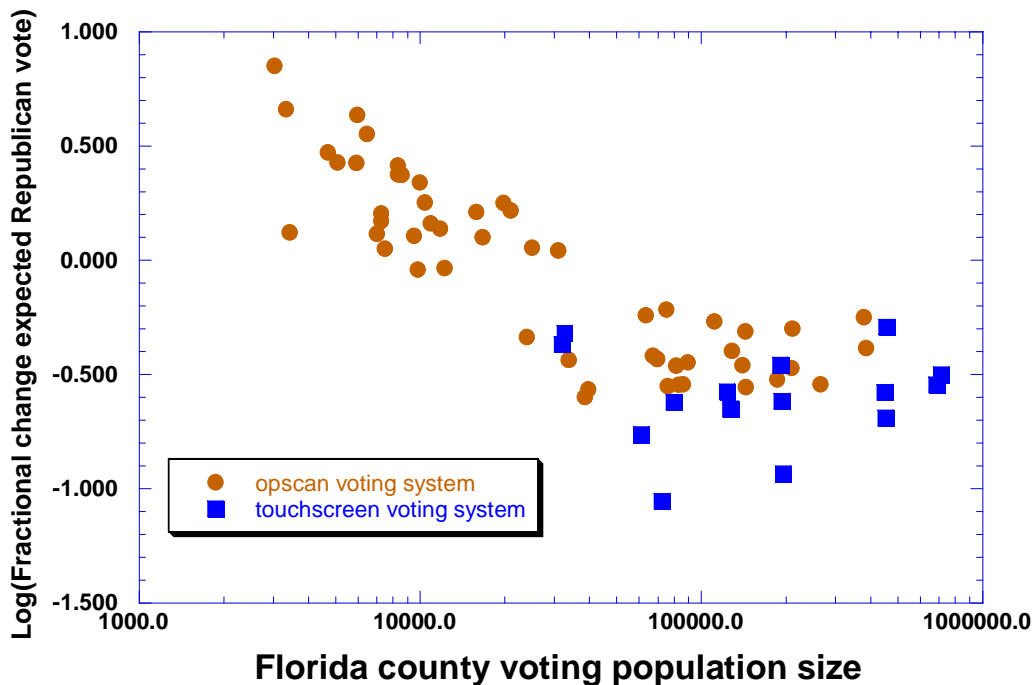


Figure 1. Although a general increase Republican candidate votes in rural areas may be expected, the bias toward choosing the Republican candidate in populations of similar size in only those counties using the optical scanning system is more difficult to explain. Regression and ANOVA analysis demonstrates that both voting method ($p < 0.00001$) and the interaction term of population size and voting method ($p < 0.0001$) are both significant, but voting population size alone is not significant when the interaction term is considered ($p = 1.00$).

This leads to another possible explanation: Perhaps counties of similar population size where optical scanning voting was used just happen to be more conservative. However, this also does not seem to be the case, as the percentage of registered Republicans in optical scanning counties was *less* not more than touch-screen counties:

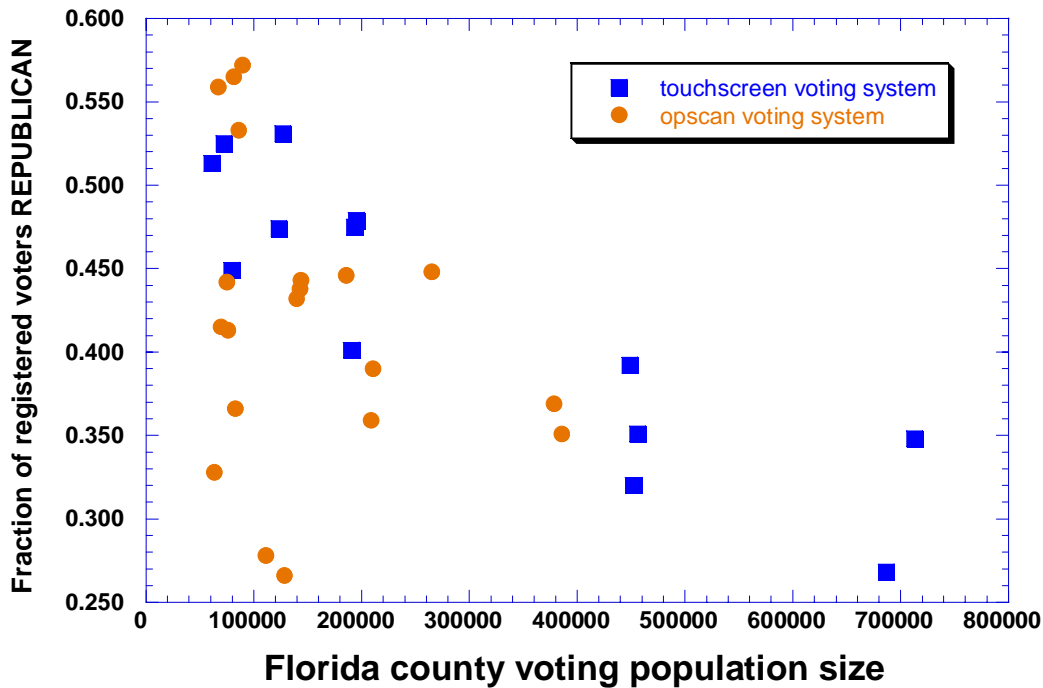


Figure 2. As one might expect, the fraction of registered Republican voters declines with population size. However, there is actually a marginally significant relationship ($p = 0.087$) using voting type as a classificatory variable, but in the opposite direction. There were more registered Republicans in counties using the touch-screen method (although granted a rather large p-value), not the optical scanning method, after accounting for differences in population size. Thus it certainly cannot be concluded that counties using the optical scanning method of comparable size ($> 60,000$) were more conservative and likely to vote for the Republican candidate.

So why did registered Democrats who used the optical scanning system tend to vote Bush? This is a difficult question to answer, but a Republican bias in either those using the optical scanning machines, or the machines themselves, is evident.

Data for this analysis are available here: http://ustogether.org/Florida_Election.htm