



Los Angeles County Registrar-Recorder/County Clerk

# 2010 Inspector Survey Analysis Report

November, 2010 General Election

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Preparation Date: March, 2011

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## — Executive Summary —

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The Los Angeles County Registrar-Recorder/County Clerk (RRCC) releases its 6<sup>th</sup> Inspector Survey Analysis Report. The surveys, begun in 2006, study various aspects of the Inspector's experience on Election Day including ballot drop-off, communication with fellow poll workers, equipment functionality, and training<sup>1</sup>. For this study, questions were added to the November 2010 survey to obtain an assessment of the current voting system and impressions of possible future voting systems.

The surveys are mailed to each of the Inspectors who are confirmed to have worked in the current election and are sent approximately 3 weeks after Election Day.

This study of Inspector responses presents a valuable perspective on how well election day/night activities are being remedied, when needed, and offers insights into trends in demographics of Inspectors.

Several key indicators of election operations have improved, dramatically in some cases, since the inception of the surveys.

Important highlights include:

Inspectors are waiting far less time at Check-In-Centers (CIC) compared to 4 years ago. 94.9% of respondents reported waiting less than 1 hour, an increase from 76.3% from November 2006.

More Inspectors are being contacted by Coordinators prior to Election Day (16% more) and visited<sup>2</sup> by their Coordinators (10% more).

93.6% of Inspectors reported that their Audio Ballot Booth (ABB) functioned the entire day, and 86.5% reported their Precinct Ballot Reader (PBR) functioned properly the whole day. These figures are down from one year ago (94.3% and 91.2%, respectively)

More Inspectors are reporting that their equipment was replaced if it malfunctioned (38%), compared to 2006 where only 21% reported that their equipment was replaced.

The largest age group of Inspectors shifted from the 62-72 to 51-61 age range. This trend began in 2009 and has continued into November 2010.

As in the past, there were more female Inspectors than males. Females accounted for about 69% of those who felt the current voting system was challenging to transport, set up, and break down.

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<sup>1</sup> Questions regarding Inspector training and opinions on voting systems were added to the November 2, 2010 survey.

<sup>2</sup> However, fewer Inspectors reported being visited by their Coordinators 3 times or more (almost 20% less).

## — Executive Summary —

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Statistical tests were performed on sets of variables and are included in Appendix A. Correlation measures showed the following results:

Malfunctioning equipment tended to be replaced on a rolling basis; if a piece of equipment malfunctioned in the morning, it tended to be replaced in the morning.

More Inspectors waited less than 1 hour than in the June election.

A Coordinator was more likely to visit an Inspector if they had contacted the Inspector before Election Day.

Based on results of the full Report, recommendations include the following:

Encourage Coordinators to pay attention to staffing issues at the polling place. 20.5% of Inspectors said that there were not enough poll workers assigned to their location. Since Coordinator contact and visits are at high levels, Coordinators should be utilized to communicate staffing issues to headquarters. Also, Inspectors should be reminded that they can recruit voters to become Clerks when needed on Election Day. This may alleviate their concerns regarding the staffing levels at polling places.

Continue dispatching troubleshooters to resolve issues before they escalate. Fewer pieces of equipment require replacing because troubleshooters and coordinators have been present to correct problems.

The booklets distributed at Inspector training classes should be reused efficiently. About 13% of Inspectors felt that the booklets were unnecessary during class, especially since duplicates are also provided to Inspectors in each supply box.

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## Section I

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### The November 2010 Inspector Survey Report: Components

The Inspector Survey Report focuses on five main areas<sup>3</sup>: CIC operations, Coordinator and Poll Worker interaction, equipment functionality, training, and a voting system assessment. It presents information critical to the formulation and/or amendment of departmental policy.

This Report is divided into the five sections mentioned above. It analyzes questions relevant to each area and discusses possible relationships that might explain correlations between policy and operational effectiveness.

The Methodology and Justification sections are included in Appendix A and discuss changes made to the survey and the statistical tests used to determine relationships. Appendix B includes the Data Entry and Analysis code book used for this particular survey report and Appendix C presents the survey used for this Report.

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## Section II

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### Questions 1 through 4: Check in Center (CIC) Operations

Check in Centers are located throughout Los Angeles County and are operated by trained staff members who receive voting supplies and ballots from each Inspector after the polls close on Election Night along with an assigned Clerk.

Voted ballots are sealed in red boxes, scanned at CICs and prepared for secure transport to Norwalk Headquarters. Provisional and Vote By Mail (VBM) ballots are also transported in separate security envelopes to Norwalk where they are prepared for signature verification.

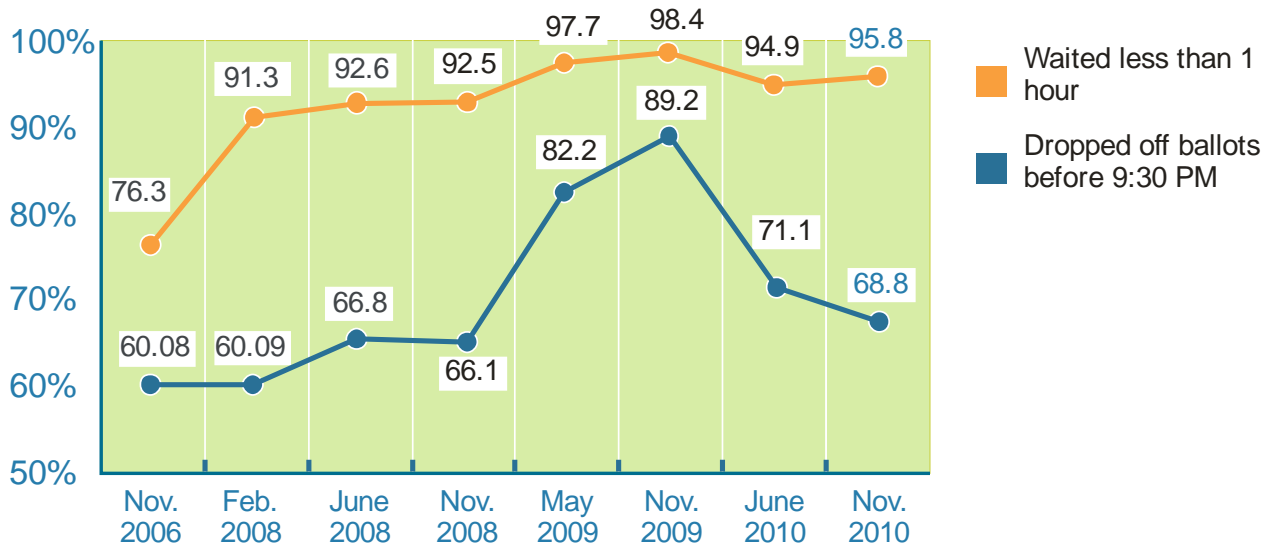
In order to measure CIC performance, survey questions asked the respondents to report when they arrived and dropped their ballots off and how long they waited in line to do so. Questions were also asked to measure the subjective aspects of Election Day, such as the difficulty in locating the CIC and whether or not Inspectors felt CIC staff members were helpful and professional. Graph 1 below tracks the percentage of respondents who dropped their ballots off before 9:30 PM on Election Night and who waited at their CICs less than one hour.

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<sup>3</sup> The training and voting system assessment sections were added to the November 2010 survey.

Section II

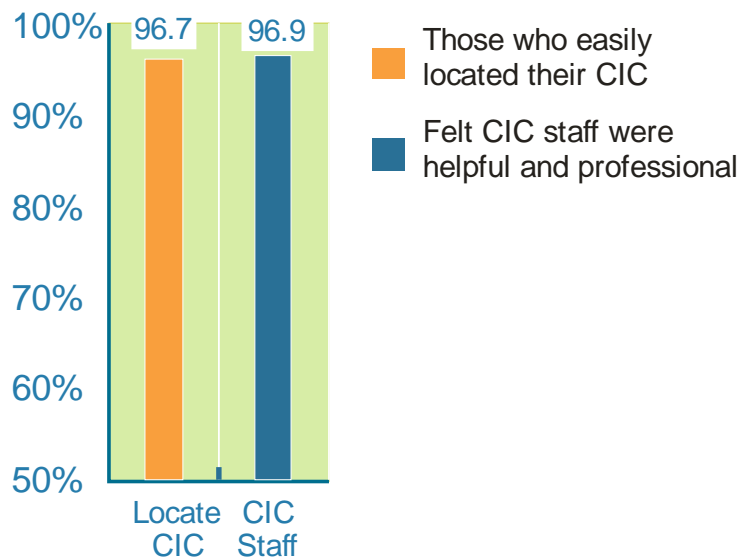
Questions 1 through 4: Check in Center (CIC) Operations



The decline in November 2010 with those who dropped off their ballots before 9:30 PM could be attributed to the higher volume of voters at the polls than in the 2009 elections. However, a study of the past four years shows that more Inspectors are dropping off their ballots before 9:30 PM than they did in 2006. In general, Inspectors are also waiting less time at CICs (less than 1 hour on average) compared to 2006.

Questions also measured the attitudes of Inspectors towards CIC operations. Specifically, the survey asked if Inspectors experienced difficulty in locating their ballot drop off location and whether or not they felt staff at the CIC were helpful and professional. Graph 2 shows that nearly all Inspectors were able to locate their CIC without difficulty and felt that staff at CICs were helpful and professional.

Contributing factors to this success could be that RRCC is able to retain CICs over many elections, maps included in Inspector materials are accurate, and communication with Coordinators is more frequent and reliable.

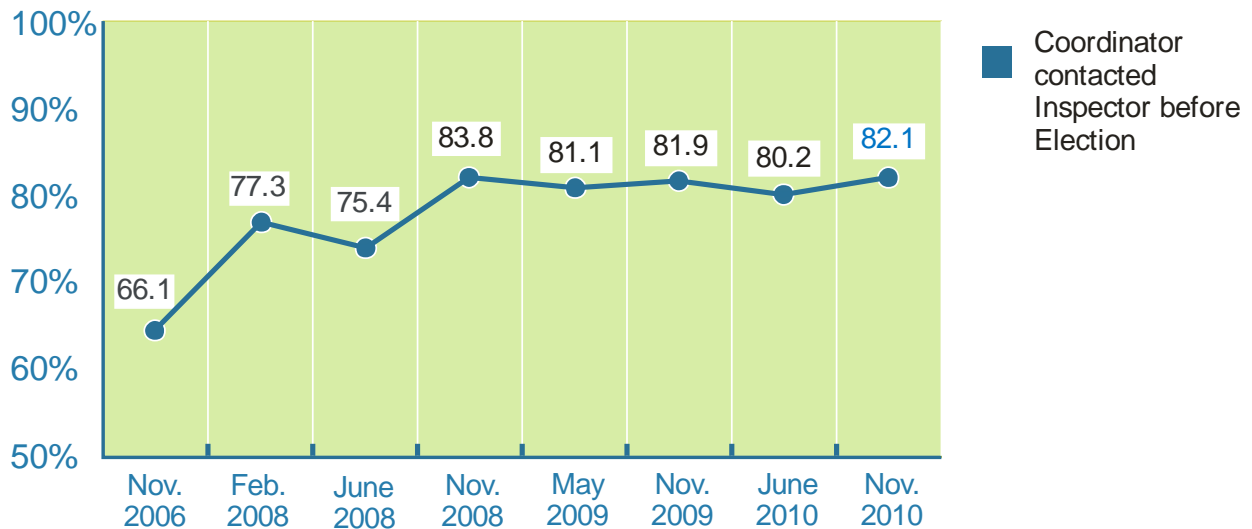


## Section III

### Questions 5 through 9: Coordinator and Poll Worker Interaction

Coordinators contact Inspectors before Election Day to provide them their contact information and to discuss any issues prior to Election Day. They act as liaisons with RRCC Headquarters and also monitor their assigned polling places throughout the day.

Graph 3 below shows an increase in Coordinator contact since 2006. In November 2010, 82.1% of Inspectors reported that their Coordinators contacted them prior to Election Day.

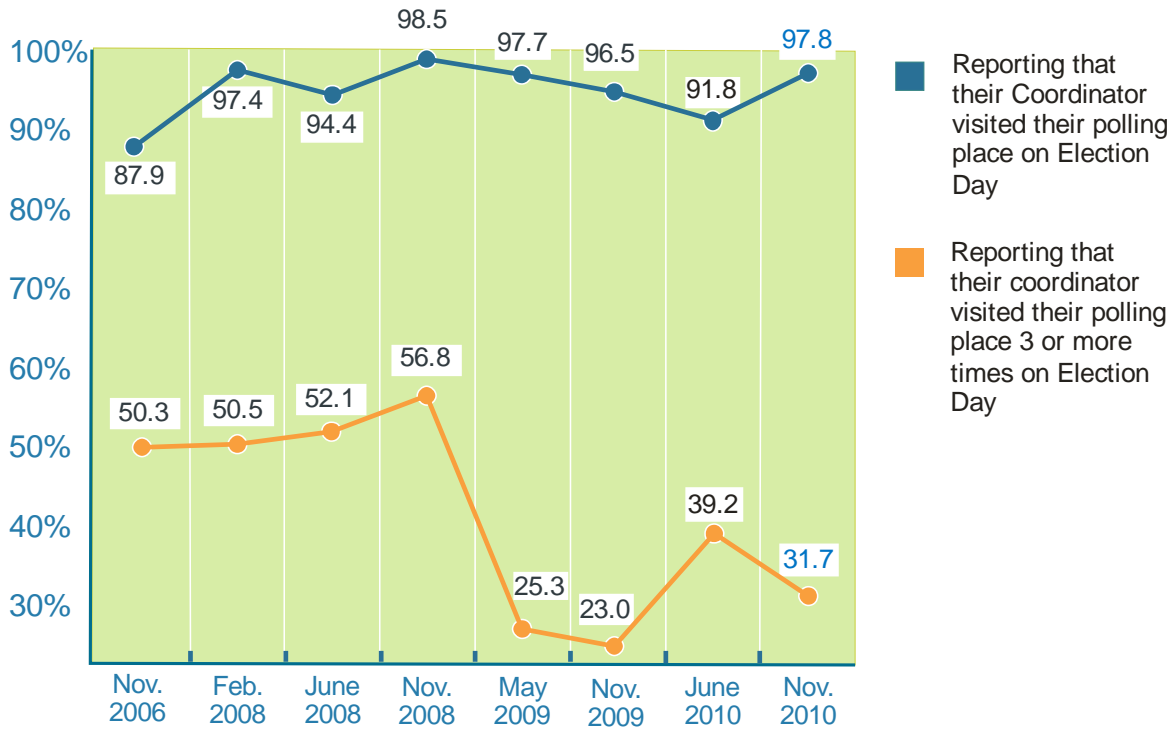


Coordinators are responsible for 10-20 precincts on average and are required to visit their assigned polling places from when polls open at 7:00 AM until they close at 8:00 PM. According to the survey 97.8% of Coordinators visited their polling places at least once, while 31.7% visited them 3 times or more.

Graph 4 on the next page shows that Coordinators have steadily maintained a high rate of visiting their polling places at least once, but significantly decreased in visiting them 3 or more times.

Section III

Questions 5 through 9: Coordinator and Poll Worker Interaction



In order to measure poll worker staffing and performance, Inspectors were asked whether they felt there were enough poll workers assigned to their polling place and to rate the overall performance of their poll workers.

According to the survey, 91.2% of Inspectors rated their poll workers as either “very good” or “excellent”. The survey does not articulate ratings for individual poll workers, but instead asks for a general evaluation of all poll workers assigned to their polling place. Only 2% of Inspectors said that poll workers were either “poor” or “very poor”.

Poll Worker Performance	Percent
Very Poor	1.2%
Poor	0.9%
Fair	6.7%
Very Good	37.0%
Excellent	54.2%
Total	100%

Each precinct is normally assigned 2 to 4 poll workers in addition to the Inspector, depending on historical turnout rates. Inspectors and Clerks are often required to take on more than one role during Election Day, especially when a Clerk is absent. The survey found that 20.5% of Inspectors felt there were not enough poll workers assigned to their polling place.



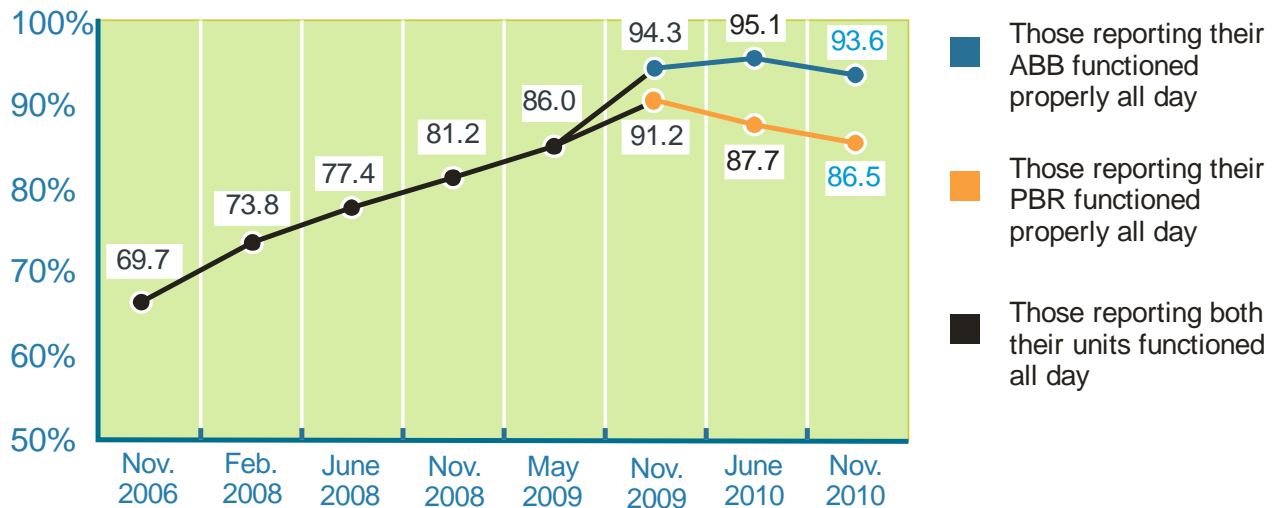
## Section IV

### Questions 10 through 18: Voting Equipment Function

The InkaVote Plus system consists of a Precinct Ballot Reader (PBR), which provides voters with “second chance” voting<sup>4</sup>. The system also includes an Audio Ballot Booth (ABB) which assists voters with special needs. The ABB consists of a key pad and headphones and provides audio instructions and ballot choices in 7 languages. Voters navigate through the ballot, make choices, and cast their ballots.

The PBR and ABB are programmed in advance of Election Day, checked, and shipped to distribution centers for Inspectors to pick up and install in their respective polling places.

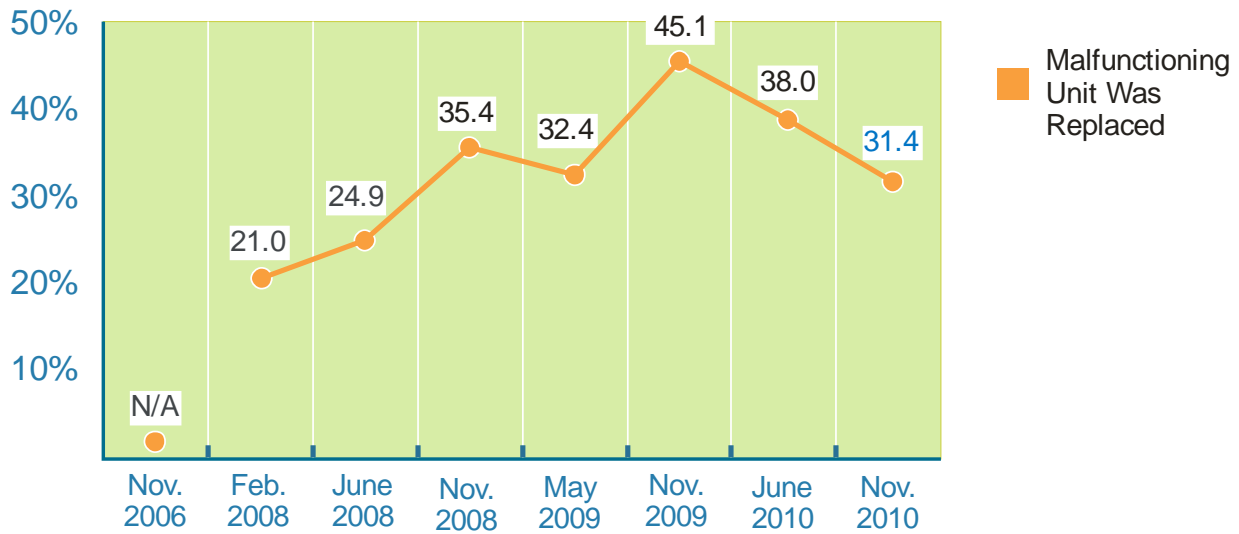
Most recently, there has been a slight decline in the percentage of Inspectors that said their equipment functioned properly all day. Graph 5 below shows that only 86.5% of respondents are reporting that their PBR functioned properly all day, down from 91.2% one year ago. Similarly, 93.6% of respondents reported their ABB functioned the entire day, down from 95.1% in June 2010.



The percentage of Inspectors who reported that their malfunctioning equipment was replaced has also significantly decreased since November 2009 (see Graph 6 below). Most issues occurred with the PBR, in fact, 74% of Inspectors reported that the PBR was the sole malfunctioning piece of equipment. Typically, problems with the PBR can be resolved by restarting the machine or calling a Coordinator. Additionally, RRCC deploys a large number of troubleshooters who are assigned a group of precincts to routinely check in with and assist when needed. Many descriptions provided by Inspectors indicated that the malfunction did not require the replacement of the unit<sup>5</sup>.

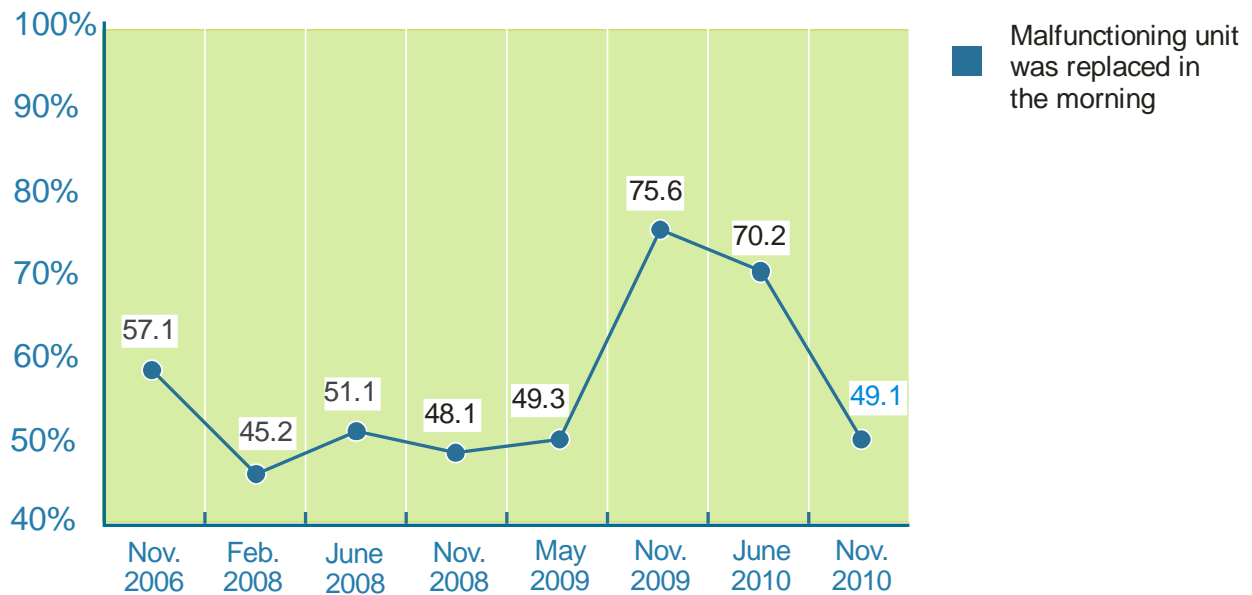
<sup>4</sup> Second chance voting consists of a function in the PBR that kicks back a ballot if there is an over vote. An over vote occurs when a voter votes for more candidates than a contest allows. That voter can either override the ballot and have it counted as is, or they can choose to invalidate the ballot and vote a new one. Blank ballots fall into the same category and can either be cast or invalidated and voted again.

<sup>5</sup> A common description of PBR malfunctions was that “ballots jammed”.



Data not available for 2006

Approximately 66% of respondents said that their unit malfunctioned in the morning, while 49.1% said that their malfunctioning unit was replaced in the morning. Statistical tests (see Appendix A) show strong evidence that there is a relationship between when a unit was reported to malfunction and when it was replaced.



## Section V

### Questions 19 through 22: Training

Before each election, Inspectors are required to attend an in-class training session in addition to an optional online course. For major elections, in-class training is offered throughout Los Angeles County at various days, times, and locations for the convenience of the Inspector. Inspectors are not required, or allowed, to make reservations for any particular session, so class attendance can vary from a few dozen to over a hundred Inspectors.

The survey asked Inspectors about the effectiveness of these training sessions in preparing them for Election Day and the necessity of handing out training materials during class. Training materials given in class are the “What To Do If...”, “Election Guide and Checklist”, and “InkaVote Plus Manual” booklets.

The findings were that nearly all respondents said that the training prepared them for Election Day, while only 87% said the training materials given in the class were necessary. When asked why the materials were not necessary, the most frequent response was that the materials are also provided in the supply box picked up by Inspectors prior to Election Day.

Inspectors Who Responded “Yes” to The Following Statements	Percent
Training prepared me for Election Day	96%
Materials given in class were necessary	87%

Another common explanation Inspectors gave for indicating training materials were unnecessary during class was that they had done the job many times and no longer need the booklets. In fact, Inspectors who served at least 31 times were about twice as likely to say they did not need training materials at training sessions, more than any other group. In total, 231 respondents (13%) said they did not think the materials were necessary.

## Section VI

### Questions 23 through 28: Voting Systems

For this survey, questions were added to measure the usability of the current voting system in Los Angeles County and the opinions of Inspectors on various key characteristics of possible future voting systems. These characteristics are: secure, easy to use, accurate, and accessible for people with disabilities.

The current voting system, InkaVote Plus, includes the PBR, ABB, and vote recording devices used at polling places. When asked to rate the ease of transporting, setting up,

Ease of Transporting, Setting Up, and Breaking Down the InkaVote Plus System	Percent
Extremely Easy	45.9%
Somewhat Easy	42%
Somewhat Challenging	11%
Extremely Challenging	1.1%

and breaking down the InkaVote components, 45.9% indicated that it was “extremely easy”. About 12.1% indicated that it was either somewhat or extremely challenging.

Inspectors were then asked to rate the voter’s ease of using this system based on their observations on Election Day. The survey found that even more Inspectors thought that voters had an easy time using the current system. Only 6.6% of all respondents said that it was either somewhat or extremely challenging for voters to use InkaVote Plus.

Voter Ease in Using the InkaVote Plus System	Percent
Extremely Easy	48.9%
Somewhat Easy	44.5%
Somewhat Challenging	6%
Extremely Challenging	0.6%

### Cross-tabulations

To further analyze Inspector responses, cross-tabulations<sup>6</sup> were performed to examine relationships between variables. The results, displayed below, showed that 63% of 18-28 year olds said transporting, setting up, and breaking down the InkaVote system was extremely easy. About 45% of the largest age group, 51-61 year olds, thought of the current system as being extremely easy to handle.

<sup>6</sup> Cross-tabulation is a method used in statistics that uses a combination of two or more frequency tables to examine frequencies of observations that belong to specific categories on more than one variable.

Cross-tabulation 1: Inspector Ease in Using InkaVote and Age

Inspector's Ease in Using InkaVote System	Age						Total
	18-28	29-39	40-50	51-61	62-72	73+	
Extremely Easy	34	47	127	233	218	105	764
Somewhat Easy	18	36	97	225	192	116	684
Somewhat Challenging	2	5	20	52	50	39	168
Extremely Challenging	0	0	3	10	4	1	18
Total	54	88	247	520	464	261	1634

The observations from rating the ease and usability of the InkaVote system were cross-tabulated with gender to study any possible relationship between the two variables. The results, shown below, found that females represent 68% of those who said it was somewhat challenging. Males tended to say that it was extremely easy (54% of male respondents) to transport, set up, and break down the voting system, but only accounted for about 42% of those who responded to that question.

Cross-tabulation 2: Inspector Ease in Using InkaVote and Gender

Inspector's Ease in Using InkaVote System	Gender		Total
	Female	Male	
Extremely Easy	225	206	431
Somewhat Easy	237	142	379
Somewhat Challenging	64	30	94
Extremely Challenging	8	3	11
Total	534	381	915

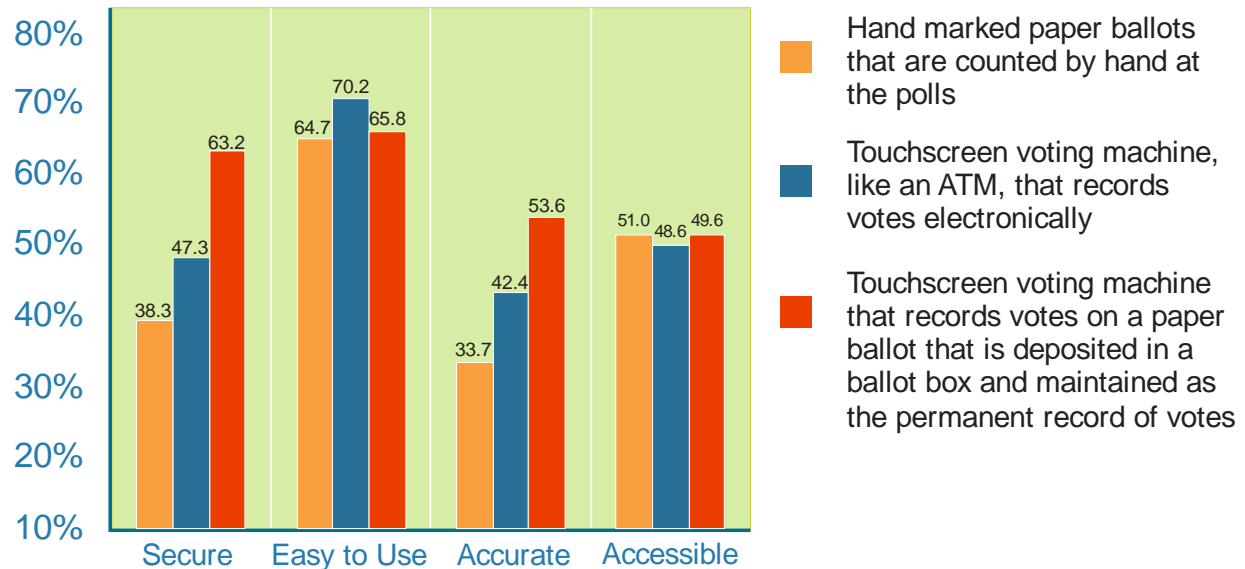
Female - 68%  
 Male - 32%

### Future Voting Systems

As part of the ongoing research in the development of a new voting system for Los Angeles County, Inspectors were asked for their opinions on three different methods that could possibly be implemented in the future. Each of the proposed systems were rated on four key characteristics as either possessing the characteristic or not. Inspectors were allowed to select all that apply to each system. These characteristics, or principles, were: secure, easy to use, accurate, and accessible.

The percentages shown on the following page are based on the number of respondents for this survey.

## Inspector Perspectives on Possible Voting Methods in the Future



Generally, Inspectors felt that each proposed voting method was easy to use. In terms of accessibility, about half of all respondents said that any of the voting systems were accessible to those with disabilities.

However, most Inspectors (63%) tended to agree that the touchscreen machine that records votes on paper was secure, while only 47% thought the touchscreen that records votes electronically was secure. Hand marked paper ballots counted by hand at the polls received only 38% of approval by Inspectors in terms of security.

When asked about the accuracy of these voting systems, 53.6% of Inspectors said the touchscreen machine that records votes on a paper ballot was accurate. Only 33.7% of Inspectors said hand marked paper ballots were accurate.

All voting systems were regarded as easy to use by at least 64% of Inspectors. Over 70% of Inspectors said that a touchscreen voting machine that records votes electronically would be easy to use. The method that received the second highest marks in terms of ease of use was the touchscreen voting machine that records votes on a paper ballot and is deposited in a ballot box. The method with the fewest Inspectors, 64.7%, indicating that it would be easy to use was the hand marked paper ballots that would be counted by hand at the polls.

**Cross-tabulations**

The largest population of Inspectors is in the age range of 51-61 years old and, along with 62-72 year olds, consistently makes up the largest pool of Inspectors. Additionally, this age group accounts for the most survey respondents. The responses for voting methods considered to be “easy to use” were cross-tabulated with age, shown below. Within the age group of 51-61, Inspectors overwhelmingly agreed that both touchscreen methods were easy to use.

Cross-tabulation 3: “Easy to Use” Responses and Age

Responses for “Easy to Use” by Age	Age						Total
	18-28	29-39	40-50	51-61	62-72	73+	
Hand Counted Ballots	28	54	130	288	255	132	887
Touchscreen (electronic only)	32	62	166	321	265	133	979
Touchscreen (w/ paper ballots)	30	61	149	332	252	137	961
Total	42	73	211	434	375	198	1333

Section VII

Questions 29 and 30: Overall Impression

Questions were added to gauge the overall experience of Inspectors on Election Day. Inspectors were asked if they would be willing to work in future elections and to rate their overall experience working in this past election. The survey found that 91.6% of respondents rated their experience as either very good or excellent. Only 1.6% of Inspectors said their experience was either poor or very poor.

When asked if they would work in future elections, 98% of Inspectors said, “yes”, that they would. Only 35 respondents make up the 2% who said they would not work in future elections. The majority of these respondents were 62 years or older and cited their age as the primary reason for not being willing to work again.

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## Appendix A

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# METHODOLOGY AND JUSTIFICATION

### **Questionnaire and Database Redesign**

Both the survey questionnaire and the database were redesigned in order for data to be collected and entered to facilitate effective analysis.

The Microsoft Access database was also modified to accommodate the questionnaire redesign and to provide ordered categories in order to reduce the number of variable recodes.

### **Database Coding and Re-Coding Methodology**

Data was imported from MS Access into SPSS for coding, recoding, and analysis. Variable fields were renamed and some were recoded to rearrange categories within questions. An explanation of the recoding procedure follows below.

Yes/No answers were given new variable names but were not recoded; only chronological data was recoded. It was necessary to reorder some chronological information because several database categories did not correspond to logical chronology (i.e. 8:30-9:30 before 7:30-8:30). It was also necessary to categorize and code the variable (Time Served) that designates how many elections each respondent has served.

The answers to multiple response questions were considered as separate variables in order to perform analyses using SPSS software. Each answer was treated as a Yes/No response and recoded (2 = Yes, 3 = No) to maintain uniformity in the data.

The table on the next page shows the MS Access variable name and whether it was binary or ordinal, and the new SPSS data table name. An explanation and justification of each recoded item follows. Note that the new variable names may be different from the previous report but the data remains the same.



**Table 1. Variable Changes and Recodes**

MS Access Variable Name	Binary/Chron./Numerical	SPSS Variable Name	Recode
Time Served	Chronological (Ordinal)	Timeserve	Yes
Drop off time	Chronological (Ordinal)	Droptime	No
Wait at drop off	Chronological (Ordinal)	Dropwait	No
Difficulty locating CIC	Binary	Locatecic	No
Were Staff helpful	Binary	Cicstaff	No
Contact w/Pct Coord	Binary	Coorcontact	No
Did Coord visit	Binary	Coorvisit	No
If yes # times	Numerical	Coortimes	No
Enough PW assigned	Binary	Pwassigned	No
Rate PW performance	Chronological (Ordinal)	Pwperform	No
Voters use ABB	Binary	Abbused	No
Did PBR function	Binary	Pbrfunc	No
Did ABB function	Binary	Abbfunc	No
Unit malfunction	Binary	Malunit	No
Time of malfunction	Chronological (Ordinal)	Maltime	No
Was unit replaced	Binary	Replaced	No
If yes what time	Chronological (Ordinal)	Replacetime	No
PBR/ABB received	Binary	Pbrabbrecvd	No
Did training prepare	Binary	Trainingprep	No
Materials needed	Binary	Trainmaterial	No
Rate ease Inkavote	Chronological (Ordinal)	Inkavotease	No
Rate ease for voters	Chronological (Ordinal)	Voterease	No
Work elections again	Binary	Workfuture	No
Rate overall exp	Chronological (Ordinal)	Overallexp	No
Gender	Binary	Gender	No
Age	Chronological (Ordinal)	Age	Yes

Timeserve was recoded to produce proper chronological time frames. The original data was entered as a string variable (single number) from 0 to 75. The recode grouped numerical data into categories for presentation and measurement purposes (i.e. “0-10, 11-20”, etc).

Age was recoded to produce age in years and placed in proper chronological time frames. The original data was entered as birth date, (mm/dd/yyyy) and calculated to produce age in years. Following that calculation, age in years was grouped into ordered categories for presentation and measurement purposes.

**Table 2. Multiple Response Variable Changes**

MS Access Variable Name	Binary/Chron./Numerical	SPSS Variable Name	Recode
Hand Count Ballot Secure	Binary	Secure1	Yes
Hand Count Ballot Easy	Binary	Easy1	Yes
Hand Count Ballot Accurate	Binary	Accurate1	Yes
Hand Count Ballot Accessible	Binary	Accessible1	Yes
Touch (Electronic Only) Secure	Binary	Secure2	Yes
Touch (Electronic Only) Easy	Binary	Easy2	Yes
Touch (Electronic Only) Accurate	Binary	Accurate2	Yes
Touch (Electronic Only) Accessible	Binary	Accessible2	Yes
Touch w/ Paper Ballot Secure	Binary	Secure3	Yes
Touch w/ Paper Ballot Easy	Binary	Easy3	Yes
Touch w/ Paper Ballot Accurate	Binary	Accurate3	Yes
Touch w/ Paper Ballot Accessible	Binary	Accessible3	Yes

Answers to multiple response questions were treated as individual variables. Data entry operators marked a check box to indicate the Inspector's selection, which the database recorded as "1 = Yes" (an unmarked box was recorded as "0 = No"). Each answer, as a separate variable, was recoded to fit the recoding scheme (2 = Yes, 3 = No). A group of these separate variables (e.g. Secure1, Easy1, Accurate1, and Accessible1) point to a single underlying variable (i.e. the principles possessed by a specified voting method).

Table 3. Variable Definitions

SPSS Variable Name	Variable Definition
Timeserve	How many times have you served
Droptime	What time did you drop off ballots at CIC
Dropwait	How long did you wait at CIC
Locatecic	Was it difficult to locate your CIC?
Cicstaff	Were staff at the CIC helpful and professional?
Coorcontact	Did Coordinator contact you before election day
Coorvisit	Did Coordinator visit you on election day
Coortimes	If yes, how many times
Pwassigned	Were there enough poll workers at your precinct?
Pwperform	Rate the overall performance of fellow poll workers
Abused	Did voters use the Audio Ballot Booth
Pbrfunc	Did your PBR function properly
Abbfunc	Did your ABB function properly
Malunit	If no, which unit malfunctioned
Maltime	What time was the malfunction
Replaced	Was unit replaced
Replacetime	What time was the unit replaced
Pbrabbreceived	Did you receive a PBR/ABB
Trainingprep	Did the training prepare you for Election Day?
Trainmaterial	Were the training materials necessary to hand out?
Inkavotease	Rate the ease of setting up the InkaVote Plus
Voterease	Rate the voters' ease in using the InkaVote Plus
Secure	Is this voting method secure?
Easy	Is this voting method easy?
Accurate	Is this voting method accurate?
Accessible	Is this voting method accessible?
Workfuture	Would you be willing to work in future election?
Overallexp	Rate your overall experience working this election
Age	Age range
Gender	Gender

The analysis contains three methods of measurement. These are frequencies, cross tabulations, and correlation measurements.

Frequencies are the number of times an event occurs, calculated numerically (i.e. 356 respondents answered “yes” to question 3), and percentages (47 percent of respondents answered “yes”). The measurement is useful for an overview of complete responses and is used to design charts and graphs for single variables. Frequencies are also valuable to track changes in responses over time.

Cross tabulations are numerical and percentage comparisons of two or more variables. Cross tabulations are used in this report to measure potential relationships between two variables or to show the relationship in percent of one variable to another (i.e. 74 percent of African American voters voted for John Kerry). Cross tabulations are beneficial for two reasons: they present findings in tabular form and they can measure relationships by performing standard statistical tests for linearity. For example, one can determine the relationship between Droptime and Dropwait by a cross tabulation table that applies a correlation measure for the strength of the relationship.

The current analysis uses correlations between two variables, although they can also be used for multiple variables. Correlation measures are presented in Table 4. They show statistical significance, direction and strength of the association. For example, the correlation between Droptime and Dropwait showed a positive and significant relationship with a significance level of .000 (anything above .05 is considered not significant) and a Pearson correlation coefficient which portrays a weak but significant and positive relationship. Therefore, one could say with .99 percent confidence that the two variables could be related. Further, one could test the assumption that the wait time at a CIC depended on when the Inspector arrived to drop off ballots.

# Research Findings

## A. Frequency Reports

The frequency report provides responses to each question included in the survey as well as percentages of responses within the category where the majority of responses reside. Also included in the table below are responses from the RR/CC's November 2006, February 2008 and June 2008 Surveys for comparison purposes.

Table 4. Frequency Responses

Variable Name	Grouping <sup>7</sup>	Percentage							
		Nov '10	June '10	Nov '09	May '09	Nov '08	June '08	Feb '08	Nov '06
Timeserve	0 to 10 times	75.2	77.6	60.6	61.0	75.6	68.0	37.5	N/A <sup>8</sup>
Droptime	9-9:30 PM	46.5	42.8	10.0	46.4	46.9	44.4	43.9	47.4
Dropwait	0-30 minutes	75.3	81.4	93.6	85.2	85.2	76.9	75.4	67.6
Coorcontact	Yes	82.1	80.2	81.9	81.1	83.8	75.4	77.3	66.1
Coorvisit	Yes	97.8	91.8	96.5	97.7	98.5	94.4	97.4	87.9
Coortimes	3 times	31.7	39.2 <sup>9</sup>	23.0	25.3	56.8	52.1	50.3	50.3
Abused	No	86.6	90.9	95.0	93.1	83.2	89.7	89.7	82.2
PBRABBfunc	Yes			46.4	86.0	81.2	77.4	73.8	69.7
Malunit	PBR	74.0	84.1	68.7	67.5	70.1	78.7	70.0	71.8
Maltime	Before 7 AM	37.5	54.3	66.7	54.6	32.6	46.8	46.2	28.4
Replaced	No	68.6	62.0	54.9	67.6	64.6	75.1	79.0	N/A <sup>10</sup>
Replacetime	Afternoon (12-5 PM)	44.6	22.8 <sup>11</sup>	22.0	43.5	48.1 <sup>12</sup>	51.1	47.8	35.1
Pbrreceived	Yes	99.8	99.3	98.7	99.5	99.2	75.8	N/A	N/A
Age	62-72	22.9	22.9 <sup>13</sup>	30.2	29.8	29.1	28.9	29.9	26.2
Gender	Female	59.7	59.6	64.5	57.4	63.5	63.2	61.0	61.9
Locatecic	No	96.7	-	-	-	-	-	-	-
Cicstaff	Yes	96.9	-	-	-	-	-	-	-
Pwassigned	Yes	79.5	-	-	-	-	-	-	-
Pwperform	Excellent	54.2	-	-	-	-	-	-	-
Trainingprep	Yes	96.1	-	-	-	-	-	-	-
Trainmaterial	Yes	87.0	-	-	-	-	-	-	-
Inkavotease	Extremely easy	45.9	-	-	-	-	-	-	-
Voterease	Extremely easy	48.9	-	-	-	-	-	-	-
Workfuture	Yes	98.0	-	-	-	-	-	-	-
Overallexp	Excellent	49.7	-	-	-	-	-	-	-

<sup>7</sup> Grouping is the response category where the majority of responses fall.

<sup>8</sup> Figures not available for 2006.

<sup>9</sup> For the June and November 2010 surveys, the majority shifted into the 2 times category.

<sup>10</sup> 2006 data base category improperly constructed – yes and no answers grouped together.

<sup>11</sup> For the June and November 2010 surveys, the majority fell into the AM category.

<sup>12</sup> For the 2009 Survey, the majority fell into the AM category.

<sup>13</sup> The category for June and November 2010 shifted to the 51-61 category. In November 2010, 29.5% of inspectors were 51-61 years old.

## B. Cross Tabulations

Cross tabulations are performed to determine which variables have potential relationships and to determine the strength and direction of those relationships. The analysis includes variables with the highest measures of association, making them likely candidates for further testing.

## C. Correlations

Correlation testing was also performed on selected variable sets to test the strength, direction and significance of their relationships based on a cross tabulation grid. All relationships proved significant, though moderate to weak, and positive. That is, they are probably not independent of each other. There is some evidence that the hypothetical statements following each set of variable relationships above are supported at the 99<sup>th</sup> percentile.

The following correlation table shows the variable relationships, their correlation coefficient, and the significance of the relationship. Significance is suggested if the value in column three is <.05.

**Table 5. Correlation Tests**<sup>14</sup>

Variable Relationship	Correlation Coeff. (Kendall's tau-b and Pearson's R)	Significant (Y/N)	Direction (+/-)
Maltime*Replacetime	.291 - tau <sup>15</sup>	Y (.000)	+
Dropwait*Droptime	.214 - tau	Y (.000)	+
Coorcontact*Coortimes	.152 - Pearson's	Y (.000)	+
Coorcontact*Coorvisit	.116 - Pearson's	Y (.000)	+
Dropwait*Cicstaff	.148 - tau	Y (.000)	-
Pwassigned*Overallexp	.188 - tau	Y (.000)	+

Although all measurements in Table 5 show potential relationships we can only state with some confidence that they may not be independent of one another because of their weak correlation coefficients. If these numbers approached 1 there would be very strong evidence that the independent and dependent variables are directly related to each other and would have a perfect linear relationship (a unit change in x produces the same unit change in y). The significant variable relationships are listed below with descriptive assumptions.

<sup>14</sup>**What Correlation Tests Suggest;**Statistical measures above are tests used to determine if there are potential relationships between (in this case) two variables, or if one is independent of the other. That is, if variables are linearly related, a change in the x variable corresponds with some type of change in the y variable. For example, in the strongest relationship we observe -Coorcontact\*Coorvisit- whether a Coordinator visits a precinct is related to whether or not a Coordinator had contact with the Inspector before the election.

<sup>15</sup>Kendall's tau-b is an accepted statistic to measure ordinal variables (categories of time, age, income levels, etc.) while Pearson's R is usually used to measure nominal variables (yes/no/maybe, democrat/republican, etc.).

Maltime\*Repairtime: The time of the malfunction is related to the time of repair. If a malfunction was reported in the morning it tended to be repaired in the morning.

Dropwait\*Droptime: The time that Inspectors waited at the CIC depended on when they dropped off their ballots. Inspectors who dropped them off later tended to wait longer.

Coorcontact\*Coortimes: If a Coordinator contacted an Inspector before Election Day that Coordinator tended to visit the Inspector more times on Election Day.

Coorcontact\*Coorvisit: If a Coordinator contacted an Inspector before Election Day that Coordinator tended to visit the Inspector on Election Day.

Dropwait\*Cicstaff: The time that Inspectors waited at the CIC depended on whether or not CIC staff were helpful and/or professional.

Pwassigned\*Overallexp: If a poll worker felt that they were assigned enough poll workers at their polling location, they tended to rate their overall experience as “excellent” or “very good”.

## Appendix B

### SPSS CODE BOOK

---

November, 2011 General Election

SPSS Variable: 1  
Variable Name: Timeserve  
Variable Description: How Many Times Have You Served?  
Coding: 2 = First Time  
3 = 1-10 Years  
4 = 11-20 Years  
5 = 21-30 Years  
6 = 1-40Years  
7 = Over 40 Years

SPSS Variable: 2  
Variable Name: Droptime  
Variable Label: Drop off time  
Coding: 2 = 8:00 – 8:30PM  
3 = 8:30 – 9:00PM  
4 = 9:00 – 9:30PM  
5 = 9:30 – 10:00PM  
6 = 10:00 – 10:30PM  
7 = 10:30 – 11:00PM  
8 = 11:00 – 11:30PM  
9 = 11:30 – 12:00

SPSS Variable: 3  
Variable Name: Dropwait  
Variable Label: Drop off wait  
Coding: 2 = 0-30 min.  
3 = 31 min. to 1 hr.  
4 = 1.5 hrs.  
5 = 2 hours  
6 = 3 hours  
7 = Other

SPSS Variable: 4  
Variable Name: Locatecic  
Variable Label: Difficulty locating CIC  
Coding: 2 = No  
3 = Yes

SPSS Variable: 5  
Variable Name: Cicstaff  
Variable Label: Were CIC staff helpful  
Coding: 2 = No  
3 = Yes



SPSS Variable:	6
Variable Name:	Coorcontact
Variable Label:	Coordinator contact
Coding:	2 = No 3 = Yes
SPSS Variable:	5
Variable Name:	Coordinator Visit
Variable Label:	Did coordinator visit
Coding:	2 = No 3 = Yes
SPSS Variable:	6
Variable Name:	Coortimes
Variable Label:	How many times did coordinator visit
Coding:	2 = 1 3 = 2 4 = 3
SPSS Variable:	7
Variable Name:	Pwassigned
Variable Label:	Enough PW assigned
Coding:	2 = No 3 = Yes
SPSS Variable:	8
Variable Name:	Pwperform
Variable Label:	Rate PW performance
Coding:	2 = Very Poor 3 = Poor 4 = Fair 5 = Very Good 6 = Excellent
SPSS Variable:	9
Variable Name:	Pbrabbrcvd
Variable Label:	Did you receive a PBR and an ABB
Coding:	2 = No 3 = Yes
SPSS Variable:	10
Variable Name:	Abused
Variable Label:	Did voters use Audio Ballot
Coding:	2 = No 3 = Yes

SPSS Variable:	11
Variable Name:	Pbrfunc
Variable Label:	Did PBR function all day
Coding:	2 = No 3 = Yes
SPSS Variable:	12
Variable Name:	Abbfunc
Variable Label:	Did ABB function all day
Coding:	2 = No 3 = Yes
SPSS Variable:	13
Variable Name:	Malunit
Variable Label:	Which unit malfunctioned?
Coding:	2 = Audio Ballot Booth 3 = Precinct Ballot Reader 4 = Both
SPSS Variable:	14
Variable Name:	Maltime
Variable Label:	What time was malfunction?
Coding:	2= Before 7 AM 3 = 7:01 – 9:00 AM 4 = 9:01 – 11:00 AM 5 = 11:01 – 1:00 PM 6 = 1:01 – 3:00 PM 7 = 3:01 – 5:00 PM 8 = 5:01 – 8:00 PM 9 = Other AM 10 = Other PM
SPSS Variable:	15
Variable Name:	Replaced
Variable Label:	Was unit replaced
Coding:	2 = No 3 = Yes
SPSS Variable:	16
Variable Name:	Replacetime
Variable Label:	Time of replacement
Coding:	2 = AM (6-11:59) 3 = Afternoon (12:00-5:00) 4 = PM (5:01-8:00)

SPSS Variable:	17
Variable Name:	Trainingprep
Variable Label:	Did training prepare you
Coding:	2 = No 3 = Yes
SPSS Variable:	18
Variable Name:	Trainmaterial
Variable Label:	Were materials needed
Coding:	2 = No 3 = Yes
SPSS Variable:	19
Variable Name:	Inkavotease
Variable Label:	Rate ease of Inkavote
Coding:	2 = Extremely easy 3 = Somewhat easy 4 = Somewhat challenging 5 = Extremely challenging
SPSS Variable:	20
Variable Name:	Voterease
Variable Label:	Rate voters' ease of using InkaVote
Coding:	2 = Extremely easy 3 = Somewhat easy 4 = Somewhat challenging 5 = Extremely challenging
SPSS Variable:	21
Variable Name:	Workfuture
Variable Label:	Would you work again
Coding:	2 = No 3 = Yes
SPSS Variable:	22
Variable Name:	Overallexp
Variable Label:	Rate overall experience
Coding:	2 = Very Poor 3 = Poor 4 = Fair 5 = Very Good 6 = Excellent
SPSS Variable:	23
Variable Name:	Secure1
Variable Label:	Hand Count Ballot Secure
Coding:	2 = Yes 3 = No

SPSS Variable:	24
Variable Name:	Easy1
Variable Label:	Hand Count Ballot Easy
Coding:	2 = Yes 3 = No
SPSS Variable:	25
Variable Name:	Accurate1
Variable Label:	Hand Count Ballot Accurate
Coding:	2 = Yes 3 = No
SPSS Variable:	26
Variable Name:	Accessible1
Variable Label:	Hand Count Ballot Accessible
Coding:	2 = Yes 3 = No
SPSS Variable:	27
Variable Name:	Secure2
Variable Label:	Touch (electronic only) Secure
Coding:	2 = Yes 3 = No
SPSS Variable:	28
Variable Name:	Easy2
Variable Label:	Touch (electronic only) Easy
Coding:	2 = Yes 3 = No
SPSS Variable:	29
Variable Name:	Accurate2
Variable Label:	Touch (electronic only) Accurate
Coding:	2 = Yes 3 = No
SPSS Variable:	30
Variable Name:	Accessible2
Variable Label:	Touch (electronic only) Accessible
Coding:	2 = Yes 3 = No
SPSS Variable:	31
Variable Name:	Secure3
Variable Label:	Touch w/ Paper Ballot Secure
Coding:	2 = Yes 3 = No

SPSS Variable: 32  
Variable Name: Easy3  
Variable Label: Touch w/ Paper Ballot Easy  
Coding: 2 = Yes  
3 = No

SPSS Variable: 33  
Variable Name: Accurate3  
Variable Label: Touch w/ Paper Ballot Accurate  
Coding: 2 = Yes  
3 = No

SPSS Variable: 34  
Variable Name: Accessible3  
Variable Label: Touch w/ Paper Ballot Accessible  
Coding: 2 = Yes  
3 = No

# Appendix C

## INSPECTOR SURVEY

### Poll Worker Survey GENERAL ELECTION 11/02/2010

Please submit this survey in the enclosed postage paid envelope. Please mail by Dec. 22, 2010. The survey will help us improve services to poll workers and voters in future elections. *Thank you!*

**PLEASE ANSWER ALL QUESTIONS.**

SERIAL NO: 3,762  
PRECINCT: 9001300A  
INSPECTOR  
Elec\_ID: 681  
12/9/10 12:29 pm

#### Ballot Drop-Off

1. Approximately what time did you arrive at the CIC to drop off your ballots on Election Night?  
 8:00-8:30PM     9:01-9:30PM     10:01-10:30PM     11:01-11:30PM  
 8:31-9:00PM     9:31-10:00PM     10:31-11:00PM     11:31-12:00PM
2. Approximately how long was your wait to drop off ballots?  
 0-30 minutes     31 min to 1 hr.     1.5 hrs.     2 hrs.     3 hrs.     Other
3. Was it difficult to locate your CIC?     YES     NO
4. Do you feel that staff at the CIC were helpful and professional?     YES     NO

#### Communication/Support

5. Did you have contact with your Precinct Coordinator before Election Day?     YES     NO
6. Did your Precinct Coordinator visit your polling place on Election Day?     YES     NO
7. If YES, how many times did your Precinct Coordinator visit your polling place?     1     2     3
8. Do you feel there were enough poll workers assigned to your polling place?     YES     NO
9. Please rate the overall performance of your fellow poll workers:  
 Very Poor     Poor     Fair     Very Good     Excellent

#### Equipment Function

10. Did you receive a BALLOT READER and an Audio Ballot Booth?     YES     NO
11. Did any voter use the Audio Ballot Booth?     YES     NO
12. Did your Ballot Reader function the entire day?     YES     NO
13. Did your Audio Ballot Booth function the entire day?     YES     NO

**If NO to QUESTION 12 and 13 ABOVE, please complete the following:**

14. Which unit malfunctioned?  
 BALLOT READER     AUDIO BALLOT BOOTH     BOTH
15. Approximately what time did the unit(s) malfunction?  
 Before 7:00 AM     11:01-1:00PM     5:01-8:00PM  
 7:01-9:00AM     1:01-3:00PM     Other AM  
 9:01-11:00AM     3:01-5:00PM     Other PM
16. Please describe the malfunction: \_\_\_\_\_
17. Was unit replaced?     YES     NO
18. If YES, what time?     AM(6-11:59)     AFTERNOON (12:00-5:00)     PM(5:01-8:00)

*Please see back for additional questions.*

**Training**

19. Do you feel the training prepared you for Election Day?  YES  NO

20. If you answered NO, please explain what would make training more helpful: \_\_\_\_\_

21. Do you feel that the materials handed out in training class were necessary?  YES  NO

22. If you answered NO, please explain why not:  
\_\_\_\_\_

**Voting System**

23. How would you rate the ease of transporting, setting up, and breaking down the InkaVote Plus voting components?

**Extremely easy**  **Somewhat easy**  **Somewhat challenging**  **Extremely challenging**

24. What is your level of confidence with regard to operating the Precinct Ballot Reader and/or Audio Ballot Booth components of the InkaVote Plus system?

**Extremely confident**  **Somewhat confident**  **Somewhat confident**  **Extremely confident**

25. Based on your observations, how would you rate the voters' ease in using the InkaVote Plus system?

**Extremely easy**  **Somewhat easy**  **Somewhat challenging**  **Extremely challenging**

Now we'd like to ask you a few questions regarding future voting systems in Los Angeles County.

Below is a list of different voting systems that may be put in place to help voters mark their ballots. For each method listed, tell us if you think it would meet the following principles of secure, easy to use, accurate, and accessible for people with disability. For each system check all the principles that apply:

26. Hand-marked paper ballots that are counted by hand at the polls.

**Secure**  **Easy to Use**  **Accurate**  **Accessible**

27. Touchscreen voting machine, like an ATM, that records votes electronically.

**Secure**  **Easy to Use**  **Accurate**  **Accessible**

28. Touchscreen voting machine that records votes on a paper ballot that is deposited in a ballot box and maintained as the permanent record of votes.

**Secure**  **Easy to Use**  **Accurate**  **Accessible**

**Overall Impression**

29. Would you be willing to work in future elections?  YES  NO

30. Please rate your overall experience working in this past election:

**Very Poor**  **Poor**  **Fair**  **Very Good**  **Excellent**

Please add any additional comments in the space below or by attachment to this survey.

Thank you for your service.

Question 24 contains an error in the multiple choice options (i.e. "somewhat confident" and "extremely confident" are repeated). There would be no way to accurately interpret the intention of a respondent's selection; therefore all responses to question 24 were disregarded and were not included in this report.