VANDERBILT HONORS ECONOMICS PROGRAM 2010

EARLY VOTING REFORM:
IMPLICATIONS FOR TURNOUT AND COMPOSITION OF THE ELECTORATE

Ryan C. Stewart

Senior Thesis

Advisors: Chris Bennett, Christian Grose, and John G. Geer

Director: Mario Crucini

Table of Contents

1. Introduction

The American political system was designed as a great democratic experiment. Nation after nation, people after people, have since recognized the value and importance of fundamental democratic ideals: each citizen, and his vote, treated equally. The voting system, however, has not always been accessible. In late-eighteenth and early-nineteenth century America, only white, male, landowners were granted suffrage. Gradually, groups pushed for the right to vote. Andrew Jackson's movement for the common man that helped to eliminate property requirements, the Civil War, the Feminist Movement, and similar suffrage campaigns all culminated in the 1960s and 1970s. With the passage of the Voting Rights Acts in 1965 and 1970, Americans again sought to augment the democratic system. No longer would literacy tests, language barriers, or grandfather clauses hinder any citizen's ability to cast his ballot. The Acts guaranteed each and every citizen the opportunity and ability to vote.

Still, attempts to expand the voting system have continued. In the past few decades political activists, government officials, and politicians have sought ways to increase turnout at the polls. One of the first attempts to do so was absentee balloting by mail. Under this system, citizens who are out-of precinct on Election Day may apply for a mail-in ballot. Originally intended for military personnel, college students, and frequent business travelers, this system granted a more feasible and convenient voting situation. Furthering this system, some states began to allow for no-excuse absentee balloting, a system in which any citizen can request to vote via mail-in ballot, regardless

of his/her availability on Election Day. Continuing down a similar path, in 1988 Texas became the first state to allow voting in-person prior to Election Day.

In this way, policy makers hoped to see a marked increase in voter turnout. This, however, has not occurred. Dr. Michael McDonald of George Mason University has published a series of reports on voting turnout in presidential election years since the middle of the twentieth century. His data demonstrates that turnout amongst the voting age population has fluctuated between fifty and sixty percent in all but four elections since 1944.[1] Texas in particular has not seen any sizeable increase in turnout. Despite the state's 1988 reform, turnout amongst voting eligible Texans was less than the1984 turnout level in three of the following six elections. Nevertheless, in the twenty years since Texas' innovation, early voting reform has swept the nation, with many states instituting similar systems. While most agree that increasing voter turnout is a noble goal, supporters and critics of these changes have argued over the legitimacy and true effects of such procedural renovations.

2. Research Question

This paper will investigate the effects that varying early voting procedures have had on turnout in their respective states. The goal of this analysis is to shed light on a variety of questions, including: (1) Has early voting actually had an effect on turnout? (2) Which types of early voting systems have had the greatest effect? (3) Which racial,

[1] McDonald

social, or educational demographics, if any, are most affected by early voting reforms? (4) What political ramifications this has.

Following the electoral controversy in the 2000 Presidential election, voting law has become even more scrutinized. Americans today are more interested in the voting system, its pros and cons, and what can be done to improve it. The questions I address are meaningful and applicable, for they analyze important consequences of voting reform. My study will demonstrate which reforms have had the strongest impact, as well as identify some unintended repercussions. Specifically, I will show that early voting systems have had an impact in lower-level elections, but a negative impact in higher-level contests. As we move forward into an era in which Election "Day" has almost completely disappeared, it is essential that our policy makers think critically when considering which voting system to implement.

3. Prior Literature

3.1 Downsian Rational Voter Theory

The economic model and underlying assumption of my, and most other voting-related research, hypotheses is well known. Simply put, it is rational choice theory: weighing the costs and benefits of voting. Specifically, Anthony Downs put forth this theory as the 'rational voter model' in 1957.[2] The model's equation is:

$$\textbf{VOTE IF: } pB - C + D \geq 0$$

In this equation, p, represents the probability that the individual's vote will have a deciding impact on the election's results. B is the sum of the individual's personal policy

[2] Downs 1957

benefits, were his preferred candidate to win public office. These benefits include differences in tax code policy, utility from legislation concerning highly valued social issues, etc. C, meanwhile, represents the individual's cost of voting. This can include opportunity costs, travel costs, registration costs, and information costs – the time and energy it takes to stay informed on the candidates and issues of the election. Finally, the D term stands for the individual's non-policy benefits of voting- generally the utility resulting from civic duty and empowerment.

In practice, the p term is essentially equal to zero, as the probability of an election being decided by a singular vote is negligible. This assumption then yields the model's final equation:

VOTE IF: D ≥ C

Since the policy benefits to voting are nullified by the fact that the individual's vote is never critical, the voting decision rests solely on the individual's costs of voting and non-policy benefits. This underlying assumption has led to reform legislation that attempts to decrease the costs of voting. To be successful these reforms must lower some usual non-voters' costs below their personal psychological utility.

3.2 Early Voting Research

As discussed, early voting has been a topic of heightened interest in recent years. Many social scientists, including those at the Cal-Tech/MIT voting project have published articles on the subject. This literature has shown mixed results. The most contentious argument is whether or not the reforms have increased turnout. While there appears to be some small rise, Paul Gronke and others argue that early voting has not

increased turnout by bringing in new voters.[3] Instead, turnout is expanded by encouraging regular voters to vote more consistently in lower intensity elections.

Several political scientists have also theorized and supported an argument that early voters are older and more partisan.[4] Similarly, Gronke and Toffey report that those who vote before Election Day have a higher overall level of campaign attentiveness and political motivation.[5] The partisan ideology of these voters has already thrown their support towards one candidate, leaving them no need to wait for Election Day before voicing their approvals. Campaign strategists have noticed the prospective benefits of this thinking and have begun to heavily concentrate on mobilizing partisan support during the early voting phase.[6] This leaves the campaign considerably more time and resources to spend on the 'swing' voters closer to Election Tuesday. Stein also finds evidence that early voters are more likely to be conservative males.[7]

Gronke and Toffey's study discussed above, also finds that more liberal voting laws decrease the differences between early and Election Day voters in midterm Congressional elections. The more open the early voting system, the more often regular voters take advantage of the opportunity to vote prior to Election Tuesday.

More recent literature has shown that non-traditional voting sites - any non-government building used as a polling place - increase turnout significantly.[8] The convenience of these locations within voters' daily schedules considerably reduces the

[3] Gronke, Rosenbaum, and Miller 2007
[4] Stein 1998
[5] Gronke and Toffey 2008
[6] Gronke 2008
[7] Stein 1998
[8] Dyck and Gimpel 2005

travel and opportunity costs of voting. Along these lines, Stein and Garcia-Monet find that the placement of early voting sites at nontraditional locations such as supermarkets and shopping malls marginally increased participation in Texas.

The problem with much of this research, however, is the limited data and scope it analyzes. Because it is difficult to obtain reliable and detailed national data, most of these papers have focused on smaller, more local levels. Gronke, for example, uses only data from Texas (and sometimes even just select counties within Texas). As mentioned, Texas was the first state to offer in-person early voting. Likewise, many studies have used data exclusively from Tennessee or Oregon, as these states release detailed voting statistics. I contend that these states may systematically differ from others that have not been at the forefront of the early voting reform movement. Perhaps voters in these early-voting-inclined states have reacted differently to voting reform than the average American. At the very least, the demographic breakdown of Texas and Tennessee are not representative of the American population at large. Research at the aggregate level, while tempered, is more likely to accurately estimate the effects of potential new voting systems.

Another concern is the confusion in the definition of early voting. There are many voting systems that allow for votes to be cast prior to Election Day. One would expect the systems to have varying effects, as they differ in their impact on the cost-benefit analysis. Increasingly, localities and researchers are referring to all sources of

absentee returns as 'early voting'. [9] The un-centralized and poorly defined system has resulted in a confusion that makes it difficult to interpret the results of these studies.

By widening the scope of my investigation, something few studies have attempted, this paper will provide a more comprehensive analysis. In doing so, my project will yield results that can be used in the process of policy-making for early voting reform.

4. Data and Variables

The majority of my data comes from the Current Population Survey (CPS), a monthly survey of approximately 50,000 American households conducted by the Bureau of the Census for the Bureau of Labor Statistics. Specifically my data set is built from CPS Voting and Registration supplements. These additional polls survey the US civilian, non-institutionalized population on election-specific information in the weeks following Congressional and Presidential elections. This data is available for download online. My data set contains all respondents including and after the 1994 Congressional election. Each observation includes independent variables such as: state of residence, education level, racial demographic, age, earnings, occupation, gender, if he/she voted, if he/she was registered, how he/she registered, why he/she did not vote, and when he/she voted. In order to develop a regression model, we must consider these various independent variables as possible influences on the observation's probability of voting. In all, my data set contains over 750,000 observations.

[9] Gronke 2008

The variables and information not included in the CPS were more difficult to obtain. In order to measure the effect of different forms of early voting, I must first break down and categorize these forms. To this end, I have created a sliding scale, upon which each state will be placed according to the "liberalness/openness" or "conservativeness/closedness" of their voting procedure. The scale consists of levels 1-6, with level 1 being the most conservative voting law and level 6 being the most liberal of voting systems. At the least, this classification can be used to categorize and define the differing systems. It may also be interpreted as hierarchical, as each movement along the slide from level 1 to level 6 is characterized by a decrease in voting costs, and as such an expectation of increased turnout. The itemized scale is displayed in Figure 1:

Figure 1

Rank	Early Voting By Mail	Early Voting In Person
1	Excuse Required	Not Permitted
2	No Excuse Necessary	Not Permitted
3	Excuse Required	Allowed
4	No Excuse Required	Allowed
5	Permanent Absentee	Not Permitted
6	Permanent Absentee	Allowed

These categorizations allow me to avoid the vagueness of the term 'early voting'. To further this breakdown, definitions of the early voting systems are listed below.

Vote by Mail AKA "Postal Voting"

Rankings 1 & 3

Under an early voting by mail system, voters who will not be able to access their polling place on Election Day report their conflicts to the appropriate election board.

Approved conflicts/excuses vary across states, but most states employing this system allow registered voters to vote by absentee ballot if:

- the voter will be absent from the county on election day
- the voter is ill or has a physical disability that prevents a trip to the polling place
- the voter is temporarily living outside the county (armed forces, college, etc.)
- the voter's work requires a shift of 10 hours or more that coincides with polling hours
- the voter's religious beliefs prevent him from going to the polling place

Assuming a citizen's request is approved, the voter receives a ballot in the mail from his local precinct place. Starting approximately two weeks before Election Day, these ballots can then be filled out, usually requiring notarization, and returned either via mail or designated drop off location. One important requirement of this system is that voters must request a mail-in ballot for each and every election in which they desire to vote absentee.

No Excuse Absentee

Rankings 2 & 4

This system is very similar to the "postal voting" discussed above. However, voters under this system can request a mail-in ballot without offering any conflict/excuse to the election board. Voters apply for and receive an absentee ballot as early as 45 days before Election Tuesday. The ballot must then be returned, postmarked on or before Election Day. Similar to 'vote by mail,' this system requires voters to request a mail-in ballot for each and every election in which they desire to vote absentee.

Permanent Absentee

Rankings 5 & 6

The permanent absentee system is a continued development of the 'postal voting' and 'no excuse absentee' systems defined above. Like the 'no excuse' system,

permanent absentee allows voters to receive absentee ballots without offering an excuse to the election board. Under this system, however, citizens are given the option to sign up as an absentee voter for all future elections. This one-time application, allows voters to receive absentee ballots without the hassle of requesting the service before each and every election.

In-Person Early Voting

Rankings 3, 4, & 6

Under this system, voters have the option of casting their vote early and in-person. Where in-person early voting occurs differs by state, but is often held at the traditional polling places, satellite locations, or the county elections offices themselves. In most situations, voters are not required to give prior notice of their intent, allowing them to show up at their own convenience. In-Person early voting typically spans a three-week period before Election Day, though each state has its own specific time regulations.

The important distinction between this and the other early voting systems is the requirement that individuals show up in-person to cast a ballot. While allowing a voter to decide when he desires to go does increase convenience, he still must go out of his daily schedule to do so. If we believe that getting to the polls imposes a significant barrier to participation, then in-person systems only partially relieve this burden; in addition, the convenience factor varies between systems, depending upon where voters can cast ballots.[10] In order to further reduce this cost, some states have recently allowed in-person, early voting polling places to be held at non-traditional voting locations. Instituting these ballot places in more convenient areas such as malls, residences, and

[10] Gronke, Rosenbaum, and Miller 2007

hotels, theoretically decreases the costs to voting by limiting the time that must be taken out of the voter's daily schedule. While I originally intended to code these "non-traditional, in-person" states as a distinct system, gathering sufficient data proved to be infeasible. As this system continues to spread in the future, it may be worthwhile to investigate its effects in a similar manner.

The sliding scale was constructed using data collected from Professor Paul Gronke of Reed College and through phone and e-mail correspondence with Secretary of State Offices. It is important to note that over the period of my study, there is significant intrastate variation in scale levels. These scale changes allow for richer analysis and are demonstrated in figures 2 and 3 below.

Figure 2

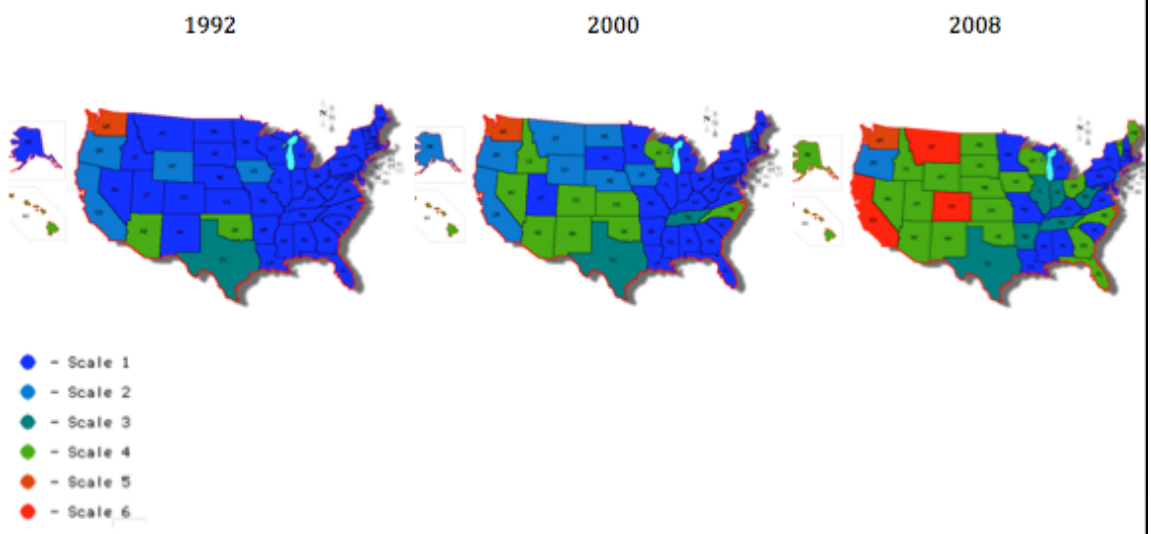
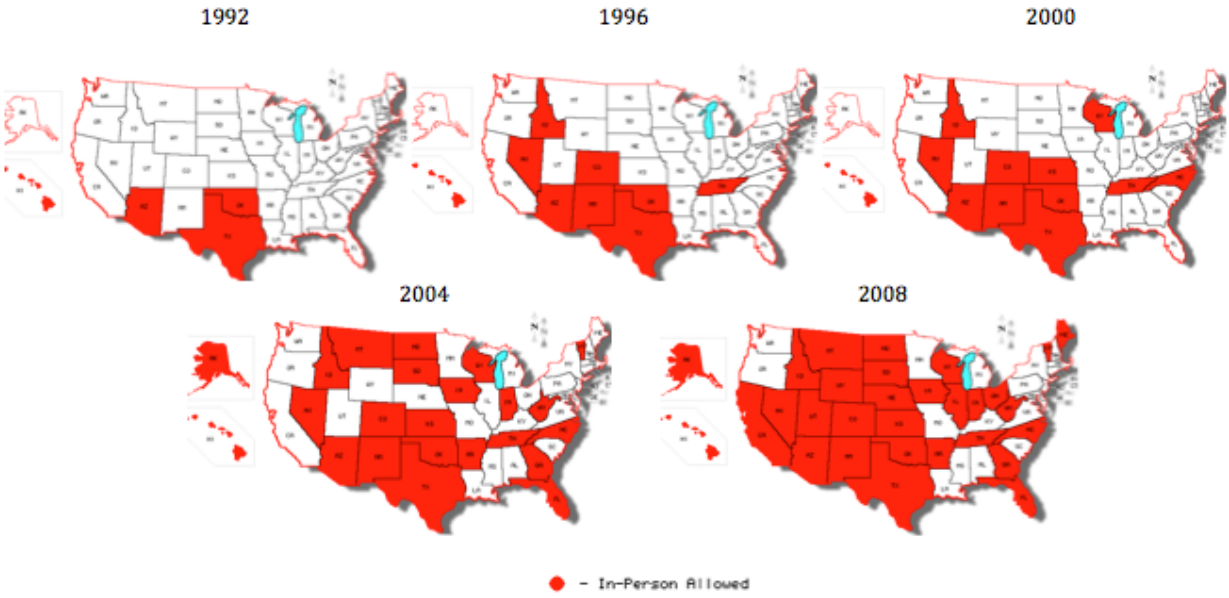


Figure 2 illustrates the American political landscape in the election years of 1992, 2000, and 2008. The most 'conservative' early voting systems, level 1 of the sliding scale, are represented by dark blue. The continued turnover of blue states into green and red states demonstrates that over time, and specifically over the time period included in

my study, there has been a shift from mostly conservative to mostly liberal voting systems.

Figure 3



Similarly, Figure 3 portrays the drastic increase in states employing an in-person early voting system over this time. In 1992, only four states incorporated in-person early voting in their voting system. A handful of other states applied the system before 2000, and many more followed suit following the 2000 electoral controversy. By 2008, thirty states allowed for in-person early voting – a 650% increase from just sixteen years prior. Without these intra-state shifts it would be difficult to distinguish between the effect of state residence and voting system on the probability of voting. With the changeover, however, the effects of the voting systems themselves can potentially be separated from the states in which they are applied. For further information on the make-up of these scales, and each state's individual scale-variable history, see Appendices B1 and B2.

5. Testing Methods and Results

5.1 Basic Regression

My main model for exploring the effects of early voting in Presidential election years is the multivariate regression below.

$$P_i votes = [\beta_{96} YR_{96} + \beta_{00} YR_{00} + \beta_{04} YR_{04} + \beta_{08} YR_{08}] + \beta_1(female) + [\beta_2(AGE_{26\text{-}59}) + \beta_3(AGE_{60+})] + \beta_4(EDUC_{B.A.+}) + [\beta_5(RACE_{black}) + \beta_6(RACE_{other})] + \beta_7(INC_{75+k}) + \beta_8(STATE) + \beta_9(VOTINGSYSTEM)$$

Here, the dependent variable is a binary variable which is coded as a "1" if the individual reported as having voted and as a "0" if not. Including the dependent variable in this way allows the model to identify each independent variable's effect on the observation's probability of voting. The first bracket section is a decomposed constant variable, broken down by the year of observation. Essentially, this gives a constant, or y-intercept value, for each election year. By replacing the traditional constant with these variables, the model takes into account such exogenous and uncontrollable factors as competitiveness, candidate popularity, economic indicators, incumbent versus open elections, etc.

Each independent variable is a binary variable, with a "1" identifying the observation as holding that quality and a "0" as not holding said quality. To avoid collinearity issues, my basic regression drops one category of each independent variable. For example, the regression does not include binary variables for both male and female. Instead, the model only includes the "female" variable. The coefficient for the "female" variable is then interpreted in relation to the excluded "male" variable. Combined, these excluded variables create a base-line observation.

Specifically, my baseline probability observation is an 18-25 year-old, white, male, with no college education, a household income of less than $75,000 per year, living in Florida, and acting under a political system with no early voting (scale level 1). The probability that this base-line individual voted in an election is given by the coefficient for said election year within the decomposed constant. To determine the probability of voting for an individual differing demographically from the base-line observation, simply take said year coefficient, and add the coefficients for those independent variables that differ. For example, the estimated probability that a female, with all other independent factors held the same as the base-line observation, voted in the 1996 election is $\boldsymbol{\beta_{96}}$ (the base-observation year coefficient) $\boldsymbol{+ \beta_1}$ (the 'female' coefficient).

With only binary variables, there are several ways in which this model can be organized. One common technique is to include all fifty state dummy variables, but excluding one year variable. Use of this procedure would create a similar interpretation. The coefficients for each state variable, however, would be interpreted as a regression constant for the probability of voting in that state. Likewise, the excluded year variable would become a part of the base-line observation, and coefficients for year variables would be interpreted relative to that base-line year. Statistically, there is no difference between the two set-ups and neither is more advantageous for interpretation in this study.

Again, this is a base model. Throughout my research, I made several small changes to this model as determined by the data available to me. Some of the

following test procedures will also adjust and complexify the model in an attempt to glean as much information as possible from the data at hand.

The most important adjustments to the basic model are the varying ways in which my sliding scale can be interpreted and applied as a variable for voting systems. I incorporated the early-voting scale into this model in six different ways. The first test investigates effects of reforms themselves, coding movements along the scale. The next four tests dissect the sliding scale into the voting systems previously defined: scale values of 2-6, 2 & 4, 5 & 6, and 3, 4, & 6. Finally, the sixth test codes each scale value as a distinct voting system, and compares each value against the base-line traditional scale value of 1.

5.2 Test 1: Effects of Reform

5.2a Procedure

The first test explores the effect on voting probability of reforms within a state's voting system.

$$P_i votes = [\beta_{96} YR_{96} + \beta_{00} YR_{00} + \beta_{04} YR_{04} + \beta_{08} YR_{08}] + \beta_1(female) + [\beta_2(AGE_{26\text{-}59}) + \beta_3(AGE_{60+})] + \beta_4(EDUC_{B.A.+}) + [\beta_5(RACE_{black}) + \beta_6(RACE_{other})] + \beta_7(INC_{75+k}) + \beta_8(STATE) + \mathbf{[\beta_{10}(REFORMany) + \beta_{11}(REFORMsecondary) + \beta_{12}(REFORMtertiary)]}$$

As shown above in bold, the variables of most interest are any reform, secondary reform, and tertiary reform. Here, any scale value change in a state's early voting procedures results in a "REFORMany" coding of "1" in the year of the change and all succeeding years. States that did not alter their scale value between the years 1992 and 2008 are coded with a "0" for each election, denoting no reform. If a state were

to implement another, secondary move along the scale, this is denoted by a "REFORMsecondary" coding of "1" for the year of the change and all following years, while still maintaining a "1" value for the 'any reform' variable. In the rare case of a third reform, this process is repeated for "REFORMtertiary." In this regression the coefficients β_{10} , β_{11}, and β_{12} indicate the change in an individual's probability of voting that results from a state reforming its election system.

While advocates of early voting argue that reform will increase turnout, and normatively benefit the American system, prior literature has shown otherwise. My analysis is outlined in the next section.

5.2b Results

The regression results for Test 1 are included in Table 1 below. As an example of the full return of these tests, including state dummy variables, the comprehensive results for this model are attached in Appendix A (table 1A).

As previously stated, the beta coefficients for the variables of Year 1996, Year 2000, Year 2004, and Year 2008 can be treated as constants for said year. This means the base-line observation (18-25 year old, white, male, with no college education, household income less than $75,000, living in Florida, and in a state that had not reformed its voting system since 1992) had a 38.5% probability of voting in the 1996 election. The other variables can be treated as the change in probability of voting when the individual, *i*, differs from this base line. For example, a woman with all the same characteristics is about 3% more likely to vote than the base-line observation. In this way, we can build a probability of voting for any individual.

Table 1 : Results

Predictors	*Coefficient*	*t-value*	*Sig.*
Year 1996	.385**	81.79	.000
Year 2000	.405**	84.219	.000
Year 2004	.465**	93.032	.000
Year 2008	.473**	91.731	.000
Female	.033**	20.855	.000
Age of 26-59	.164**	67.455	.000
Age of 60+	.274**	101.262	.000
Race – Black	.05**	17.434	.000
Race – Other	-.136**	-34.057	.000
Income ≥ $75K	.103**	55.401	.000
Education ≥ B.A.	.202**	107.361	.000
Any Reform	-.006*	-2.020	.043
Secondary Reform	-.011*	-2.387	.017
Tertiary Reform	-.05**	-2.974	.003

Adjusted R^2 = .728

* statistically significant at α = .05
** statistically significant at α = .01

The results demonstrate a statistically significant increase in the probability of voting as age, income, and education level increase. The intuitiveness of these results and solid adjusted R-squared value strengthen my confidence in the basic model. One counterintuitive result is the coefficient for the "Race – Black" variable. The coefficient shows that, all else equal, a black individual is 5% more likely to vote than a white individual. This finding was repeated in all tests structured off of the base model. I will not dwell on this anomaly here, but offer that empirical evidence demonstrates Black survey respondents – including in the CPS – are 8-10% more likely to misrepresent their voting behavior than Whites.[11] [12]

Finally, the coefficients for the 'any reform,' 'secondary reform,' and 'tertiary reform' variables are -.006, -.011, and -.05 respectively. Each coefficient was

[11] Bernstein, Chadha, Montjoy 2001
[12] Traugott and Katosh 1979

statistically significant from zero at an alpha-value of .05; and hence we find no noticeable increase in the probability of voting due to reform. In fact, we find significant and negative effects on an individual's probability of voting. These findings demonstrate that while in theory reform decreases the costs of voting and increases turnout, in reality this appears not to be the case. In fact, additional, secondary and tertiary, reforms resulted in a greater negative impact on voting probability.

5.3 Tests 2-4: Dissecting the Sliding Scale

5.3a Procedure

In the next tests, the reform variable of interest is based on each state's sliding scale value at the time of observation. The 6-level sliding scale can be broken up in several ways to isolate the effects of different early voting procedures. Similar to Test 1, these regressions maintain the base model demographic variables, only adjusting the 'voting system' variable. The second test includes this variable as:

$$\textbf{(2)} \qquad P_i \text{ Votes} = \ldots\ldots + \beta_{10}(SCALE_{2\text{-}6})$$

In this case, each state is coded for each election year with a single binary variable. States classified with a scale value of 1 are coded as a "0" in $SCALE_{2\text{-}6}$. Other states, with scale value classifications of 2, 3, 4, 5, or 6 are coded as a "1." By including the sliding scale in this way, a voting system of sliding scale value 1 is added to the base-line observation. The coefficient, β_{10} , is then the effect of any non-traditional voting system on an individual's probability of voting.

Test 3 furthers this by dissecting the scale into even smaller components:

$$\textbf{(3)} \quad P_i \text{ Votes} = \ldots\ldots + [\beta_{10}(SCALE_{2\&4}) + \beta_{11}(SCALE_{5\&6}) + \beta_{12}(SCALE_{3})]$$

With this adjustment, each state is coded for each election year into one of four different categorizations. States classified with a scale value of 1 are coded as a "0" in all SCALE variables, denoting a traditional voting system. States classified with a scale value of 2 or 4 are coded as a "1" in $\boldsymbol{SCALE_{2\&4}}$. This is repeated for $\boldsymbol{SCALE_{5\&6}}$ and $\boldsymbol{SCALE_3}$. By including the sliding scale in this way, a voting system of sliding scale value 1 is added to the base-line observation. The coefficient $\boldsymbol{\beta_{10}}$ is the effect of a no-excuse absentee voting system (defined in section 4) on an individual's voting probability. Similarly, $\boldsymbol{\beta_{11}}$ is the effect of a permanent absentee voting system on the probability of voting. Here, the variable $\boldsymbol{SCALE_3}$ is not of interest. It is included so as not to combine the effects of a scale value 3 voting system and scale value 1 system during interpretation.

Test 4 sorts the sliding scale into two groups, those systems that allow for in-person early voting and those that do not:

$$\textbf{(4)} \quad \mathbf{P_i\ Votes} = \ldots\ldots + \boldsymbol{\beta_{10}(SCALE_{3,4,6})}$$

Here, each state is coded for each election year with a single binary variable. States with voting systems allowing for in-person early voting (scale values 3,4, and 6) are coded with a "1" in $\boldsymbol{SCALE_{3,4,6}}$. By including the sliding scale in this way, a voting system that does not allow for in-person early voting is added to the base-line observation. As a result, the coefficient $\boldsymbol{\beta_{10}}$ is the effect of in-person early voting on an individual's probability of voting.

Again, evidence in prior literature begs the hypothesis that these variables will not yield results that demonstrate a statistically significant increase in the probability of voting.

5.3b Results

The results for the variables of interest in tests 2, 3, and 4 are displayed in table 2 below. These returns indicate that neither the implementation of any non-traditional voting system nor the use of a no-excuse absentee procedure has an effect on an individual's probability of voting. The use of permanent absentee or in-person early voting systems actually decreases the probability of voting by statistically significant margins of 1.4% and .6% respectively. Yet again, the evidence supports the notion that early voting has almost no impact on voting turnout in Presidential elections, regardless the category of system implemented.

Table 2

Predictors	*Coefficient*	*Sig.*	*Adj. R^2*
Non-trad (Scale 2-6)	*-.001*	*.752*	*.728*
No Excuse Absentee (Scale 2&4)	*.000*	*.978*	*.728*
Permanent Absentee (Scale 5&6)	*-.014**	*.044*	*.728*
In-Person Early Voting (Scale 3,4,6)	*-.006**	*.048*	*.728*

5.4 Test 5: Differentiated Scale Values

5.4a Procedure

Finally, I differentiate each sliding scale value into its own distinct voting system. Like the previous tests, the regression mirrors the base model in all variables except for the voting scale variables . Test 5's variables of interest are:

$$\textbf{(5)} \quad P_i \text{ Votes} = \ldots\ldots + [\beta_{10}(SCALE_2) + \beta_{11}(SCALE_3) + \beta_{12}(SCALE_4) + \beta_{13}(SCALE_5) + \beta_{14}(SCALE_6)]$$

Here, each state is coded for each election year into one of six binary variables. States with a scale value of 2 are coded with a "1" in $\boldsymbol{SCALE_2}$., and a "0" in all other SCALE variables. This procedure is repeated for states with scale values of 3, 4, 5, and 6. States with a scale value of 1 are coded with a "0" in all SCALE variables. By including the sliding scale in this way, each scale category is recognized as its own voting system, and the most traditional system (scale value 1) is added to the base-line observation. The coefficients, $\boldsymbol{\beta_{10\text{-}14}}$, are then interpreted as the effect of said scale level on an individual's probability of voting.

Following the claims of previous literature, I again expect to find that none of these variables has a large, positive impact on voting probability.

5.4b Results

Table 3 : Differentiated Scale Results

Predictors	*Coefficient*	*t-value*	*Sig.*
Scale Value 2	.011*	2.255	.024
Scale Value 3	-.01	-1.655	.098
Scale Value 4	-.004	-1.655	.283
Scale Value 5	-.024**	-2.709	.007
Scale Value 6	.002	.223	.823

Adjusted R^2 = .728

* statistically significant at α = .05
** statistically significant at α = .01

Again, the coefficients are interpreted as the effect difference from the base-line voting system of scale value 1. All else equal, a voting system of scale value 2 increases the estimated probability of an individual voting by approximately 1%. The results again demonstrate that early voting systems have no statistical impact on the probability of

voting. Only 'Scale Value 2' yields a significant and positive effect on voting probability. Even this result is trivial at best as, in practice, it represents a very minimal (1%) change . This small effect is overshadowed by the fact that the same test yields significant and *highly* positive coefficients for other independent variables: 16% for age 26-59, 27% for age 60+, 10% for income over $75,000, and 20% for having earned a college degree. Even when statistically significant, the impact of early voting is negligible in comparison to other factors. It is also noteworthy that, while only 'Scale Value 5' holds statistically significant, scale values 3,4,5, and 6 all demonstrate a negative impact on voting.

5.5 Non-Presidential Year Elections

5.5a Procedure

As previously discussed, some prior research has claimed that early voting yields greater effects in lower intensity elections. Gronke states that early voting reform has little effect on Presidential elections because America has essentially maxed out its turnout for this high-level office.[13] The non-policy benefits of voting are much larger in Presidential than non-Presidential elections. Because of this, most citizens who value voting will vote in Presidential elections – regardless the voting system. In elections, however, with only lower-level offices on the ballot, even enthusiastic voters sometimes lose interest. Perhaps early voting spurs regular voters to vote more consistently in these lower-interest elections.

To investigate this theory, I need to adjust the basic regression presented earlier. The adapted regression for non-Presidential Year Elections is:

[13] Gronke 2008

$$P_i votes = \beta_X(STATE) + \beta_1(female) + [\beta_2(AGE_{26\text{-}59}) + \beta_3(AGE_{60+})] + \beta_4(EDUC_{B.A.+}) + [\beta_5(RACE_{black}) + \beta_6(RACE_{other})] + \beta_7(INC_{75k+}) + \beta_8(Close\ Senate\ Race) + \beta_9(Close\ Gubernatorial\ Race) + \beta_{10}(Senate\ Race) + \beta_{11}(Gubernatorial\ Race) + \beta_{12}(VOTINGSYSTEM)$$

Like the base model, the non-Presidential regression runs through the origin, as the constant is excluded. However, the constant is decomposed over state, rather than year, variables in this model. The year variable has been completely removed, as its primary purpose was a catchall for competitiveness and national sentiment during Presidential elections. In order to capture these same effects at the state level, the variables for Senate and Gubernatorial elections have been included. States holding an election for governor are coded as a "1" in the 'Gubernatorial Race' variable, and likewise for Senate races. Each state has two Senate seats, both holding an election every 6 years. Gubernatorial elections are usually held every 4 years - though a couple of states hold this contest every other year. The 'Close Gubernatorial Race' and 'Close Senate Race' variables incorporate the competitiveness of these contests. Elections resulting in a winning percentage of or less than 5% are coded as 'close.' Including the variables in this way, the base-line observation for the non-Presidential election regression is an 18-25 year old, white, male, with less than a college degree, household income of fewer than $75,000 per year, and an election with no Senate or Gubernatorial contests.

5.5b Results

Repeating the five tests performed in sections 5.2 – 5.4, but substituting the non-Presidential model for the original, base regression offers markedly different results in the variables of interest. The non-Presidential regression yields a respectable

adjusted R^2 value of .589. Figure 3 compares the coefficients for the voting system variables of interest from both the Presidential year and non-Presidential year regressions.

Figure 3

Predictor	Presidential Election	Non-Presidential Election
Any Reform	-.006*	-.003
Secondary Reform	-.011*	-.009
Tertiary Reform	-.05**	.031
Non-trad (Scale 2-6)	-.001	.018**
No Excuse Absentee (Scale 2&4)	.000	.025**
Permanent Absentee (Scale 5&6)	-.014*	-.044**
In-Person Early Voting (3,4,6)	-.006*	.031**
Scale Value 2	.011*	.02**
Scale Value 3	-.01	.02**
Scale Value 4	-.004	.015**
Scale Value 5	-.024**	-.055**
Scale Value 6	.002	.027

* statistically significant at α = .05 ** statistically significant at α = .01

The data supports the theory that early voting has a more positive impact on voting in lesser-intensity elections. Six of the voting system variables demonstrate a positive and statistically significant effect on the probability of voting in non-Presidential elections. Of these, five had not shown positive effects in Presidential elections. Even the non-Presidential year, statistically insignificant results are an improvement from the Presidential year regression results. Out of the 4 non-Presidential insignificant coefficients, three had shown statistically significant *negative* effects in Presidential elections. Ten of the twelve voting system coefficients demonstrated a more positive impact in non-Presidential years than in Presidential elections. Finally, the non-

Presidential regression results show only two voting systems with a significant negative impact, in comparison to the six voting systems that reported negative effects in Presidential elections.

5.6 Demographic Decompositions

5.6a Procedure

The final application of the base-model and non-Presidential regressions is a variable decomposition that identifies the impact of early voting systems on different subgroups of the population. With the algebraic substitution below, effects on individual demographics can be teased out of the original coefficient.

$$P_i votes = ... + [\beta_{10}(SCALE_{3,4,6}) ....$$

$$P_i votes = ... + (\alpha_0 + \alpha_1 \text{female})\ (SCALE_{3,4,6}) ....$$

$$P_i votes = ... + \alpha_0(SCALE_{3,4,6}) + \alpha_1(SCALE_{3,4,6} * \text{female}) ....$$

By separating the early voting variable in this way, α_1 is the effect of an in-person early voting system (as coded in Test 4) on a female's probability of voting. α_0, meanwhile, is the impact of an in-person early voting system on a male's probability of voting. Through decompositions incorporating sex, age, education, and race this procedure allows for a deeper understanding of who uses early voting. I selected only the voting system variables of 'Non-trad (Scale 2-6)' and 'In-Person Early Voting (Scale 3,4, 6)' to be broken down in this way. 'Non-trad (Scale 2-6)' is included for it represents the effects of any non-traditional voting system. 'In-Person Early Voting (Scale 3,4,6)' is included because it is the system most commonly instituted today and it also demonstrated the greatest positive impact on voting probability in Figure 3.

Earlier studies would suggest that older, white, men are more likely to be positively incentivized by early voting.

5.6b Results

Table 4 displays the results of the demographic decomposition procedures. In opposition to Stein's 1998 finding, the data shows women are significantly more motivated by early voting systems than men. The effect on male voting probability of both early voting system variables is either significantly negative or, at best, insignificant from zero. Female voters, however, are statistically more likely to vote in Presidential and non-Presidential elections when these systems are in place.

Table 4: Demographic Decomposition

Demographics	Effect of In-Person EV		Effect of Non-Trad (2-6)	
	Pres.	Non-Pres.	Pres.	Non-Pres.
Male	-.011**	-.004	-.009*	-.001
Female	.008**	.004	.009**	.014**
White	-.009**	.03**	-.003	.008**
Black	.01	-.012	-.018**	.018**
Other	.043**	.062**	.049**	-.009*
Age 18-25	.021**	.008	.023**	.019**
Age 26-40	-.029**	-.014*	-.033**	-.02**
Age 41-59	-.029**	-.01	-.028**	-.018**
Age 60+	-.036**	-.007	-.034**	-.007
< HS degree	-.015**	-.004	-.002	.008
HS degree	.001	-.008	-.008	-.013*
Some College	.011*	.000	.000	-.003
B.A./B.S. +	.018**	.025**	.004	.017**
Close Sen.	-	-.047**	-	-.01
Close Gov.	-	.012	-	-.044**
Neither	-	.000	-	.01**

*statistically significant at $\alpha = .05$ *statistically significant at $\alpha = .01$

The results similarly differ from prior literature in the realm of age group demographics. While previous studies claim that older voters are more likely to vote early, I find otherwise. Table 4 shows that 18-25 year-olds are significantly more likely to vote when these systems are in place than when they are not. No other age demographic reports significant and positive effects from these systems. In fact, all of the older groups report negative effects.

Racially, the returns are mixed. Like many articles that demonstrated early voters are mostly white, my results also demonstrate that white voters are significantly more likely to vote when these systems are employed, but only in non-Presidential elections. Black voters' probability of voting, meanwhile, is also positively affected by non-traditional systems in non-Presidential elections. In Presidential elections, however, blacks are less likely to vote within a non-traditional system. Most interestingly, non-black minorities are highly mobilized under both in-person early voting and other non-traditional systems. In Presidential elections, 'other race' voters are 4.3% more likely to turn out if in-person early voting is allowed. This effect only grows in non-Presidential elections, making other races 6.2% more likely to vote when an in-person early voting system is in place. This is, by far, the highest effect on turnout probability of any voting system in my study.

Finally, the Senatorial and Gubernatorial election variables are worth noting. After presidential contests, the statewide elections for senate and governor seats are the next highest in intensity, especially those decided by only a few percentage points. The negative coefficients attributed to the "Close Sen." and "Close Gov." variables represent

a negative to non-existent effect of these non-traditional systems on voting probability in elections that hold high intensity races. Non-traditional systems do statistically increase turnout probability, however, in the lowest-intensity non-Presidential elections – the 'neither' variable. These results further support the theory that non-traditional early voting systems increase the probability of voting in lower-level elections, but have little to no effect on higher-level election turnout.

5.7 Aggregate Turnout

5.7a Procedure

The final study in this investigation moves away from the Current Population Survey data and base-model regressions. Employing a CDF, it is possible to identify the predictive affect of early voting as a percentage change in Presidential election voter turnout. The data included in this test are binary variables for each state and Presidential election year – similar to the base-model regression dummy variables. The dependent variable in this case is each state's voter turnout percentage. Finally, the independent variable of interest is a binary variable representing the allowance of in-person early voting. The regression for this test is :

$$turnout = \Phi(\delta_{state} + \delta_{year} + \delta_{IPAllowed})$$

$$= \Phi(\sum_{i=1}^{50} \hat{\beta}_i \delta_{statei} + \sum_{j=1}^{5} \hat{\beta}_j \delta_{yearj} + \hat{\beta} \delta_{IPAllowed})$$

In order to obtain the predicted results of in-person early voting as a percentage change in each state's turnout, we must plug the beta coefficient results for the state and year of interest into the equation below.

$$\Phi(\hat{\beta}_i + \hat{\beta}_j + \hat{\beta}_{IPAllowed}) - \Phi(\hat{\beta}_i + \hat{\beta}_j)$$

5.7b Results

This regression yields a very strong adjusted R^2 value of .956. Through this regression, the In-Person Allowed binary variable yields a beta coefficient of -.036, statistically significant from 0 at an alpha-value of .05. The percentage change in turnout varies by state, dependent upon where the state's coefficient falls on the CDF. For quick interpretation, I have included the results by year for three states - Hawaii, Wyoming, and Minnesota - in Table 5 below. I selected these three states for their low, average, and high turnouts respectively.

Table 5
Predicted Effect of In-Person EV as a Percentage change in Turnout

	1992	*1996*	*2000*	*2004*	*2008*
Hawaii	-1.4%	-1.4%	-1.4%	-1.4%	-1.5%
Wyoming	-1.4%	-1.4%	-1.4%	-1.4%	-1.6%
Minnesota	-1.2%	-1.3%	-1.3%	-1.1%	-1.1%

Adjusted R^2 = .956

These three states demonstrate the general effect of in-person early voting, between a 1 and 1.6% decrease in turnout. Again, we see that the incorporation of early voting does not increase turnout, in fact it decreases participation by a fairly large percentage. For example, in the 1992 election 2,331,344 Minnesotans voted. Minnesota has retained the

most traditional voting system, scale value of 1, throughout the time period of my study. Had in-person early voting been instituted during that election, we predict that approximately 28,000 fewer Minnesotans would have voted. And this is only the lower end of effects.

6. Conclusions

6.1 Analysis

Early voting is a relatively new phenomenon. The exponential rate at which it has spread throughout our and other countries reflects the generally positive view of most citizens. These reforms, however, have not generated a massive influx of new voters. This study takes the first step in advancing the investigation of early voting reform past the local level, and into the national sphere. The creation and use of the sliding scale to categorize different voting systems corrects a confusion of definition that has stymied research efficacy. Most importantly, the wide, national outlook creates applicable results that can be considered in legislative reform.

My research supports the notion that early voting systems have a much larger impact on smaller, lower-intensity elections than they do on Presidential and even close statewide contests. In fact, much of my data affords non-traditional systems a statistically significant, negative effect on voting probability in Presidential elections. This result is, even accepting prior literature, strange. I offer two possible explanations for this counterintuitive measure. First, perhaps increased average wage rates have augmented the opportunity costs to voting. The threat of decreased turnout in some areas, may have led to a targeted, state-specific implementation of these reforms, in

attempts to buoy turnout numbers. If this is the case, it is possible that decreases in voting probability have not fallen due to the adoption of these voting systems. Rather, the decline in an individual's probability of voting might have been even greater had these reforms not been in place. I contend, however, that this theory is not likely. As seen in figure 2 and 3, most early voting reform was enacted in the early 2000s, a time when turnout was increasing across the board. In fact, over the time period of my study, partisan shifts towards the poles led to a general increase in turnout. More importantly, in my research, most documents containing any type of explanation for the adoption of early voting systems spoke to the need for either (1) a more open, democratic forum or (2) a system that was better suited to handle voting without controversy.

A second, more likely, explanation for the significant and negative results, is a newer theory that places emphasis on social pressure. The idea is that many citizens vote because of the neighborhood community. Some of these voters enjoy the holiday-like feel of Election Tuesday and the way it brings their community together. Other voters worry that their family, friends, and neighbors would notice and be disappointed were they not to vote. Early voting disincentives both types. First, the ability to vote without leaving home, or several weeks before Election Tuesday destroys the communal gathering that was once associated with neighborhood polling precincts. Those voters that enjoyed the Election Day atmosphere have lost some utility – in the non-policy benefit D term- from early voting procedures. Second, those voters that once feared social reprimand for not voting are no longer as pressured by the voting system. When voting occurred only on one day and in one place for each precinct, it was relatively easy

to discern which neighbors had voted and which had not. The ability to mail in ballots and/or to vote on a variety of days, makes it essentially impossible for the community as a whole to recognize voters from non-voters. As a result, decreased social pressure lowers the psychological benefit – D term – yet again.

Finally, my research has presented new possibilities in the search for which types of people most benefit from early voting. While a majority of early voters may be elderly and white, this does not mean that elderly whites are the most positively affected demographic. My research reflects a substantial increase in the probability of voting for non-black minorities, women, and 18-25 year-olds when non-traditional voting systems are instituted. This finding offers a new perspective on the consequences of this early reform movement. While non-black minorities and 18-25 year-olds are not all of a sudden turning out in massive droves, they are statistically more likely to vote – especially in non-Presidential elections. In this way, the early voting movement has achieved its goal of creating a more open voting system. Now that we know more about the effects of reform, our legislators can use this knowledge in deciding how open the system should be and what ramifications this will have on the constituency as a whole.

6.2 Limitations / Looking Forward

While the national scope, regressions, and sliding scale offer new, more generalizable results, there are limitations to this study. First, the CPS data is confining. Some applicable independent variables are not gathered in the survey, most notably a measure of partisanship – one factor commonly believed to correlate with early voting. The survey questions have also changed over time, making it difficult to code

observations from differing election cycles in the same way. Perhaps the most disappointing example is the question of respondent's race. While the more recent surveys have given respondents over twenty categorical options, the original surveys offered only 'white,' 'black,' and 'other.' This coding impedes any attempt to isolate the effect of early voting on distinct non-black minority groups. Especially disappointing is the inability to estimate effects of early voting on Hispanic citizens. Within the next few decades, this racial demographic is projected to overtake Blacks as the nation's dominant minority. It would be nice to have obtained a reliable measure of how this newly powerful demographic responds to reform.

One possible criticism of my regression models is the non-use of any time-series relationship. Some research has included this type of relationship, arguing that the implementation of voting system reform does not immediately correlate into effects on turnout. Instead, they claim, voters must learn about the new system before they will take advantage of it. I contend that political campaigns make a time-series relationship unnecessary. These campaigns have a vested and demonstrated interest in informing the public of early voting and its benefits.

Finally, the study is limited by the sliding scale. Each state has its own separate election laws. There are differences not only in whether or not early voting is allowed, but where it is allowed, when it is allowed, when polling places open and close, when registration must occur, etc. There are no two states with identical voting systems, making it difficult to categorize each state into a simple, 6-level scale.

While these interstate differences may have watered down the potency of the sliding scale, they also offer room for improvement in future research. As early voting continues to spread, I would like to see continued development of a categorization similar to my sliding scale. There are many factors that I considered adding to the scale, including motor-voter laws, registration requirements, polling hours, actual days of early voting, and the placement of polling places. It is intuitive that voting systems allowing for same-day registration or offering polling places in non-traditional, frequented areas have decreased the costs of voting in other ways than I have discussed. For the purposes of this study, however, I maintained a more basic model to verify the plausibility and reliability of the research design. This project marks a step in the right direction, but now further investigation along these lines is necessary to enrich analysis.

Works Cited

Bernstein, Robert, Anita Chadha, and Robert Montjoy. "Overreporting Voting: Why It Happens and Why It Matters." *American Association for Public Opinion Research* 65 (2001): 22-44. *Oxford Journals*. Web.

Downs, Anthony. *An Economic Theory of Democracy.* New York: Harper, 1957. Print.

Dyck, J.J., and J.G. Gimpel. "Distance, Turnout, and the Convenience of Voting." *Social Science Quarterly - Austin* 86.3 (2005): 531-48. *British Library Direct*. Web.

Gronke, Paul, Eva Galanes-Rosenbaum, and Peter A. Miller. "Early Voting and Turnout." *PS: Political Science & Politics* 40.4 (2007): 639-45. *Cambridge Journals*. Web.

Gronke, Paul. "Early Voting Reforms and American Elections." *William and Mary Bill of Rights Journal* 17 (2008): 423-53. *LexisNexis Academic*. Web.

Gronke, Paul, and Daniel Krantz Toffey. "The Psychological and Institutional Determinants of Early Voting." *Journal of Social Issues* 64.3 (2008): 503-24. *Wiley Interscience*. Web.

McDonald, Michael. "Voter Turnout." *United States Elections Project*. Web. 20 Apr. 2010. <http://elections.gmu.edu/voter_turnout.htm>.

Stein, R. M. "Early Voting." *Public Opinion Quarterly* 62.1 (1998): 57-69. Print.

Traugott, Michael W., and John P. Katosh. "Response Validity in Surveys of Voting Behavior." *Public Opinion Quarterly* 43.3 (1979): 359-77. *Oxford Journals*. Web.

Appendix A

Table 1A

Predictors	Unstandardized Coefficients		t	Sig.
	B	Std. Error		
Year 1996	.385	.005	81.709	.000
Year 2000	.405	.005	84.219	.000
Year 2004	.465	.005	93.032	.000
Year 2008	.473	.005	91.731	.000
Alabama	-.013	.008	-1.721	.085
Alaska	.093	.008	10.929	.000
Arizona	-.051	.008	-6.510	.000
Arkansas	-.076	.008	-9.852	.000
California	.012	.005	2.501	.012
Colorado	.015	.007	2.054	.040
Connecticut	-.010	.007	-1.299	.194
Delaware	.014	.008	1.804	.071
Georgia	-.044	.007	-6.374	.000
Hawaii	-.040	.009	-4.569	.000
Idaho	.000	.008	.039	.969
Illinois	.003	.006	.500	.617
Indiana	-.026	.007	-3.589	.000
Iowa	.041	.007	5.895	.000
Kansas	-.008	.007	-1.063	.288
Kentucky	-.027	.008	-3.545	.000
Louisiana	.046	.008	5.732	.000
Maine	.079	.007	11.181	.000
Maryland	-.019	.007	-2.659	.008
Massachusetts	.015	.007	2.128	.033
Michigan	.043	.006	7.175	.000
Minnesota	.103	.007	14.979	.000

Mississippi	.008	.008	1.019	.308
Missouri	.027	.007	3.685	.000
Montana	.069	.009	8.139	.000
Nebraska	.011	.007	1.520	.129
Nevada	-.054	.008	-6.935	.000
New Hampshire	.026	.007	3.624	.000
New Jersey	-.005	.006	-.869	.385
New Mexico	-.019	.008	-2.395	.017
New York	-.018	.005	-3.427	.001
North Carolina	-.028	.006	-4.527	.000
North Dakota	.057	.007	7.704	.000
Ohio	.006	.006	1.079	.281
Oklahoma	-.016	.008	-2.115	.034
Pennsylvania	-.031	.006	-5.544	.000
Rhode Island	-.007	.008	-.877	.380
South Carolina	-.042	.008	-5.419	.000
South Dakota	.027	.007	3.752	.000
Tennessee	-.062	.008	-7.997	.000
Texas	-.068	.005	-12.365	.000
Utah	-.015	.008	-1.901	.057
Vermont	.021	.008	2.535	.011
Virginia	-.015	.007	-2.080	.038
Washington	.033	.007	4.424	.000
West Virginia	-.076	.007	-10.277	.000
Wisconsin	.079	.007	11.435	.000
Wyoming	.037	.007	4.890	.000
Female	.033	.002	20.855	.000
Age 26-59	.164	.002	67.455	.000
Age 60+	.274	.003	101.262	.000
Race – Black	.050	.003	17.434	.000

Race – Other	-.136	.004	-34.057	.000
Income > 75K	.103	.002	55.401	.000
Education > BA	.202	.002	107.361	.000
Any Reform	-.006	.003	-2.020	.043
Secondary Reform	-.011	.005	-2.387	.017
Tertiary Reform	-.050	.017	-2.974	.003

a. Dependent Variable: VOTED

b. Linear Regression through the Origin

Table 1A *ANOVA RESULTS*

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	157951.623	62	2547.607	13469.641	.000[a]
	Residual	59006.377	311977	.189		
	Total	216958.000[b]	312039			

Appendix B1

Sliding Scale Values

STATE	1992	1994	1996	1998	2000	2002	2004	2006	2008
Alabama	1	1	1	1	1	1	1	1	1
Alaska	1	1	2	2	2	4	4	4	4
Arizona	4	4	4	4	4	4	4	4	4
Arkansas	1	1	1	1	1	1	3	3	3
California	2	2	2	2	2	5	5	5	6
Colorado	1	4	4	4	4	4	4	4	6
Connecticut	1	1	1	1	1	1	1	1	1
Delaware	1	1	1	1	1	1	1	1	1
Florida	1	1	1	1	1	2	4	4	4
Georgia	1	1	1	1	1	1	4	4	4
Hawaii	4	4	4	4	4	4	4	4	4
Idaho	1	4	4	4	4	4	4	4	4
Illinois	1	1	1	1	1	1	1	3	3
Indiana	1	1	1	1	1	3	3	3	3
Iowa	2	2	2	2	2	4	4	4	4
Kansas	1	1	1	4	4	4	4	4	4
Kentucky	1	1	1	1	1	1	1	1	1
Louisiana	1	1	1	1	1	1	1	1	1
Maine	1	1	1	1	1	2	2	2	4
Maryland	1	1	1	1	1	1	1	1	1
Massachusetts	1	1	1	1	1	1	1	1	1
Michigan	1	1	1	1	1	1	1	1	1
Minnesota	1	1	1	1	1	1	1	1	1
Mississippi	1	1	1	1	1	1	1	1	1
Missouri	1	1	1	1	1	1	1	1	1
Montana	1	1	1	1	2	2	4	6	6
Nebraska	1	1	1	1	2	2	2	4	4

	1992	1994	1996	1998	2000	2002	2004	2006	2008
Nevada	1	4	4	4	4	4	4	4	4
New Hampshire	1	1	1	1	1	1	1	1	1
New jersey	1	1	1	1	1	1	1	2	2
New Mexico	1	4	4	4	4	4	4	4	4
New York	1	1	1	1	1	1	1	1	1
North Carolina	1	1	1	1	4	4	4	4	4
North Dakota	1	1	1	2	2	2	4	4	4
Ohio	1	1	1	1	1	1	1	4	4
Oklahoma	4	4	4	4	4	4	4	4	4
Oregon	2	2	2	2	2	2	2	2	2
Pennsylvania	1	1	1	1	1	1	1	1	1
Rhode Island	1	1	1	1	1	1	1	1	1
South Carolina	1	1	1	1	1	1	1	1	1
South Dakota	1	1	1	1	1	1	4	4	4
Tennessee	1	3	3	3	3	3	3	3	3
Texas	3	3	3	3	3	3	3	3	3
Utah	1	1	1	1	1	1	1	4	4
Vermont	1	2	2	2	2	4	4	4	4
Virginia	1	1	1	1	1	1	1	1	1
Washington	5	5	5	5	5	5	5	5	5
West Virginia	1	1	1	1	1	3	3	3	3
Wisconsin	1	1	1	1	4	4	4	4	4
Wyoming	2	2	2	2	2	2	2	4	4

Appendix B2

1992:

1: (41) Alabama, Alaska, Arkansas, Colorado, Connecticut, Delaware, Florida, Georgia, Idaho, Illinois, Indiana, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Utah, Vermont, Virginia, West Virginia, Wisconsin,

2: (4) California, Iowa, Oregon, Wyoming

3: (1) Texas

4: (3) Arizona, Hawaii, Oklahoma

5: (1) Washington

6: (0)

1994:

1: (35) Alabama, Alaska, Arkansas, Connecticut, Delaware, Florida, Georgia, Illinois, Indiana, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, New Hampshire, New Jersey, New York, North Carolina, North Dakota, Ohio, Pennsylvania, Rhode Island, South Carolina, South Dakota, Utah, Virginia, West Virginia, Wisconsin

2: (5) California, Iowa, Oregon, Vermont, Wyoming

3: (2) Tennessee, Texas

4: (7) Arizona, Colorado, Hawaii, Idaho, Nevada, New Mexico, Oklahoma

5: (1) Washington

6: (0)

1996:

1: (34) Alabama, Arkansas, Connecticut, Delaware, Florida, Georgia, Illinois, Indiana, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, New Hampshire, New Jersey, New York, North Carolina, North Dakota, Ohio, Pennsylvania, Rhode Island, South Carolina, South Dakota, Utah, Virginia, West Virginia, Wisconsin.

2: (6) Alaska, California, Iowa, Oregon, Vermont, Wyoming.

3: (2) Tennessee, Texas.

4: (7) Arizona, Colorado, Hawaii, Idaho, Nevada, New Mexico, Oklahoma.

5: (1) Washington.

6: (0)

1998:

1: (32) Alabama, Arkansas, Connecticut, Delaware, Florida, Georgia, Illinois, Indiana, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, New Hampshire, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Rhode Island, South Carolina, South Dakota, Utah, Virginia, West Virginia, Wisconsin

2: (7) Alaska, California, Iowa, North Dakota, Oregon, Vermont, Wyoming

3: (2) Tennessee, Texas

4: (8) Arizona, Colorado, Hawaii, Idaho, Kansas, Nevada, New Mexico, Oklahoma

5: (1) Washington

6: (0)

2000:

1: (28) Alabama, Arkansas, Connecticut, Delaware, Florida, Georgia, Illinois, Indiana, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, South Carolina, South Dakota, Utah, Virginia, West Virginia.

2: (9) Alaska, California, Iowa, Montana, Nebraska, North Dakota, Oregon, Vermont, Wyoming.

3: (2) Tennessee, Texas.

4: (10) Arizona, Colrado, Hawaii, Idaho, Kansas, Nevada, New Mexico, North Carolina, Oklahoma, Wisconsin.

5: (1) Washington

6: (0)

2002:

1: (24) Alabama, Arkansas, Connecticut, Delaware, Georgia, Illinois, Kentucky, Louisiana, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, South Carolina, South Dakota, Utah, Virginia

2: (7) Florida, Maine, Montana, Nebraska, North Dakota, Oregon, Wyoming

3: (4) Indiana, Tennessee, Texas, West Virginia

4: (13) Alaska, Arizona, Colorado, Hawaii, Idaho, Iowa, Kansas, Nevada, New Mexico, North Carolina, Oklahoma, Vermont, Wisconsin

5: (2) California, Washington

6: (0)

2004:

1: (21) Alabama, Connecticut, Delaware, Illinois, Kentucky, Louisiana, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, South Carolina, Utah, Virginia,

2: (4) Maine, Nebraska, Oregon, Wyoming,

3: (5) Arkansas, Indiana, Tennessee, Texas, West Virginia,

4: (18) Alaska, Arizona, Colorado, Florida, Georgia, Hawaii, Idaho, Iowa, Kansas, Montana, Nevada, New Mexico, North Carolina, North Dakota, Oklahoma, South Dakota, Vermont, Wisconsin.

5: (2) California, Washington.

6: (0)

2006:

1: (17) Alabama, Connecticut, Delaware, Kentucky, Louisiana, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, New Hampshire, New York, Pennsylvania, Rhode Island, South Carolina, Virginia

2: (3) Maine, New Jersey, Oregon

3: (6) Arkansas, Illinois, Indiana, Tennessee, Texas, West Virginia

4: (21) Alaska, Arizona, Colorado, Florida, Georgia, Hawaii, Idaho, Iowa, Kansas, Nebraska, Nevada, New Mexico, North Carolina, North Dakota, Ohio, Oklahoma, South Dakota, Utah, Vermont, Wisconsin, Wyoming

5: (2) California, Washington

6: (1) Montana

2008:

1: (17) Alabama, Connecticut, Delaware, Kentucky, Louisiana, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, New Hampshire, New York, Pennsylvania, Rhode Island, South Carolina, Virginia.

2: (2) New Jersey, Oregon,

3: (6) Arkansas, Illinois, Indiana, Tennessee, Texas, West Virginia.

4: (21) Alaska, Arizona, Florida, Georgia, Hawaii, Idaho, Iowa, Kansas, Maine, Nebraska, Nevada, New Mexico, North Carolina, North Dakota, Ohio, Oklahoma, South Dakota, Utah, Vermont, Wisconsin, Wyoming.

5: (1) Washington

6: (3) California, Colorado, Montana.