

Post-Election Audit Summary

November 2, 2021 General Election

For Representative to Congress (11th District) (UTE 1/3/2023)

For Mayor of Cleveland

24 - Cleveland Charter Amendment

There were 232,149 total ballots cast in the November 2, 2021 General Election. A hand count was conducted of 3,719 ballots cast in the audited contests. The accuracy rate for the post-election audit is 100%.

Beginning on December 13, 2021 we conducted three Risk-Limiting Post-Election Audits for the November 2, 2021 General Election. Audited race and batch details are provided below:

RACE	TOTAL BALLOTS CAST	UNIQUE BATCHES AUDITED	TOTAL BALLOTS AUDITED	NUMBER OF PRECINCTS IN CONTEST
For Representative to Congress (11th District) (UTE 1/3/2023)	100,741	6	622	513
For Mayor of Cleveland	59,066	11	1,434	332
24 - Cleveland Charter Amendment	59,066	13	1,663	332
Total	218,873	30	3,719	

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 six batch types each consisting of one single ballot type category: Vote-by-Mail, Election Day, Early In-Person, Provisional, Post Vote-by-Mail, 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 00000 through 99999 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.

For Representative to Congress (11th District) (UTE 1/3/2023)

PRECINCT NAME	NUMBER OF TIMES SELECTED	SELECTED BATCH TYPE	OFFICIAL BALLOTS CAST	AUDIT HAND COUNT	DIFFERENCE
CLEVELAND -01-A	1	Election Day	61	61	0
CLEVELAND -02-I	1	Election Day	87	87	0
PEPPER PIKE -00-E	1	Election Day	263	263	0
CLEVELAND -01-L	1	Vote-by-Mail	123	123	0
CLEVELAND -08-K	1	Vote-by-Mail	58	58	0
EUCLID -07-C	1	Vote-by-Mail	30	30	0
Total	6		622	622	0

For Mayor of Cleveland

PRECINCT NAME	NUMBER OF TIMES SELECTED	SELECTED BATCH TYPE	OFFICIAL BALLOTS CAST	AUDIT HAND COUNT	DIFFERENCE
CLEVELAND -04-I	1	Vote-by-Mail	25	25	0
CLEVELAND -11-G	1	Vote-by-Mail	85	85	0
CLEVELAND -17-M	1	Vote-by-Mail	106	106	0
CLEVELAND -03-O	1	Election Day	274	274	0
CLEVELAND -06-P	1	Election Day	126	126	0
CLEVELAND -07-L	1	Election Day	119	119	0
CLEVELAND -13-G	1	Election Day	185	185	0
CLEVELAND -13-M	1	Election Day	180	180	0
CLEVELAND -14-H	1	Election Day	80	80	0
CLEVELAND -15-N	1	Election Day	249	249	0
CLEVELAND -03-I	1	Provisional	5	5	0
Total	11		1434	1434	0

24 - Cleveland Charter Amendment

PRECINCT NAME	NUMBER OF TIMES SELECTED	SELECTED BATCH TYPE	OFFICIAL BALLOTS CAST	AUDIT HAND COUNT	DIFFERENCE
CLEVELAND -01-N	1	Vote-by-Mail	97	97	0
CLEVELAND -01-C	1	Election Day	82	82	0
CLEVELAND -01-Q	1	Election Day	219	219	0
CLEVELAND -02-N	1	Election Day	126	126	0
CLEVELAND -04-P	1	Election Day	67	67	0
CLEVELAND -04-T	1	Election Day	92	92	0
CLEVELAND -06-N	1	Election Day	28	28	0
CLEVELAND -08-J	1	Election Day	220	220	0

CLEVELAND -08-N	1	Election Day	105	105	0
CLEVELAND -09-V	1	Election Day	106	106	0
CLEVELAND -10-T	2	Election Day	128	128	0
CLEVELAND -15-C	1	Election Day	374	374	0
CLEVELAND -01-N	1	Early In-Person	19	19	0
Total	14		1663	1663	0

