The Vermont Legislative Research Shop

Instant Runoff Voting

On March 7, 2006 the city of Burlington, Vermont utilized an instant run off voting system (IRV) to select its mayor. As a result Burlington's mayor, Bob Kiss, is currently the only executive office holder in the US to be selected by the instant runoff voting system. The purpose of this report is to present the results of an exit poll The Vermont Legislative Research Shop conducted on the March 7th election. Before discussing the election and exit poll we will examine the use of IRV in other political jurisdictions and paradoxes associated with this type of voting system.

Instant Runoff Voting (IRV) is also known as Alternative Voting, Ranked Choice, Preferential Voting, or the Hare System. For the purposes of this report we will refer to the system as IRV. IRV describes an electoral process in which voters can rank choices for a political office on a ballot. If one candidate is ranked first by over 50% of the voters, that candidate wins and the election is over. If no candidate receives over 50% of the votes in the first ranking then the candidate with the lowest number of votes is eliminated. The second rankings of voters who voted for the eliminated candidate are allotted to the remaining candidates. This process continues until one candidate receives over 50% of the vote.

The first use on record of IRV was the colony of Queensland, Australia in 1893. The IRV method is presently used for electing the Australian House of Representatives. The President of Ireland is currently elected using IRV, as well as the Papua New Guinea National Parliament and the Fijian House of Representatives.[1]

Experience with IRV in the US

IRV is used by several US cities, including: San Francisco, California for its Board of Selectmen election in 2004 and Cambridge, Massachusetts for its city council elections. Ann Arbor,

[1] Anthony Quas, "Anomalous Outcomes in Preferential Voting," *Stochastics and Dynamics* Vol. 4, No. 1 (2004), pp. 95-105, and "Instant-runoff Voting." Wikipedia. Modified March 30th, 2006, accessed 4/4/06,

Michigan used the system for its mayoral race in 1975 and some cities that have adopted, but have yet to implement IRV, include Ferndale, Michigan, and Takoma Park, Maryland. [2]

San Francisco, CA

Thanks to an exit poll conducted by Francis Neely, Lisel Blash, and Corey Cook of San Francisco State University, the 2004 San Francisco Board of Supervisors election provided a look at how IRV worked in another city. IRV was used in seven of the city's eleven Board of Supervisors districts. Neely *et al's* study aimed to determine whether the voters had prior knowledge of the IRV method before voting, whether they understood the new method of voting, and whether they utilized it by ranking all three choices. Overall, Neely *et al* concluded that IRV was accepted positively in San Francisco though the results did raise some concerns about educational and language barriers when using IRV.

In order to make voting easier for the entire public, San Francisco instituted a program meant to educate the public on how Instant Run-off Voting works. The initiative (aptly named "Ranked Choice Voting Education Plan") was proposed by the Department of Elections with the goal to inform voters how to correctly mark ranked-choice voting ballots. The city produced and distributed informational flyers and pamphlets citywide in order to inform people of the change in voting. The Department of Elections also chose to train 3,500 poll workers on the ins and outs of ranked-choice voting so as to better inform those coming to vote.[3]

Similarly, the Department of Elections' website had a demonstration ballot which allowed people to walk through the process of ranking their candidates. The ballot was available in multiple languages to cater to people whose first language is not English. The Department of Elections also distributed full-color brochures in English, Spanish and Chinese.[4]

Exit poll responses indicated that "after having used it (IRV), most [voters said] they prefer it to the former runoff system."

Voters with higher levels of education were more likely to have had prior knowledge of the new voting system. Sixty-two percent of the respondents without any college education had prior knowledge of the new system in contrast to the 72% of voters who had some college experience. Education was also a factor when examining voters' understanding of IRV; 27% of the voters who did not finish high school responded that they did not understand the IRV method in contrast to the 12.1% of those with at least some college experience. Thus, education played a role in both prior knowledge as well as understanding of IRV with the advantage toward those respondents with greater education.

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[2] "Instant-runoff Voting." Wikipedia. Modified March 30th, 2006, accessed 4/4/06, http://en.wikipedia.org/wiki/Instant_runoff_voting

[3] Department of Elections. "RCV Public Education Plan." San Francisco, California, November 2, 2004. Accessed 4/4/06 from www.sfgov.org/site/uploadedfiles/election/appendixD-rcvpubliceducationplan2004.pdf

[4] Department of Elections: Ranked-Choice Voting. Department of Elections. March 14, 2006. Accessed 4/4/06 from http://www.sfgov.org/site/election_index.asp?id=24269.

With regard to language differences, voters whose first language was Spanish had more

redistributed to the next indicated preference (number 2, 3, 4, etc.). The count continues until the nine winners are identified.[6]

The proportional representation used by the Cambridge city government is different from the commonly used ranked choice voting because of its usage of a quota system. Unlike a majority of city council elections, the city of Cambridge is a single district and candidates are eliminated if they do not acquire the sufficient number of votes following a succession of voting rounds.

Ann Arbor, MI

In November 1974 the residents of Ann Arbor voted in favor of the usage of IRV for mayoral elections with 52% voting in favor of the method. The method was used in the April 1975 mayoral election following a large effort by the city to educate voters about the practice and implications of IRV voting. In the mayoral election, the Republican candidate won 49% among 1st

Table 1: Original Results[9]

1st Round Votes		2nd Round Votes	
		D over R	R over D
417	PDR	417	0
82	PRD	0	82
143	DPR	143	0
357	DRP	357	0
285	RPD	0	285
324	RDP	0	324
1st Round	Progressive	499	
	Democrat	500	
	Republican	609	

modify for our purposes of illustration.[12] Suppose 17 voters cast the following vote in an election involving 4 candidates (where P is the Progressive Party Candidate, D the Democrat, R the Republican and I an independent):

Table 3

# of voters	1st an

phenomenon" or the "paradox of cyclical majorities" in which it is possible in a three-way race where voters rank their preferences ala IRV for "every candidate to be beaten by some other candidate in direct-comparison voting."[17] This would occur in Burlington with a vote such as

Table 5

400	PDR[18]
500	RPD
700	DRP

The Progressive candidate beats the Democrat 900 to 700, the Democrat beats the Republican 1,100 to 500, and the Republican beats the Progressive 1,200 to 400, showing no clear preference for any one candidate.

In sum, IRV has the potential to result in some unusual electoral outcomes, outcomes that could, as happened in Ann Arbor, leave the public unhappy with the results. The probabilities of such outcomes are not insubstantial.[19] The main source of paradoxes arising from IRV is the fact that it matters which candidates are eliminated after the first round.[20] Races in which no candidate wins in the first round and the 2nd and 3rd candidates' vote totals are close are contests in which these sort of unusual outcomes are most likely. Because it matters who comes in 2nd and 3rd, IRV is not immune to strategic voting as some of its advocates claim.[21]

Exit Poll of Burlington's 2006 IRV Experience

In order to measure Burlington voters' reactions to IRV in the city's May 7th election, The Vermont Legislative Research Shop (VLRS), with the assistance of 51 students from Professor Gierzynski's Politics & the Media course, interviewed 1,096 voters leaving the polling places on Election Day.

IRV Exit Poll Methodology

The VLRS class read selections from *Basics of Survey Research* by Earl Babbie for strategies on how to conduct exit polls. The book discusses guidelines for asking questions, what types of questions to ask, and the construction of the actual questionnaire. Three different groups of students wrote exit poll questions which were then vetted by the entire class resulting in a first

[17] Peter Fishburn and Steven Brams, "Paradoxes of Preferential Voting: What Can Go Wrong with Sophisticated Voting Systems Designed to Remedy Problems of Simpler Systems," p. 210.
[18] Simulation numbers borrowed from Fisburn and Brams.
[19] Anthony Quas, "Anomalous Outcomes in Preferential Voting," *Stochastics and Dynamics* Vol. 4, No. 1 (2004), pp. 95-105 and William H. Riker and Peter C. Ordeshook,

draft of the exit poll. Some of the questions were based on questions sent to us by Representative David Zuckerman and Vermont's Secretary of State, Deb Markowitz. The survey went through several drafts, reviewed by Representative Zu

Election Results

Before discussing the exit poll findings, an examination of the ballots cast for mayor is instructive.

Participation in IRV

Table 6 shows the percentage of people who cast a vote in each ranking level according to official election results.[22] About 1/5th of voters selected only one candidate, that is, they, in effect, did not participate in the IRV aspect of the election. Four-fifths of voters took part in ranking candidates, with 80.9% people having ranked at least two candidates, 47.9% having ranked at least 3 candidates, etc. Only a little over 1/4th of voters ranked all 5 candidates.

Table 6	
Ranking	**% of people**
Voted for only 1 candidate	19.1%
Ranked at least 2 candidates	80.9%
Ranked at least 3 candidates	47.9%
Ranked at least 4 candidates	29.9%
Ranked all 5 candidates	26.4%

As Table 7 shows, voters for the Republican candidate, Kevin Curley, were the least likely to rank candidates. A little over 29% of Curley voters voted just for Curley and ranked no other candidate as compared with 12% of Kiss voters and 17.3% of Miller voters.

Table 7	
Voters for	**% of voters who did not rank any candidates after their first choice**
Kiss (P)	12.0%
Miller (D)	17.3%
Curley (R)	29.4%

Voter Turnout

Voter turnout as a percentage of eligible voters[23] was 30.3% for the 2006 mayoral election.[24] Two other elections in recent years had a higher level of voter turnout—1999 in which 31% of eligible voters cast ballots, and 1995, with the highest level of turnout at 36.5% (see Table 8).

[22] Official election results can be obtained by the City of Burlington's Internet site http://www.ci.burlington.vt.us/ct/elections/, accessed April 22, 2006.

[23] The number of eligible voters was obtained from the US Census Bureau (census.gov). Calculating turnout as a percent of eligible voters is a better reflection of voter turnout than calculating it as a percentage of registered voters

Table 8	
Mayoral Election Year	**Voter Turnout as a % of voting age population**
2006	30.3%
2003	22.3%
2001	18.7%
1999	31.0%
1997	20.8%
1995	36.5%
Sources: Burlington City Clerk's Office and US Census Bureau.	

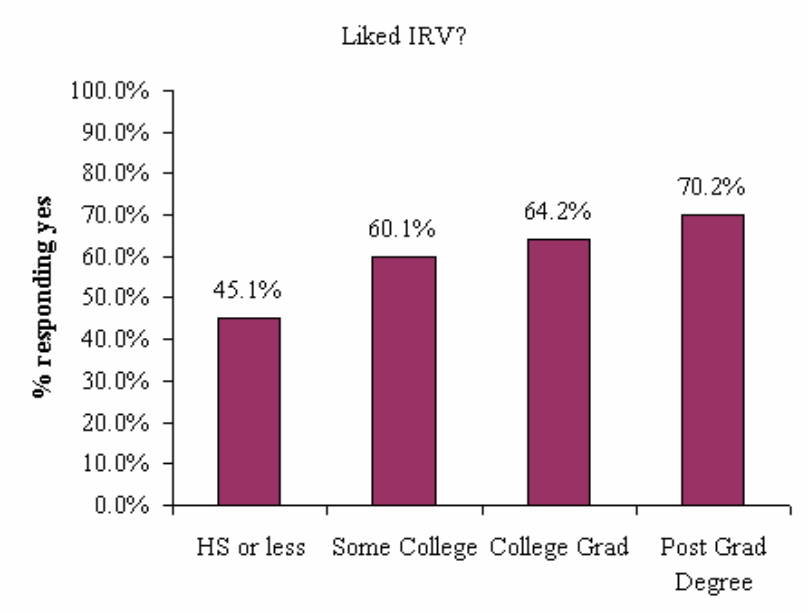

Figure 1: Preference for IRV by level of formal education.

Support for the new voting system also varied along party lines. Progressives liked IRV the most, at a rate of 80.3%. Democrats followed at a rate of 64.9%, and Republicans favored IRV the least, with just 36.5% saying they liked the new voting system while a plurality of Republicans, 47.8% did not like it. This finding, that Republicans were the group that liked IRV the least, fits with the fact that voters for the Republican candidate Curley were the least likely to have ranked any candidates beyond their 1st choice.

Respondents that said they either liked or disliked the IRV system were asked why they liked or disliked it in an open ended question. Of the respondents that answered that they liked IRV, 11.5% said the reason that they liked it was that it got rid of the spoiler effect, or the ability of a third party candidate to take votes away from a candidate otherwise more likely to win; 10.4% said that they liked IRV because it avoids a runoff; 9.1% said they liked it because allows greater political expression; 7.5% liked it because it was more democratic and legitimate; 7% liked it because it saves money; and, 6% liked it because they thought it was fairer (for full results of the open-ended question see Appendix A).

Of the respondents that did not like the IRV system, 16.4% said that it was too confusing; 10.7% said that they did not like change or did not see the reason for change; 5.7% wanted a runoff; and 3.8% felt it would not be as true of a vote.

In general most voters thought that IRV was a better way to express

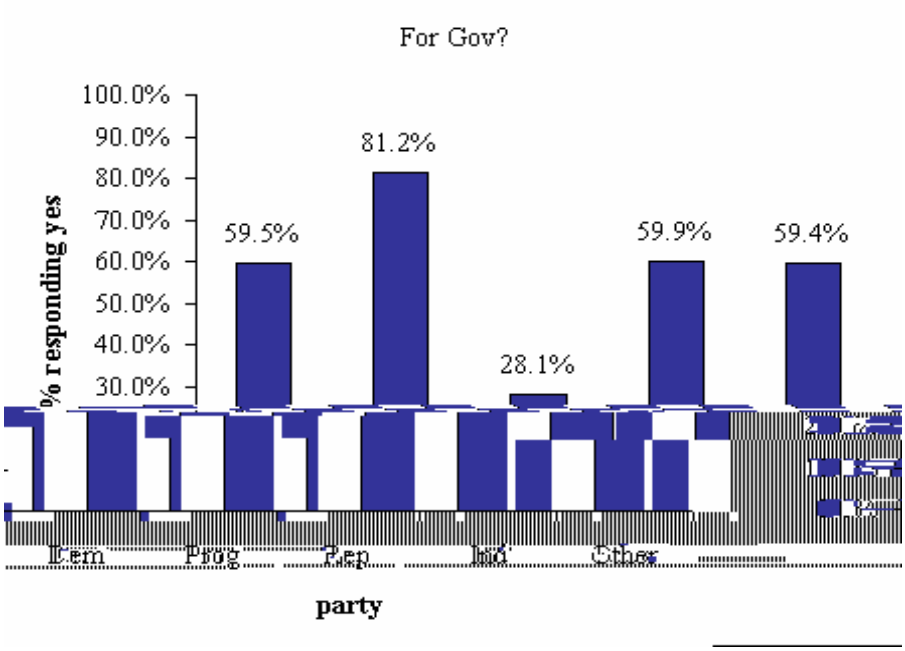

Figure 4: Percent by party answering "yes" to the question: Would you like to see the new system of ranking candidates used for the election of governor in Vermont?

Fewer voters supported the use of IRV for all statewide offices than favored it for gubernatorial elections—53.3% said that they would like to see it used for all statewide offices, whereas 31.9% would not like to see IRV used in those elections. Approval for use in statewide elections also varied along party lines. As shown in Figure 5, 75.4% of Progressive voters favored its use statewide, and 52.5% of Democrats favored its usage. There were only 24.6% of Republican voters that wanted to see IRV used for all statewide elections.

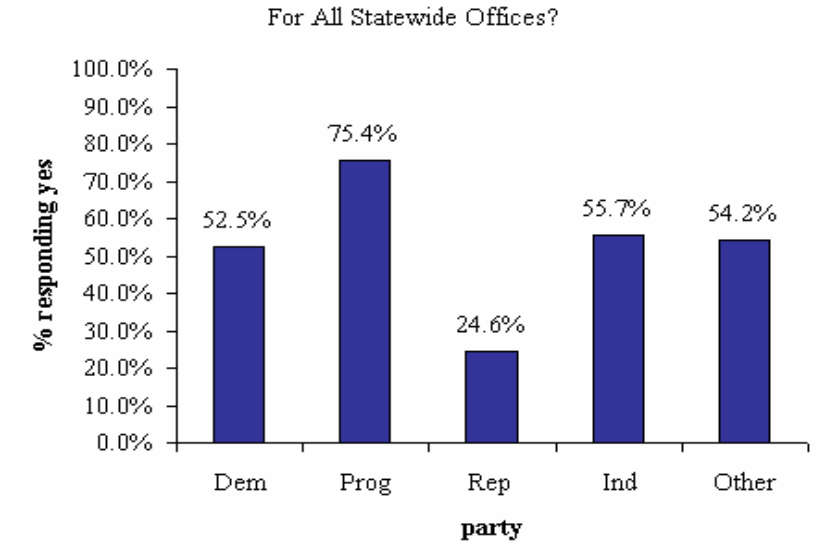

Figure 5: Percent by party answering "yes" to the question: Would you like to see the new system of ranking candidates used for the election of all statewide candidates in Vermont?

In terms of awareness of the new system, 90.4%

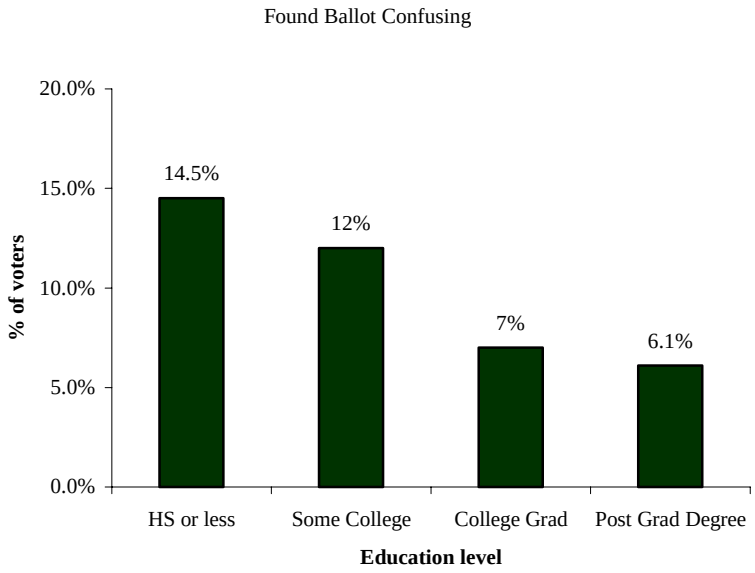

Figure 7: Percent who thought ballot was confusing by level of education

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The relationship between education levels and awareness and understanding of the IRV ballot in our exit poll is similar to the findings of the exit poll conducted during San Francisco's recent experience with IRV (see discussion above) and is one of the main concerns with this method of voting. As the experience of Florida in the 2000 presidential election demonstrated, certain voters are likely to have enough difficulty with complex ballots so that their votes do not end up counting. The percentages of people who were unaware of IRV or found the ballot confusing in the Burlington election were low even for the lowest levels of education (undoubtedly due to the City of Burlington's effort to educate voters on IRV). The number of confused voters represented by those percentages, however, would be much greater in elections in larger cities or in statewide contests. Additionally, the higher level of voter turnout in statewide elections means that a larger proportion of the electorate would be composed of groups that, according to both our results and those of the San Francisco exit poll, had more difficulty with IRV, namely, those with lower levels of education. To illustrate, the percent of eligible voters casting ballots for governor in Vermont in 2004 was 65.1%[25] compared to the 30.3% turnout in the 2006 mayoral election in Burlington. Only 12% of voters in Burlington's mayoral election had a high school degree or less, while 26% of voters in the 2004 presidential election had a high school degree or less.[26] Because they represent the group that had the most difficulty with IRV, a higher percentage of voters with a high school degree or less would undoubtedly inflate the percentage, as well as the number of those uninformed about IRV and/or confused by it. In other words, there is a good possibility that the difference among voters based on education levels would be intensified in an election with a higher voter turnout.

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[25] Vote data from Vermont Secretary of State (http://vermont-elections.org/elections1/2004_election_info.html), voting eligible population from United States Election project (http://elections.gmu.edu/).
[26] National exit polls conducted by the National Election Pool.

Conclusion

Burlington's experiment with Instant Runoff Voting appeared to go very well; however, the long term viability of IRV may be tested only through future use. Eight in ten voters ranked at least two of the candidates, 63.4% of the voters said that they liked the new system, and nearly 6 in 10 would like to see it used for the election of Vermont's governors. When compared to previous *competitive* elections for mayor in Burlington, there appeared to be no significant difference in voter turnout for Burlington's first use of IRV.

The exit poll results do, however, raise a couple of concerns about IRV. There appear to be both education and partisan differences in the reaction to IRV. The relative lack of awareness and confusion voiced by those with lower levels of education suggests that IRV has the potential to engender some inequities in the electoral process based on class. The partisan divide found on IRV in Burlington—Progressives and Democrats liking the system, Republicans disliking it—poses a problem for the perceived fairness of elections and the legitimacy of those elected. While a sound argument can be made that IRV functions in a manner to select candidates based on majority preferences, the minority party may see it as an unfair changing of the rules of the game that deprives them of a chance of winning when their opposition is in such disarray as to offer multiple candidates. Were any of the potential voting paradoxes discussed above to arise in an election (especially if a Republican candidate had the lead in the 1st round and lost after the second round) there would surely be attacks on the legitimacy of that election in the press. Then there will be a real test of the publics' understanding of IRV.

Other questions remain to be answered regarding the effect of IRV elections. It is unknown how IRV affects campaigning. It may ensure more congenial elections since candidates would not want to alienate any potential 2nd place votes from supporters of their opponents. But, it could also make it so candidates play down their policy differences for the very same reason—not wanting to alienate any potential 2nd place votes—making it less clear to the voters what their choice really means in terms of governance. Nasty campaigning, it should also be noted, could simply go underground as it may have in the Burlington mayoral contest. It also remains to be seen how IRV affects voters' decisions. Despite claims of its supporters to the contrary, IRV does allow for, and even encourages strategi

Ryan Whalen, and Joseph Winsby in response to a request by Representative David Zuckerman on April 27, 2006.

Appendix A

7.0% it saves money
6.0% it is fairer
5.7% it makes more sense
5.4% it allows more competition
5.2% it allows for more candidates to run
4.5% it makes it faster
4.0% it shows a clear winner
3.5% it makes it easier
3.0% it allows them to vote their conscience
2.1% it allows for more control

Reasons offered for disliking the new methods (includes responses only from those answer 'no' to question D above)**:**
16.4% it is too confusing
16.4% offered no reason
15.1% only voted once without ranking
5.7% don't like change
5.7% wanted a runoff
5.0% don't see reason for change
3.8% feel it will not be as true of a vote
3.1% feel it is not familiar
3.1% feel that it can be manipulated
3.1% feel forced to rank
3.1% feel that it is silly
3.1% feel that if you loose then you loose
2.5% the winner of the first round could loose

[F] Would you have preferred a separate run-off election held at a later date between the 2 highest vote getters instead of the system used today?
20.9% Yes 68% No 11% don't know

I'm going to read you a few statements about the voting for mayor today. Please tell me whether you agree or disagree with the statement.
[G] It is a better way to express my voting preferences than the usual system.
71.1% agree 20.8% disagree 8.2% don't know
[H] The ballot was confusing.
8.6% agree 90.6% disagree .8% don't know
[I] I felt I needed to know more about more of the ca

[N] Would you like to see the new system of ranking candidates used in Vermont for elections for all state-wide offices?

53.3% Yes
31.9% No
14.6% don't know/don't care/no opinion

Now, just a few background questions….

[O] To which age group do you belong?

8.2% 18-24 **33.8% 45-59**
38.5% 25-44 **19.3% 60 and over**

[P] What is your level of formal education?

1.1% Some high school
10.9% High school degree
18.5% Some college
36.0% Bachelors degree
33.5% Post graduate degree

[Q] No matter how you voted today, do you usually think of yourself as a:

33.8% Democrat **32.7% independent**
11.5% Progressive **10.4% something else**
11.2% Republican

[R] *Record person's gender*

49.8% Female **50.1% male**

Appendix B

Instructions: Please read carefully.

1. Fill out the label on your envelop with your name and the polling place. Mark down the time you arrive and the time you leave.

2. Arrive at the polling place sometime in the first ½ hour of your time block.

3. When you arrive at the polling place, go inside and introduce yourself to the election officials. Tell them you are a UVM student wanting to conduct a study of voters' reaction to the instant run-off system for Vermont state legislators and the Secretary of State. Ask them to help you with understanding where you can stand to poll voters leaving the polling places. Technically, the rules state we have to be outside of:
    (a) The area within a corridor extending fifteen (15) feet to each side of the designated primary access route and ending where the primary and access route reaches the city sidewalk; and
    (b) The area within a thirty (30) foot radius of the front of the polling place drawn from the center point of the designated primary entrance door(s).

4. Start polling by asking for an interview with the first person who walks near you using the greeting/intro spelled out at the top of the survey. Slight modifications of the greeting are okay, the key think is to get in that
    a. you are a UVM student
    b. working on a research project of voters reaction to the new voting system
    c. and that this is for Vermont state legislators and the secretary of state

5. When reading the survey questions to the voter, be sure to read them exactly as they appear. Read all response options except the "don't know, don't care, know opinion" option (we'll leave it to them to volunteer that option). Do not read anything that is in italics—that is for you.

6. Mark each answer they give in the box next to the response option.
    a. When recording their response to the way they ranked the candidates use numbers for each candidate they ranked, if they didn't rank the candidate leave the box blank, if they ranked the candidate but didn't remember how they ranked them but an 'X' in the box.
    b. For [E] write down what they say word-for-word as best as you are able.

7. If the voter refuses to answer a particular question, that is okay. Do not press them for an answer. Leave the responses unmarked and just move on to the next question.

8. After you complete each survey thank the respondent and then ask the next person who walks near you. It is **very important that you select your subjects by asking the next available person!** If you pick and choose whom you ask the survey results will be biased.

9. On the envelop containing your surveys keep track of how many voters refuse your request for an interview (you can use hash marks). Note anything you think we should know about the process on the envelope (anywhere), e.g., people were confused with question [X]…

10. When you have had 20 interviews (the number of forms you are provided with) you can go home.

11. Drop off the envelopes with your surveys at my office on Wednesday.

12. Instructions must be followed exactly in order to earn your extra credit.

If you have any problems or questions, I've arranged to be available via a cell phone; the number is 802-999-9339.