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The Voting Process, Including Ranked Choice Voting for Local Offices in the City and County of San Francisco

Final Report

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Definition of Terms

Given the range and relatively recent emergence of the debate surrounding Ranked-Choice Voting (RCV), there has yet to be developed a codified and universally accepted meaning of the terminology involved. For this reason it is necessary for us and for the sake of clarity to define and delimit the terms that repeatedly occur in the discussions surrounding RCV so as to not offer any confusion regarding usage in this report. Where there are existing definitions that have arisen from common usage, we have remained true but whereas any given term lends itself to ambiguity, we have established a specific meaning for the purposes of this study. Therefore, any mention of the following terms, unless otherwise noted, will always refer to the intent and meaning as defined below:

65% Scenario: The 65% scenario is a term used to refer to the suggested change to the City Charter that would allow a Primary/General election situation with the possibility of a final winner declared after the Primary if that candidate receives, at minimum, a 65% majority of the vote in the Primary election.

Ballot Exhaustion: In this report ballot exhaustion refers specifically to phenomenon occurring in the RCV system wherein a voter votes correctly with no overvotes but has chosen three candidates who have been eliminated prior to the final round.

December Run-Off System: This is the voting system as employed by the CCSF prior to the implementation of the RCV system. The December Run-Off system is based upon a situation in the November General election whereby if no one candidate receives more than 50% of the votes, then the two candidates with the highest number of votes are moved to a December run-off election.

Multi-candidate Voting: Voting method wherein a given race has more than one seat within the field and voters can select as many candidates for the race as there are seats for that field. This method is used for the School Board and the Community College Board in the CCSF.

Neighborhoods: All mention to neighborhoods in this report specifically includes those of the CCSF and are listed below as defined by the San Francisco Department of Elections (for a map of neighborhoods, see Appendix 1):
Bayview/Hunters Point, Chinatown, Civic Center/Downtown, Diamond Heights, Excelsior (Outer Mission), Haight Ashbury, Ingleside, Inner Sunset, Lake Merced, Laurel Heights/Anza Heights, Marina/Pacific Heights, Mission, Noe Valley, North Bernal Heights, North Embarcadero, Portola (added in 2006), Potrero Hill, Richmond, Sea Cliff/Presidio Heights, South Bernal Heights, South of Market, Sunset, Upper Market/Eureka Valley, Visitacion Valley, West of Twin Peaks, Western Addition (see Appendix for detailed map)

Open Seat: An open seat is a situation in a given election wherein there is no incumbent candidate.

Overvote: An overvote is noted by the San Francisco Department of Elections to have occurred when a voter makes more marks than allowed in any single field in any given race.

Plurality Voting: Voting method used for most non-City (i.e. state and federal) elected offices and by the CCSF for its local offices prior to RCV in which voters selected one candidate from a given field.

Ranked-Choice Voting: Ranked-Choice voting, commonly referred to as RCV, was passed by the voters as an amendment to the City Charter in March 2002. As currently implemented, ranked-choice voting allows San Francisco voters to rank up to three candidates for a single office in order of preference.

Undervote: An undervote is noted by the San Francisco Department of Elections to have occurred when a voter chooses not to make the allowed maximum number of marks for any single race.

Voter Error: For the purposes of this study, we consider voter error to be an overvote which appeared on the ballot. We have chosen to delimit voter error in this manner, rather than including undervotes, as it addresses more fully the issues surrounding voter education, in that an overvote points to a misunderstanding of the election system whereas, an undervote, could be due to a host of subjective reasons. By focusing on voters who misunderstand the system, we are able to illustrate a clearer picture of the true population of voters in need of further outreach and education.

Voter Participation: Voter participation, for the purposes of this study, is defined as the total of voters who cast a ballot in any given race. This is distinct from the number of voters whose votes went toward the final selection of a candidate

Yes/No Voting: Voting method used for Ballot Measures and for the approval of some Judicial seats. Voters in these types of races will choose between Yes or No rather than specific candidates.

Introduction:

The objective of this report is to analyze the voting process presently employed by the City and County of San Francisco (CCSF) with a particular emphasis on Ranked-Choice Voting (RCV). Currently, the CCSF utilizes four types of voting mechanisms: ranked-choice voting, used for all city offices; plurality voting, used for most other offices; multi-candidate voting, which is used in School Board and Community College Board races; and Yes/No voting, which is used on Ballot Measures and some Judicial races.

The impetus for this report stems from the emerging debate in the San Francisco community and its representatives related to the efficacy of the RCV system. In light of this debate, San Francisco's Local Agency Formation Commission (SF LAFCo) has undertaken a Special Study of the current voting process for local offices in San Francisco with a special focus on Ranked Choice Voting (RCV). This study, undertaken pursuant to Government Code §56378 and SF LAFCo Policies on Special Studies §2.6, §2.62, §2.63, and §2.64, was conducted with the intent of providing a statistical and objective analysis of the voting process and as such relies primarily upon data provided directly by the San Francisco Department of Elections unless otherwise noted.

As RCV is the election system currently under examination by the CCSF, it follows that RCV presents itself as the best baseline from which to analyze the voting process as a whole. In order to set the parameters of the analysis, LAFCo examined the contentions surrounding RCV by examining information circulating in the public sphere (press, radio, civic media, and governmental agencies). We found that proponents and detractors of RCV have centered the debate mainly around the three following areas:

I. Voter participation rates
II. Voter error rates
III. The Move to a Primary/General election with the possibility of a winner in the Primary

To best provide empirical evidence for these three focal areas, LAFCo examined a large body of data spanning multiple years and cities. However, in regard to the breadth and scope of the conducted analysis, it is important to note that data collection capabilities and the depth of voter information has increased significantly over the last few years; as such, there are restrictions on data analysis for election comparisons over time. This is particularly limiting in regard to providing a statistically significant time-series analysis in comparing RCV against the former Run-Off system used in San Francisco for city offices prior to RCV.

Executive Summary

Voter Participation Rates

From our analysis, our findings show, under RCV, higher rates of voting for those participating in the election for the San Francisco Supervisor Races. In looking at a comparison of voter participation rates between RCV and non-RCV Supervisorial races from the years 2000-2010, on average, there was a 2.1% greater voter participation rate under RCV than the non-RCV races. This increased voter participation under RCV was even more marked in races in which there was an open seat. For instance, since RCV, in all the Supervisorial races but one—District 4—there has been higher voter participation.

Our findings show that, from the available data, there is no clear correlation between RCV and voter participation in City-wide races. It should be noted that there are not as many City-wide races to compare amongst as there are Supervisor races. Rates of voter participation for City-wide races have tended to fall on both sides of RCV and Run-Off elections wherein certain races have shown greater voter participation under RCV, while others have shown greater voter participation under the Run-Off system. However, unlike the Supervisorial races, there is no data readily available for comparison when considering voter participation rates for an open seat election (since RCV implementation there has been only one open seat election in City-wide races). Essentially, with the available Department of Elections data for the years 1997-2011, the averages for voter participation rates under RCV or non-RCV races remain approximately equal with the caveat remaining that there is not yet enough data regarding open seat elections to make a full assessment of the efficacy of either election system.

Voter Error

Our analysis of San Francisco neighborhoods showed that there are neighborhoods that consistently have ballot errors at a higher rate than others. These neighborhoods are easily identifiable through an analysis of rates of overvotes across time. We found that the 'neighborhood' as a unit of measurement for this discussion is likely the most informative measure since (a) most community groups tend to focus on the level of the neighborhood; and (b) this is by and large the most effective means to address voter education and outreach programs. The aggregated neighborhood information is an especially pertinent and focalizing tool for the Department of Elections, as it can be used to target neighborhoods in greater need of voter education.

The Move to a Primary/General election with the possibility of a winner in the Primary

Currently there is a proposed change to the City Charter on City-wide offices which would change the current RCV system to a Primary/General election system. As proposed at the time of this report being drafted, it would allow any candidate receiving at least 65% of the vote in the Primary to be the winner without having to proceed to the General election. We looked at a 65% winner scenario by comparing the turnout in statewide primaries and the succeeding general

elections here in San Francisco for the years 1990-2010. Using the 65% winner scenario, there was only one year (1998) in which the winning candidate would have taken more than 50% of the general vote in the Primary election. We also looked at the top 20 cities in the country to see if any had elections and data available that match, at least in part, what is being proposed in San Francisco. We found three cites which have comparable elections systems: Los Angeles, with a spring Primary and summer General and allowing a final winner in the Primary if a 50% threshold is met; Detroit, which holds a non-partisan Primary in August and general in November with no winner allowed in Primary; and Charlotte which has a Partisan Primary in September and General in November. It should be noted that we have not found a 65% winner scenario in any other city election system.

Methodology

The specific methodology for each of the three study areas of focus—voter participation, voter error, and the move to a Primary/General election with a possibility of a winner in the Primary—differs in the respective aggregate data and the statistical measurements involved. For each of the study areas to be discussed below, we will introduce the specific measurement tools used. In general though, for all the areas of study, we used publicly available data taken directly from Department of Elections' websites. However, for certain elections taking place prior to the availability of neighborhood level reporting data (pre-2007), we cannot perform neighborhood analysis of rates of overvote. Additionally, San Francisco's Department of Elections' historic data prior to 2008 lacks the in-depth aggregate data of recent years. As a result of this, certain aspects of a neighborhood by neighborhood direct comparison to pre-RCV races under the Run-Off system are difficult to accurately posit.

The study of, "The Voting Process, Including Ranked Choice Voting for Local Offices in the City and County of San Francisco," will comprise three sections according to the study areas described in the introduction to the study: voter participation, voter error, and the move to a Primary/General election with a possibility of a winner in the Primary. Each section will offer an empirical analysis of the available information pertinent to the area of study. Additionally, for each area surveyed, we will introduce the specific methodology used to generate the data. Having delineated our findings in each area, we will conclude with an overview of our research. Bearing in mind that this is a study meant to be entirely impartial to the policy debates, we will offer no policy suggestions in support or opposition to the current electoral process in the CCSF.

§1: Voter Participation:

As mentioned earlier voter participation for the purposes of this study is defined as the total number of voters casting a ballot and having their vote recognized and counted by the City. LAFCo sought to compile an accurate assessment from the available data of the impacts upon voter participation of the RCV system and the Run-Off system which was used prior to RCV being implemented in 2004. As noted in the summary to this report, our data showed that voter participation, on average, increased for Supervisorial races in the City. For City-wide offices, voter participation was distributed nearly evenly between races, where some races had higher numbers of voter participation under RCV, whereas others had higher numbers under the Run-Off system.

The data for this analysis was developed by compiling voter participation rates for City-wide races from the years 1997-2011 (see Appendix 2). These races include the offices of Assessor-Recorder, District Attorney, Treasurer, City Attorney, Mayor, Sheriff, and Public Defender. In order to maintain consistency across races for City-wide offices the following standard was applied to the analysis:

- All one candidate races were excluded from analysis because of their inability to accurately reflect voter participation, including: 1997 City Attorney, 1999 Sheriff, 2005 City Attorney, 2006 Public Defender, 2006 Assessor-Recorder, 2007 District Attorney, and 2010 Public Defender.

Having established the parameters for comparison, we reviewed voter participation rates across election years containing both RCV elections (2004-2011) and Run-Off elections (1997-2003). We then took an average for each office race for the RCV years and Run-Off years, respectively, and compared those against each other.Our findings from these comparisons indicated that there have been instances across all the office races where either RCV or the Run-Off system had garnered greater rates of voter participation as shown in the following table:

Voter Participation Differences by Office for City-wide Races (1997-2011)

	Difference between all non RCV to RCV races		**Open Seat vs Open Seat**		**Incumbent vs Incumbent**	
Election	**RCV**	**Run-Off**	**RCV**	**Run-Off**	**RCV**	**Run-Off**
Assessor Recorder	3.73%		n/a		3.75% w/odd year 0.78% no odd year	
City Attorney		12.00%	n/a		n/a	
District Attorney	2.03%		n/a		5.02%	
Mayor w/out 1999		1.99%	n/a		n/a	
Mayor w/ 1999	15.72%		n/a		33.43%	
Public Defender	Not enough consistent data due to change in election cycle as well as a high frequency of 1 candidate fields					
Sheriff	5.25%		n/a		2.46%	
Treasurer		8.21%	n/a			8.74%

What we can extrapolate from this data is that for City-wide races over the period 1997-2011, we could not accurately infer any statistical significance to the RCV versus Run-Off discussion. This is in part due to a lack in the number of races by which to make same-office comparisons between RCV and the Run-Off system. There are likely more qualitative analyses that can be made to better interpret the voting patterns that occur over time for City-wide races. For instance, factors such as whether or not there was voter excitement, the type of race, election timing, or popular candidates on the ballot could all contribute to voter participation in a particular race. Unfortunately, for City-wide races, there has not been an occasion where we could compare an open seat election for the same offices under RCV to an open seat election under the Run-Off system. This situation could be due to a legacy of incumbency in the most City-wide offices and the fact that only the Mayor is office has term limits. However, this type of qualitative analysis is outside the scope of this report.

In regard to the analysis of voter participation rates in Supervisorial races over the period 2000-2010, we did find our analysis of the data to show that under RCV, there has been greater voter participation. For this field of the study, our methodology involved an aggregation of Supervisorial elections over multiple election cycles to include data of all district elections since half the districts hold office elections every two years. This aggregated election data allows us to more accurately analyze voter participation rates by Supervisorial district in a time series analysis by comparing the districts against themselves in a holistic manner.[1] As in the City-wide races, we excluded all single candidates' fields from this comparison: 2000 District Two, 2002 District Ten, and 2010 District Four (see Appendix 3).

Our findings here were, on average, in favor of RCV for the years analyzed. Of the 11 Supervisorial districts, there were three districts (2, 4, and 7) that had slightly higher voter participation under the Run-Off system, whereas the remaining 8 districts did better under the RCV system (1, 3, 5, 6, 8, 9, 10, and 11). The inference that can be made from this is that RCV appears to have a greater impact on garnering higher voter participation in the Supervisorial races than had occurred under the Run-Off system. Important to note here is that in all races, compared with an open seat, voter participation was consistently higher under RCV—except in District 4.

[1] District boundaries shifted in 2002 onwards from the 2000 district boundaries. This shift moved a small number of precincts between districts and though they may have contributed to some very slight deviations in our data output, we considered them to be negligible and presented to no skewing

Voter Participation Differences by Office for Supervisor Races (2000-2010)

Election	Difference between all non-RCV to RCV races		Open Seat vs Open Seat		Incumbent vs Incumbent	
	RCV	Run-Off	RCV	Run-Off	RCV	Run-Off
Supervisor 1	5.18%		4.64%		n/a	
Supervisor 2		1.10%	n/a			2.14%
Supervisor 3	4.07%		5.23%		n/a	
Supervisor 4		3.39%		0.63%	n/a	
Supervisor 5	2.67%		2.51%		n/a	
Supervisor 6	5.78%		7.64%		3.91%	
Supervisor 7		3.10%	n/a		n/a	
Supervisor 8	2.65%		3.98%		n/a	
Supervisor 9	3.24%		3.11%		n/a	
Supervisor 10	1.93%		3.41%		n/a	
Supervisor 11	5.25%		5.63%		n/a	

§2: Voter Error:

§2.1 Comparison of Overvotes by Election Type

For this section, we conducted a neighborhood by neighborhood comparison of overvotes by type of election—specifically, the four types of election being RCV, plurality voting, multi-candidate voting, and Yes/No voting. In establishing the level of analysis for this section we concluded that the neighborhood (as defined by the San Francisco Department of Elections) was the most effective measurement for communicating the rates of overvotes that occurred in the races under analysis. The neighborhood-level analysis serves the dual purpose of (a) allowing us to work within the already established data reporting of the San Francisco Department of Elections, and (b) the identification of neighborhoods consistently having higher rates of overvotes above the city averages for any given type of race. We should note that, while the precinct level would indeed give a more detailed analysis of smaller areas having higher rates of overvotes, it remains the norm that community groups tend to coalesce at the neighborhood level rather than the precinct level. The neighborhood analysis then has the additional benefit of creating data which could be used by the San Francisco Department of Elections to implement targeted voter education working in collaboration with neighborhood and community groups.

Before generating the full data set for this section, we had to establish a baseline of overvotes that can be expected to occur in any election. This was done by looking at the City-wide average of overvotes across the 2011 Ballot Measures. In deciding upon the 2011 Ballot Measure rate of overvote, we distinguished between the average 2008, 2009, and 2010 Ballot Measures' rate of overvotes average. After the analysis of all the years in question, 2011 presented the lowest overvote percentage, so we can infer that this is the most dedicated regular voter group of the years 2008-2011 since having made the least errors they are likely the most familiar with the election system. Beyond this assumption, 2011 presents as having the lowest overvote rate (as opposed to the higher incidents of overvotes in the 2008 and 2010 years) and can thereby be the most conservative baseline from the data analyzed. The assumption here was that there exist a percentage of voters who can be expected to make mistakes regardless the race, election method, or educational efforts based on the type of voting system used in the CCSF.

Average Rates of Overvote on Ballot Measures 2008-2011

Year	Number of Measures on Ballot	Turnout as a % of Registered Voters	Ballots Cast	Average rate of Overvote on all Measures	Range of rate of Overvotes on Ballot Measures
2011	8	42.37%	196756	0.041%	.024%-.066%
2010	15	60.48%	282081	0.059%	.038%-.104%
2009	5	22.58%	102061	0.043%	.030%-.061%
2008	22	79.87%	381495	0.057%	.042%-.101%

Having established a baseline average of overvotes in any election, we then aggregated data to create averages across the years 2008-2011 (see Appendix 4):

- For plurality local races, plurality State-wide races, RCV City-wide Races, and Multiple-Candidate races.
- For plurality local races we included the races of State Assembly, U.S. Representative, and Superior Court Judge. [2]
- For plurality State-wide races, we included the races for President, U.S. Senate, State Constitutional Offices, and Board of Equalization.
- For RCV City-wide races we included the races for all City-wide Offices.
- For Multiple-Candidate races, we included School Board and Community College Board[3].

Our findings for this section of the analysis showed that the City-wide averages of overvotes by election type were ranked in the following order, from highest to lowest:

I.	RCV City-wide Races (Final Round)	.34%
II.	Multiple-Candidate Races	.34%
III.	RCV City-wide Races (1st Round)	.26%
IV.	Plurality State-wide Races	.12%
V.	Plurality Local Races	.09%
VI.	2011 Yes/No Races	.04%

The Department of Elections has slightly different ways of how it tracks overvotes depending on the type of election. In Plurality and Yes/No races, an overvote is counted when more than one spot is marked in the column(s) for that office. Multiple Candidate races will have an overvote when the voter marks more candidates than there are seats and counts the number of overvotes for each possible seat elected. For example, if somebody marked five people for an office where up to three people may be elected, the Department of Elections would count this as three overvotes since there were only three candidates who could have been selected; so any overvote is counted as an overvote for all three seats. For the purpose of this study, we divided the total of overvotes by the number of seats being elected in order to get to the true number of people who made an overvote in that race.

Additionally, there are three main methods by which overvotes tend be looked at and reported. The first method involves the overvote occurring right from the start, which we refer to as the First Round overvote. As the RCV is run, an election may result in overvotes in each round of calculation than is needed to determine the winner. This leads to a second methodology of numbers reporting, which is the rate of overvotes after all the ballots are counted or, as we refer to it in this report, the Final Round overvote. In San Francisco City-wide races, based on how

[2] U.S. Representative and State Assembly races were merged across years to give a more accurate City-wide measure

[3] We do not include one candidate field or multiple candidate fields where the number of candidates running are equal to the number of candidates elected.

the city released information on City-wide races where multiple rounds of voting occur, 75.87% of the errors happen in the First Round. Conversely, in the Board of Supervisor races, 87.96% of the errors occur in the First Round. The third way numbers get reported by others outside of the Department of Elections is by looking at how many voter errors are in a race, even if the ballot was counted in the election as a valid vote. This can occur if a voter properly votes in the first column but makes an error in the second or third column; however, the candidate chosen in the first round does not get eliminated, so the error is not included in how ballots get counted. In 2011, the Department of Elections made available the data allowing us to see how voters voted in all three races. With this data, we can now calculate in the most recent elections how many voters made an error in any RCV race, this will allow for a new way of looking at overvoting patterns. This third reporting methodology does not impact the outcome of the election, but can be useful in determining targeted voter education programs.

While not considered to be an overvote but still resulting in ballot exhaustion, are the cases where a voter has correctly filled out the ballot, but has not chosen one of the candidates making it to the final round. Specifically, this type of exhausted ballot happens when a voter votes for the maximum allowed amount of candidates—which in San Francisco is three—but none of the three choices are in the final round of voting. Several races contained no ballots where this occurred, however where it has occurred, it has been as high as 16.30% for the City-wide race for the 2011 Mayoral race, and 26.01% in the 2010 Board of Supervisor race for District 10 (see Appendix 5). These higher rates of ballot exhaustion appear to be positively correlated (adjusted R^2 of .64) with the number of candidates in the field in that the more candidates in a field, specifically, the higher the rates of ballot exhaustion under RCV (see appendix 7).

§2.2 Neighborhood by Neighborhood Percent Differences of Overvotes by Election Type

The second part of this section is related primarily to our comparison of neighborhoods and their respective relation to overvotes by election type over the years 2008-2011. This analysis differs from §2.1 in that our focus is more upon the neighborhoods and their respective propensities for higher or lower rates of overvotes, rather than on City-wide averages associated with the type of election. This analysis could allow for a specific targeting of voter education for neighborhoods that have consistently higher rate of overvotes in elections.

The methodology of this section incorporates the same aggregated data from §2.1, but utilizes a different statistical measurement. For this section, we have taken the rates of overvotes for each neighborhood and incorporated a percent difference above or below the City-wide average for that race (see Appendix 6). This metric allows us to hold a baseline measurement (from the data presented in §2.1) for each election type and compare a neighborhoods performance against this baseline.

Our findings for this section show that for the years 2008-2011, certain neighborhoods consistently had higher rates of overvotes in every category of election type:

- Neighborhoods with more than 50% above the City-wide averages for overvotes in every election type consisted of the following: Bayview/Hunters Point, Visitacion Valley

- Neighborhoods with more than 40% above the City-wide average for overvotes in every election type consisted of the following: Civic Center/Downtown, Excelsior (Outer Mission), Ingleside

- Neighborhood with more than 30% above the City-wide average for overvotes in every election type consisted of the following: Portola

This evidence suggests that we are able to identify neighborhoods in the City which have consistently shown themselves to be more likely to overvote under any election type and therefore present as opportunities for greater educational outreach.

§2.3 Regional Comparison of Overvotes

Having explored the relationship of overvotes to election type and neighborhoods, we now examine overvotes within the RCV system, as delimited by a comparison amongst other cities in California. The comparisons for the purposes of this study include only those localities which hold municipal elections under the RCV system. These localities include Berkeley, Oakland, San Francisco, and San Leandro. The purpose of this particular study is to discern, as accurately as possible, where San Francisco falls in relation to its rates of overvotes when compared to other California cities.

To establish the metrics for this section, we examined the rates of overvotes for elections occurring in the years 2010 in Berkeley, Oakland, San Leandro, San Francisco (in 2008-2011). We then arranged the data by number of candidates in each election field. We subsequently eliminated from our analysis any election which had only one candidate and/or one round in the race. From the remaining data, we conducted a multiple-regression analyzing if a causal relationship exists between '*rates of overvotes'* and the '*number of candidates in the field'*. The output from this regression analysis presented a strong correlation (adjusted R^2 of .64) between these variables, thereby allowing us to present with confidence[4] our findings below.

Our findings show that, as the candidates in any given election field increase, there is a proportionate increase in the rate of overvotes. Our comparison also shows that, over the years examined, San Francisco generally had higher rates of overvotes than Berkeley, Oakland, and San Leandro in comparable races with approximately the same number of candidates in a field. What we can infer from this analysis is that San Francisco tends to have higher rates of overvotes

[4] The *F statistic* of the regression analysis equals 1.70826E-07 which means that there is a .00000017826 chance that the relationship between the two variables occurred by chance.

than other cities in comparable races. Additionally, though the Berkeley, Oakland, and San Leandro exhibit the same phenomenon of ‘more candidates, more overvotes’ they maintained lower rates of overvotes than San Francisco in all comparable races with a comparable number of candidates.

§3 The Move to a Primary/General election with the possibility of a winner in the Primary**:**

The move to a Primary/General election with a possibility of a winner in the Primary if a 65% threshold is met is being discussed by the CCSF as a Charter amendment to the current RCV system for City-wide offices. This move would consist of an election system, which would deem any candidate garnering at least 65% of the total vote in a given race in the Primary election, the winner of said race. If implemented, this would be a new type of election system for city offices in the United States and, as such, presents itself with a dearth of available data since there is no historic precedent found in our research. However, given the availability of Department of Elections' data we are able to model hypothetical scenarios across previous election years to gain insight into the possible effects on voter participation in the context of such a system.

Our methodology for this particular area involved a historical analysis of the election years 1990-2010 in which both a Primary and General election were held. We then took Primary voter participation as a percent of voter participation in the General election for a given year over the period 1990-2010. Having this percent as a baseline for the total of voters that could decide an election outcome in the Primary, we then investigated what percent of the voters could decide an election under a 65% scenario. Our findings showed that, had there been a 65% scenario for all Primary elections occurring during the period 1990-2010, there would only have been one election in which more than 50% of the voters who would have participated in the General election would have elected an official. This singular outcome would have occurred in the June 1998 Primary.

San Francisco Turn-Out Comparison between Primary and General Elections (1990-2010)

Year	Primary	General	% of Vote in the General that Voted in the Primary	# of Votes if there is a 50% Winner in the Primary	% of the General Vote if 50% Winner in the Primary	# of Votes if there is a 65% Winner in the Primary	% of the General Vote if 65% Winner in the Primary
2010 (June/Nov)	155,533	284,625	54.64%	77,766.50	27.32%	101,096.45	35.52%
2008 (June/Nov)	173,035	388,112	44.58%	86,517.50	22.29%	112,472.75	28.98%
2008 (Feb/Nov)	269,212	388,112	69.36%	134,606.00	34.68%	174,987.80	45.09%
2006 (June/Nov)	156,272	253,719	61.59%	78,136.00	30.80%	101,576.80	40.04%
2004 (March/Nov)	190,828	361,822	52.74%	95,414.00	26.37%	124,038.20	34.28%
2002 (March/Nov)	150,249	225,102	66.75%	75,124.50	33.37%	97,661.85	43.39%
2000 (March/Nov)	210,229	324,031	64.88%	105,114.50	32.44%	136,648.85	42.17%
1998 (June/Nov)	199,157	250,719	79.43%	99,578.50	39.72%	129,452.05	51.63%
1996 (March/Nov)	178,165	298,648	59.66%	89,082.50	29.83%	115,807.25	38.78%
1994 (June/Nov)	135,495	249,669	54.27%	67,747.50	27.13%	88,071.75	35.28%
1992 (June/Nov)	182,577	329,695	55.38%	91,288.50	27.69%	118,675.05	36.00%
1990 (June/Nov)	161,989	236,413	68.52%	80,994.50	34.26%	105,292.85	44.54%

To better apply these findings to a real world scenario, we also examined the top 20 cities across the country to see who may have scenarios similar to the proposed Charter Amendment. Of the 20 cities examined, we found data on the respective Department of Elections' websites for three cities that fit, in part, with what would transpire in San Francisco if the Charter Amendment (as introduced on November 8, 2011) was implemented. The two main criteria we looked for were that the city office election occurred separate from any state or federal office and followed a Primary/General format.

City by City Turn-Out Comparison between Primary and General Elections

Year	Primary	General	% of Vote in the General that Voted in the Primary	# of Votes if there is a 50% Rule in Primary	% of the November Vote if 50% Rule	# of Votes if 65% Rule in Primary	% of November Vote Needed if 65% Rule
Los Angeles (Non-Partisan) *No General if Candidate receives 50% in first round							
2005 (Mar/May)	420,570	498,729	84.33%	210,285.00	42.16%	273,370.50	54.81%
2001 (Apr/June)	511,521	579,408	88.28%	255,760.50	44.14%	332,488.65	57.38%
Detroit (Non-Partisan)							
2009 (Aug/Nov)	97,903	129,842	75.40%	48,951.50	37.70%	63,636.95	49.01%
2005 (Aug/Nov)	135,786	233,370	58.18%	67,893.00	29.09%	88,260.90	37.82%
Charlotte (Partisan)							
2011 (Sep/Nov)	10,167	98,999	10.27%	5,083.50	5.13%	6,608.55	6.68%
2009 (Sep/Nov)	20,254	125,218	16.17%	10,127.00	8.09%	13,165.10	10.51%
2007 (Sep/Nov)	11,150	129,004	8.64%	5,575.00	4.32%	7,247.50	5.62%
2005 (Sep/Nov)	21,529	98,588	21.84%	10,764.50	10.92%	13,993.85	14.19%
2003 (Sep/Nov)	27,518	97,258	28.29%	13,759.00	14.15%	17,886.70	18.39%
2001 (Sep/Nov)	24,828	95,707	25.94%	12,414.00	12.97%	16,138.20	16.86%
1999 (Sep/Nov)	24,828	95,707	25.94%	12,414.00	12.97%	16,138.20	16.86%

One of these cities, Los Angeles, has in effect a 50% Rule in the Primary. This rule holds that any candidate receiving more than 50% of the vote in the Primary is declared winner of the race. Examining this real world scenario from Los Angeles, we found that voter participation in the Primary (as a percentage of voter participation in the General) was much higher—approximately 20% higher—than the outcomes in San Francisco. What we can infer from this data is that when voters are aware that a final outcome for city offices can be decided in a Primary they may be more likely to participate in the Primary rather than waiting until the General to cast a ballot. However, it must be noted that in all cases observed (including Charlotte and Detroit) the voter participation rate in the Primary is lower than the General.

Concluding Remarks:

The objective of this study was an empirical analysis of the voting process presently employed by the CCSF, with a particular emphasis on RCV. The methodology of this process involved a quantitative analysis of data as reported by the San Francisco Department of Elections with data aggregated across election years, when necessary, to make relevant comparisons of the area studies of this report, including the following:

- voter participation
- voter error
- the move to a Primary/General election with a possibility of a winner in the Primary under a 65% threshold.

Our findings in each area were consistent with the data available from the San Francisco Dept. of Elections, and the findings were presented with the purpose of providing empirical information about the impacts of RCV in the CCSF.

In regard to voter participation, our study in §1 shows that voter participation rates were, on average, higher in the RCV Supervisorial races for the years 2000-2010. This was especially true of open seat elections occurring within this same time period. However, our findings in the City-wide elections for voter participation did not present with the same correlation in favor of either election type for the years 1997-2011 under RCV or the Run-Off system. This was due, in part, to the lack of elections under RCV. Despite the lack of in-depth election reporting data for the years prior to 2008 of City-wide races, we may have an opportunity for this information as more elections occur. Therefore, until such research is conducted it is difficult to state empirically how the RCV system has affected voter participation in City-wide races.

In regard to voter error using current voting systems, our study in §2.1 shows that, as a baseline average, 0.04% of voters in any election can be expected to make errors using current voting machines. Additionally, we found for the years 2008-2011, the Multiple Candidate (0.34%) and RCV elections (0.34% for the Final Round, and 0.24% for the First Round) had the highest occurrence of voter error. The State and Local plurality elections had average voting error rates of 0.12% and 0.09%, respectively. In conducting a more in-depth of analysis of voter error rates by neighborhood in §2.2, we were able to identify, for the years 2008-2011, specific neighborhoods in the City with consistently higher percentages above the City-wide average of voter errors. The information produced by the analysis in §2.2 does bear out an interesting phenomenon in which we were able to target and identify specific neighborhoods with consistently higher voter error, rates regardless of election type. §2.3 allowed us an opportunity to examine how San Francisco compares against other California cities in regard to overvotes. What we discovered was that San Francisco has had consistently higher rates of overvotes in similar elections than its neighbors. Additionally, in other California elections, all showed a strong positive and causal relationship between the number of candidates in an election and the rates of overvotes.

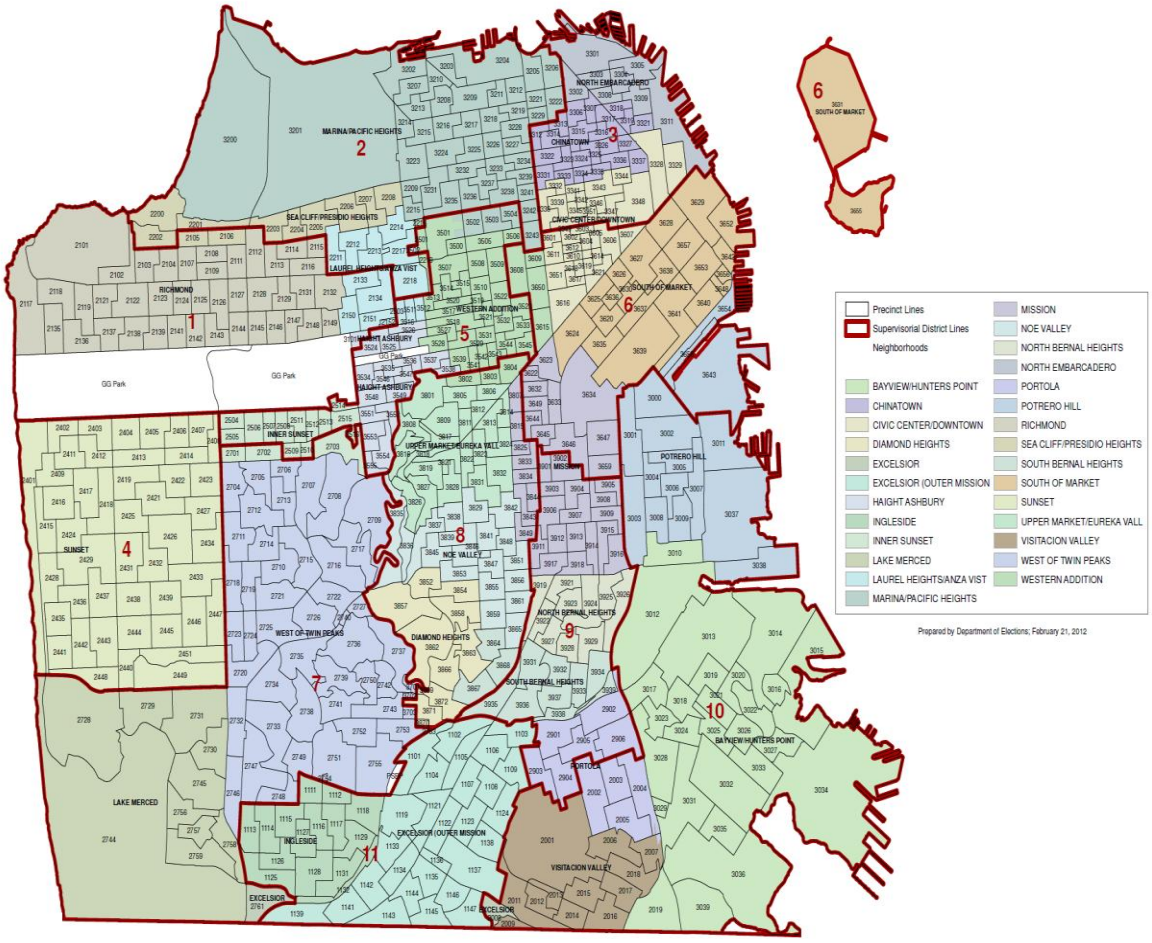
Perhaps the most difficult analysis in terms of available data was our look at the move to a Primary/General election with a possibility of a winner in the Primary in a 65% scenario. This

instance presented difficulties in that there are no historical precedents from which to draw data. To compensate for this lack of data, we conducted a study of how the City would have fared under a possible 50% scenario (as used in other jurisdictions), and a 65% scenario for election years 1990-2010. In regard to being an inclusive mechanism for voter participation, our findings show that in only one instance would a 50% majority of the General election voters have participated in the election of an office holder under a 65% scenario. Additionally, in every year investigated and every to which San Francisco was compared, we found that voter participation is consistently lower in a Primary election than a General election. This is also true of any election where a candidate can win the office in a Primary.

All areas of this study are as comprehensive as the available topographical data allow, and we could only work within the confines of the data. For this reason, each area opens up new avenues of research and study that will be contingent upon the future availability of a more comprehensive and in-depth elections data reporting system.

San Francisco Local Agency Formation Commission
The City and County of San Francisco
1 Dr. Carlton B. Goodlett Pl.
San Francisco, CA 94012

Appendix 1:



Appendix 2:

City-wide Data 1997-2011

Assessor Recorder

OS/INC	% turnout	Year	1 candidate race
INC	78.42%	2002	
INC	85.11%	2005	
INC	73.64%	2006	x
INC	79.20%	2010	

City Attorney

OS/INC	% turnout	Year	1 candidate race
INC	57.67%	1997	x
OS	91.34%	2001	
INC	80.80%	2005	x
INC	79.33%	2009	

District Attorney

OS/INC	% turnout	Year	1 candidate race
INC	87.89%	1999	
OS	93.88%	2003	
INC	77.81%	2007	x
INC	92.92%	2011	

Mayor

OS/INC	% turnout	Year	1 candidate race
INC	63.76%	1999	
OS	99.18%	2003	
INC	95.91%	2007	
INC	98.46%	2011	

Treasurer

OS/INC	% turnout	Year	1 candidate race
OS	84.41%	1997	
INC	85.46%	2001	
INC	76.35%	2005	
INC	77.09%	2009	

Sheriff

OS/INC	% turnout	Year	1 candidate race
INC	64.37%	1999	x
INC	84.65%	2003	
INC	87.11%	2007	
OS	92.68%	2011	

***Public Defender**

OS/INC	% turnout	Year	1 candidate race
INC	72.08%	2006	x
INC	72.63%	2010	x

Appendix 3:

Supervisor Data 2000-2010

Supervisor 1

OS/INC	% turnout	Year	1 candidate race
OS	85.87%	2000	
INC	91.59%	2004	
OS	90.51%	2008	

Supervisor 2

OS/INC	% turnout	Year	1 candidate race
OS	70.85%	2000	x
INC	82.14%	2002	
INC	83.82%	2004	
INC	76.18%	2006	
OS	83.12%	2010	

Supervisor 3

OS/INC	% turnout	Year	1 candidate race
OS	84.74%	2000	
INC	87.66%	2004	
OS	89.97%	2008	

Supervisor 4

OS/INC	% turnout	Year	1 candidate race
OS	88.23%	2000	
OS	88.39%	2002	
OS	87.68%	2006	
INC	92.69%	2008	
INC	74.39%	2010	x

Supervisor 5

OS/INC	% turnout	Year	1 candidate race
OS	83.41%	2000	
OS	85.93%	2004	
INC	86.25%	2008	

Supervisor 6

OS/INC	% turnout	Year	1 candidate race
OS	76.11%	2000	
INC	83.84%	2002	
INC	87.75%	2006	
OS	83.75%	2010	

Supervisor 7

OS/INC	% turnout	Year	1 candidate race
OS	89.26%	2000	
INC	87.82%	2004	
INC	84.50%	2008	

Supervisor 8

OS/INC	% turnout	Year	1 candidate race
OS	88.11%	2000	
OS	84.95%	2002	
INC	87.84%	2006	
OS	90.51%	2010	

Supervisor 9

OS/INC	% turnout	Year	1 candidate race
OS	88.25%	2000	
INC	91.62%	2004	
OS	91.36%	2008	

Supervisor 10

OS/INC	% turnout	Year	1 candidate race
OS	82.75%	2000	
INC	66.15%	2002	x
INC	83.20%	2006	
OS	86.16%	2010	

Supervisor 11

OS/INC	% turnout	Year	1 candidate race
OS	85.56%	2000	
INC	90.43%	2004	
OS	91.19%	2008	

Appendix 4:

Neighborhood by Neighborhood comparison of overvotes by type of race (2008-2011)

Neighborhood	Avg Overvote as % of turnout for 2011 Ballot measures	Avg Overvote as % of turnout for non-RCV local races	Avg Overvote as % of turnout for non-RCV state-wide races	Avg Overvote as % of turnout for all RCV City-wide races (1st Round)	Avg Overvote as % of turnout for all RCV City-wide races (Final Round)	Avg Overvote as % of turnout for School Board and Community College Board
BAYVIEW/HUNTERS POINT	0.05%	0.18%	0.22%	0.48%	0.62%	0.89%
CHINATOWN	0.03%	0.07%	0.12%	0.24%	0.34%	0.28%
CIVIC CENTER/DOWNTOWN	0.04%	0.17%	0.23%	0.39%	0.50%	0.49%
DIAMOND HEIGHTS	0.04%	0.11%	0.07%	0.24%	0.33%	0.20%
EXCELSIOR (OUTER MISSION)	0.04%	0.14%	0.24%	0.38%	0.50%	0.51%
HAIGHT ASHBURY	0.05%	0.06%	0.05%	0.11%	0.13%	0.20%
INGLESIDE	0.05%	0.16%	0.20%	0.39%	0.54%	0.48%
INNER SUNSET	0.03%	0.06%	0.03%	0.19%	0.22%	0.28%
LAKE MERCED	0.05%	0.09%	0.10%	0.32%	0.42%	0.31%
LAUREL HEIGHTS/ANZA VISTA	0.03%	0.13%	0.08%	0.16%	0.24%	0.29%
MARINA/PACIFIC HEIGHTS	0.04%	0.04%	0.05%	0.18%	0.25%	0.25%
MISSION	0.04%	0.10%	0.19%	0.33%	0.39%	0.35%
NOE VALLEY	0.05%	0.05%	0.05%	0.15%	0.18%	0.22%
NORTH BERNAL HTS	0.03%	0.06%	0.04%	0.18%	0.25%	0.25%
NORTH EMBARCADERO	0.04%	0.09%	0.05%	0.14%	0.26%	0.20%
PORTOLA	0.06%	0.17%	0.22%	0.36%	0.46%	0.50%
POTRERO HILL	0.05%	0.07%	0.10%	0.24%	0.29%	0.17%
RICHMOND	0.03%	0.05%	0.08%	0.19%	0.27%	0.25%
SEA CLIFF/PRESIDIO HEIGHTS	0.04%	0.07%	0.06%	0.11%	0.20%	0.35%
SOUTH BERNAL HTS	0.05%	0.07%	0.12%	0.23%	0.28%	0.29%
SOUTH OF MARKET	0.05%	0.13%	0.17%	0.31%	0.43%	0.47%
SUNSET	0.04%	0.07%	0.10%	0.23%	0.29%	0.28%
UPPER MARKET/EUREKA VALLEY	0.04%	0.04%	0.04%	0.12%	0.15%	0.15%
VISITACION VALLEY	0.06%	0.22%	0.33%	0.44%	0.54%	0.69%
WEST OF TWIN PEAKS	0.03%	0.06%	0.07%	0.17%	0.25%	0.26%
WESTERN ADDITION	0.04%	0.12%	0.13%	0.39%	0.50%	0.44%
Citywide % of Overvote	0.04%	0.09%	0.12%	0.26%	0.34%	0.34%

Appendix 5:

Exhausted Ballots by Race and Year (Post RCV)

Seat	Year	November Votes in Race (not including Overvotes)	Number of ballots that voted 3 candidates but did not vote for final 2 (IRV only)	Number of ballots that voted 3 candidates but did not vote for final 2 as a % of Turnout	Number of people in November Race
Supervisor D1	2004	28,697	1457	5.08%	7
Supervisor D1	2008	28,756	1429	4.97%	9
Supervisor D2	2010	24,094	332	1.38%	5
Supervisor D3	2008	27,198	2325	8.55%	9
Supervisor D4	2006	19,539	827	4.23%	6
Supervisor D5	2004	34,955	8773	25.10%	22
Supervisor D6	2006	17,728	416	2.35%	8
Supervisor D6	2010	21,086	1998	9.48%	14
Supervisor D7	2004	31,523	4237	13.44%	13
Supervisor D8	2010	34,950	4	0.01%	4
Supervisor D9	2008	28,884	993	3.44%	7
Supervisor D10	2010	17,808	4631	26.01%	21
Supervisor D11	2004	23,039	2526	10.96%	8
Supervisor D11	2008	24,673	2128	8.62%	9
DA	2011	183,238	2517	1.37%	5
Mayor	2011	195,238	31826	16.30%	16

Appendix 5 continued:

Overvote Comparison for 2011 San Francisco Elections (Sheriff, DA, and Mayor)

	Voter Turnout	Overvote in 1st Round	Overvote in 1st Round as a % of Turnout	Ballot Exhausted by Overvote	Ballot Exhausted by Overvote as a % of Turnout	Any Overvote Issue in Race (but May Not Have Been Exhausted)	Any Overvote Issue in Race (but May Not Have Been Exhausted) as a % of Turnout	Ranked Three Candidates and Ballot Exhausted	Ranked Three Candidates and Ballot Exhausted as a % of
SHERIFF (4 CANDIDATES)	183611	367	0.20%	471	0.26%	657	0.36%	N/A	N/A
DISTRICT ATTORNEY (5 CANDIDATES)	184046	537	0.29%	682	0.37%	935	0.50%	2517	1.37%
MAYOR (16 CANDIDATES)	195238	803	0.41%	1097	0.56%	1383	0.70%	31826	16.30%

Appendix 6:

Neighborhood by Neighborhood Percent Difference Above/Below City Average of Over Votes by Type of Race (2008-2011)

Neighborhood	Avg % difference from average overvotes for RCV City-wide races (1st Round)	Avg % difference from average overvotes for RCV City-wide races (Final Round)	Avg % difference from average overvotes for non-RCV local races	Avg % difference from average overvotes for non-IRV state-wide races	Avg % difference from average overvotes for Multiple Candidate Races
BAYVIEW/HUNTERS POINT	82.75%	81.22%	97.34%	79.52%	160.43%
CHINATOWN	-6.34%	-0.77%	-20.77%	4.00%	-17.74%
CIVIC CENTER/DOWNTOWN	49.40%	47.21%	91.33%	92.77%	44.08%
DIAMOND HEIGHTS	-9.60%	-3.83%	19.87%	-43.13%	-42.53%
EXCELSIOR (OUTER MISSION)	45.59%	46.49%	52.98%	97.20%	49.32%
HAIGHT ASHBURY	-58.43%	-62.45%	-33.84%	-59.13%	-42.39%
INGLESIDE	49.51%	59.65%	72.53%	63.30%	41.50%
INNER SUNSET	-27.97%	-34.75%	-36.81%	-70.92%	-18.26%
LAKE MERCED	21.42%	23.40%	5.27%	-18.32%	-8.38%
LAUREL HEIGHTS/ANZA VISTA	-39.64%	-30.60%	48.15%	-33.08%	-15.07%
MARINA/PACIFIC HEIGHTS	-31.49%	-25.46%	-50.74%	-57.55%	-26.92%
MISSION	27.08%	13.84%	9.57%	60.26%	3.53%
NOE VALLEY	-41.97%	-47.73%	-47.73%	-57.91%	-34.38%
NORTH BERNAL HTS	-31.46%	-26.90%	-28.15%	-62.77%	-27.27%
NORTH EMBARCADERO	-47.20%	-24.24%	3.41%	-62.24%	-42.54%
PORTOLA	37.55%	36.52%	86.71%	82.25%	46.68%
POTRERO HILL	-9.07%	-14.01%	-24.83%	-20.63%	-50.86%
RICHMOND	-28.24%	-19.93%	-38.91%	-32.78%	-25.21%
SEA CLIFF/PRESIDIO HEIGHTS	-55.88%	-40.08%	-17.89%	-50.07%	1.99%
SOUTH BERNAL HTS	-12.30%	-17.95%	-20.26%	3.11%	-13.85%
SOUTH OF MARKET	21.01%	26.80%	46.71%	40.40%	39.48%
SUNSET	-11.48%	-14.36%	-24.48%	-18.05%	-17.66%
UPPER MARKET/EUREKA VALLEY	-55.16%	-56.29%	-52.93%	-62.91%	-55.60%
VISITACION VALLEY	67.38%	60.00%	139.36%	175.89%	104.22%
WEST OF TWIN PEAKS	-33.12%	-27.68%	-37.85%	-40.72%	-23.28%
WESTERN ADDITION	51.30%	46.69%	36.12%	4.37%	29.69%

Appendix 7:
Rates of Overvotes Compared against Number of Candidates in a Field

Year and Jurisdiction	Office	City-wide or District	# Of Rounds	# of Candidates	Overvote in 1st Round as a % of Turnout	Overvote in Final Round as a % of Turnout
2010 - Oakland	City Auditor	City Wide	1	2	0.12%	N/A
2010 - Oakland	City Council D2	District	1	2	0.07%	N/A
2010- Oakland	School Director D4	District	1	2	0.08%	N/A
2010 - San Leandro	City Council D5	District	1	2	0.20%	N/A
2010 - San Francisco	Assessor-Recorder	City Wide	1	2	0.20%	N/A
2010 - Berkley	City Council D8	District	1	3	0.13%	N/A
2010- Oakland	City Council D6	District	1	3	0.09%	N/A
2010 - San Leandro	City Council D1	District	1	3	0.17%	N/A
2008 - San Francisco	BOS - D4	District	1	3	0.28%	N/A
2008 - San Francisco	BOS - D5	District	1	3	0.27%	N/A
2008 - San Francisco	BOS - D7	District	1	3	0.16%	N/A
2010 - Berkley	City Council D1	District	1	4	0.12%	N/A
2010 - Berkley	City Council D4	District	1	4	0.19%	N/A
2010 - Berkley	City Council D7	District	2	3	0.12%	0.12%
2010 - San Francisco	BOS - D8	District	2	4	0.23%	0.27%
2010 - San Francisco	BOS - D2	District	2	6	0.36%	0.40%
2008 - San Francisco	BOS - D1	District	2	9	0.83%	0.90%
2011 - San Francisco	Sheriff	City Wide	3	4	0.20%	0.26%
2011 - San Francisco	District Attorney	City Wide	3	5	0.29%	0.37%
2008 - San Francisco	BOS - D9	District	3	7	1.17%	1.31%
2008 - San Francisco	BOS - D11	District	4	9	1.50%	1.73%
2010 - San Leandro	Mayor	City Wide	6	6	0.24%	0.37%
2010- Oakland	City Council D4	District	6	7	0.22%	0.29%
2008 - San Francisco	BOS - D3	District	7	8	0.94%	1.04%
2010 - Oakland	Mayor	City Wide	10	10	0.30%	0.44%
2010 - San Francisco	BOS - D6	District	12	13	1.66%	1.80%
2011 - San Francisco	Mayor	City Wide	12	16	0.41%	0.56%
2010 - San Francisco	BOS - D10	District	20	21	2.73%	3.30%

SUMMARY OUTPUT	
Adjusted R Square	0.6438
Standard Error	0.0037
Observations	28

x= # of candidates
(discrete variable)
y= overvote rates
(scale variable)

ANOVA					
	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.000668792	0.000668792	49.80162444	1.71E-07
Residual	26	0.000349157	1.34E-05		
Total	27	0.00101795			

	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	-0.002	0.001132708	-1.39407215	0.175096589
# of Candidates	0.0011	0.000153033	7.057026601	1.71E-07

Lower 95%	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
-0.00390739	0.000749238	-0.00390739	0.000749238
0.000765393	0.001394519	0.000765393	0.001394519