

Post-Election Audit Summary

September 10, 2019 Primary Election

Fairview Park Ward 05 Council

There were 4,753 total ballots cast in the September 2019 Primary Election. A hand count was conducted of 389 ballots cast in the audited contest. The accuracy rate for the post-election audit is 100%.

November 5, 2019 General Election

6 - Cuyahoga County Charter Amendment - Sheriff

There were 222,648 total ballots cast in the November 2019 General Election. A hand count was conducted of 1,153 ballots cast in the audited contest. The accuracy rate for the post-election audit is 100%.

On December 16, 2019 we conducted Risk-Limiting Post-Election Audits for the September 2019 Primary and November 2019 General elections. Audited race and batch details are provided below:

RACE	TOTAL BALLOTS CAST	UNIQUE BATCHES AUDITED	TOTAL BALLOTS AUDITED	NUMBER OF PRECINCTS IN CONTEST
Fairview Park Ward 05 Council <i>[September 2019 Primary]</i>	4,753	5	389	2
6 - Cuyahoga County Charter Amendment - Sheriff <i>[November 2019 General]</i>	222,648	7	1,153	975

Our Risk-Limiting Audits were based upon the Kaplan-Markov method as explained by Philip B. Stark and Mark Lindeman. Auditing best practices recommend we split up the total ballots cast by precinct into multiple batch types. We utilized five batch types each consisting of one single ballot type category: Absentee, Election Day, Provisional, Post Absentee, and Post Election Day.

A master spreadsheet was created for each contest with statistical formulas to determine the number of batches that must be audited in order to reach a 90% confidence level. This confidence level means the audit has at least a 90% probability of leading to a full recount if the apparent outcome is incorrect.

We used a "Probability Proportional to Error Bound with Replacement" selection method. We assigned numbers ranging from 000000 through 999,999 for each batch within each contest. Unique ranges of numbers were allocated to specific batches based upon their error bound - i.e. the greater the possibility of a miscount within a batch, the more numbers assigned, and the more likely it is to be selected. For example, if a single batch has a high probability of a miscount, multiple numbers would be assigned to that single batch, making the random selection of that batch more likely during the audit. Each of those individual numbers might be randomly selected and included in the overall batch audit requirement, but the single batch to which those numbers are assigned would need to be audited only once. To obtain the precinct batch number we rolled differently colored dice numbered 0 - 9, each one of the colored dice representing one digit of the batch number.

Fairview Park Ward 05 Council

PRECINCT NAME	NUMBER OF TIMES SELECTED	SELECTED BATCH TYPE	OFFICIAL BALLOTS CAST	AUDIT HAND COUNT	DIFFERENCE
FAIRVIEW PARK -05-A	6	Election Day	140	140	0
FAIRVIEW PARK -05-A	2	Vote-by-Mail	51	51	0
FAIRVIEW PARK -05-B	5	Election Day	144	144	0
FAIRVIEW PARK -05-B	4	Vote-by-Mail	53	53	0
FAIRVIEW PARK -05-B	1	Early In-Person	1	1	0
Total	18		389	389	0

6 - Cuyahoga County Charter Amendment – Sheriff

PRECINCT NAME	NUMBER OF TIMES SELECTED	SELECTED BATCH TYPE	OFFICIAL BALLOTS CAST	AUDIT HAND COUNT	DIFFERENCE
BEDFORD HEIGHTS -01-B	1	Vote-by-Mail	65	65	0
BROADVIEW HEIGHTS -01-C	1	Vote-by-Mail	124	124	0
CLEVELAND -13-H	1	Election Day	108	108	0
CLEVELAND HEIGHTS -04-E	1	Election Day	252	252	0
LAKEWOOD -03-F	1	Election Day	272	272	0
NORTH OLMSTED -04-E	1	Election Day	159	159	0
PARMA HEIGHTS -03-A	1	Election Day	173	173	0
Total	7		1153	1153	

