

POST-ELECTION VOTING SURVEYS

QUANTITATIVE LOCAL ELECTION OFFICIALS TECHNICAL REPORT

2016



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FEDERAL VOTING ASSISTANCE PROGRAM

This report describes sampling, editing, weighting and imputation methodologies for the 2016 Quantitative Post-Election Voting Survey of Local Election Officials (Quant PEVS-LEO). The first section describes the background and administration of the 2016 Quant PEVS-LEO. The second section describes the design of the survey. The third section describes the weighting methodology. The final section explains the edit and imputation processes, variance calculation, and estimation. Appendix A displays the imputed national estimates for each of the 2016 Quant PEVS-LEO questions. Additional information on the EAVS administration can be found in the 2016 EAC Election Administration and Voting Comprehension Report (2017).¹

1.1 | EAVS and Quant PEVS-LEO Legislative Responsibility

In 2016, the Federal Voting Assistance Program (FVAP) continued their collaboration with the U.S. Election Assistance Commission (EAC) to collect congressionally mandated quantitative data from State and local election voting officials through the 2016 Election Administration and Voting Survey (EAVS). The EAVS satisfies the EAC's requirements under the Help America Vote Act (HAVA) to serve as a clearinghouse of election data. The sections of the EAVS related to voter registration and *UOCAVA* voting allow States to satisfy their data reporting requirements established by the National Voter Registration Act (NVRA) and under the *Uniformed and Overseas Citizens Absentee Voting Act (UOCAVA)*. Section 703(a) HAVA amended section 102 of *UOCAVA* by adding the requirement that each State must report certain election data to the EAC no more than 90 days after each Federal election. The data is to include the number of absentee ballots transmitted to absent Uniformed Services voters and overseas voters for the election and the number of those ballots that were returned. In 2013, the EAC and FVAP entered into a Memorandum of Understanding (MOU) to establish a joint survey effort for 2014 that enables both agencies to meet their core requirements while reducing the overall burden on election officials. As a result of this successful interagency initiative, FVAP and the EAC now issue a single survey which includes FVAP's *UOCAVA* related survey questions from the original 2012 Quant PEVS-LEO as part of Section B in the EAC's EAVS. EAC contracted Fors Marsh Group (FMG) to help administer and analyze the 2016 EAVS and FVAP contracted FMG to conduct the imputations necessary creating Section B State and national estimates.

¹ The EAVS Comprehensive Report (2017) is available at: https://www.eac.gov/assets/1/6/2016_EAVS_Comprehensive_Report.pdf

1.2 | Survey Design

The EAVS has been conducted since 2004; the 2016 EAVS is the seventh administration of the survey. The EAVS asks all 50 States, the District of Columbia and four U.S. territories—American Samoa, Guam, Puerto Rico, and the Virgin Islands—to provide data about the methods in which Americans participated in each Federal election. The EAVS collects information on “ballots cast, voter registration, overseas and military voting, Election Day activities, voting technology, and other important issues,” (EAC, 2016).² Specifically, the EAVS is divided into six sections:

- A. Voter Registration
- B. *Uniformed and Overseas Citizens Absentee Voting Act (UOCAVA)*
- C. Domestic Civilian Absentee Ballots
- D. Election Administration
- E. Provisional Ballots
- F. Election Day Activities

For FVAP’s reporting needs, Section B (specifically B19 through B35) is the only section necessary for FVAP’s program needs and is considered the 2016 Quant PEVS-LEO. FVAP continued in 2016 to work with EAC to consolidate these Section B questions in the EAVS. After combining the EAVS and Quant PEVS-LEO in 2014, Section B contained questions that were redundant and, in places, the question language was not clear and concise. In 2016, in order to streamline and improve Section B, FVAP worked with the Council of State Governments’ Overseas Voting Initiative to create a working group consisting of State and local election officials. This group identified the redundant questions in Section B and the wording issues associated with several questions. No changes were made to the survey instrument itself between 2014 and 2016, but additions and edits were made to the Supplemental Instruction Manual (SIM) to reflect the suggestions of the Section B Working Group. Nine questions were identified as being redundant, and four questions contained subitems that asked for data that most states do not record. The SIM instructed States to skip these 13 questions and their 62 subitems, and the items were grayed out in the data templates. The SIM updated language sought to 1) define UOCAVA status more clearly, 2) clarify what “transmit” means when discussing “transmitted ballots” and 3) clarify the meaning of the phrase “returned and submitted for counting” in specific questions and the SIM.

1.3 | Sample Design and Selection

a. Target Population

The 2016 Quant PEVS-LEO was a census designed to represent all voting jurisdictions in the United States and its territories. The census population contained 6,467 voting jurisdictions identified by the EAC.

b. Sampling Frame

The sampling unit was the voting jurisdiction. Voting jurisdictions are typically counties, but were defined differently from State to State. For example, the States of Alaska and Maine are each considered to be one voting jurisdiction when reporting UOCAVA data, whereas Michigan, Wisconsin, and some States in New England

² The 2016 EAVS survey instrument is available on the EAC website and can be found at: https://www.eac.gov/assets/1/28/2016_EAVS_Instrument.pdf

define voting jurisdiction by individual townships. When accounting for States that only report as one jurisdiction (Alaska, Maine), FMG determined that there are 6,467 unique reporting *UOCAVA* voting jurisdictions.

c. Sample Design

Individual voting jurisdictions were selected with certainty (probability of selection equals 1). However, due to historically known issues of jurisdiction nonresponse and nonnegligible missing data rates, it was determined that the survey would require imputation and weighting methodologies. FMG identified a critical value (response to B1a)—the total number of *UOCAVA* ballots transmitted for the 2016 election—that could act as a stratifying variable to split the population into homogenous responders. The 2016 Quant PEVS-LEO population was split into eight groups based on responses to B1a. Not all jurisdictions responded to the survey, however, and the critical question had missing data. For the purpose of assigning jurisdictions to one of the groups, FMG imputed for the missing B1a with previous iterations of the EAVS using the 2012 data. Jurisdictions without data for either 2012 and 2016 were dropped from the target population. Six jurisdictions (approximately 0.1 percent) were excluded from the population for this reason.³ A total of 547 jurisdictions had missing data for the critical item and were all resolved with prior data (approximately 8 percent).

The strata definitions were taken from the 2014 Quant PEVS-LEO. The strata definitions (and their distribution) are shown in Table 1. Stratum 1 indicates that 1,015 jurisdictions responded as not transmitting a single *UOCAVA* ballot; as such, much of their subsequent responses (regarding the specifics of the *UOCAVA* ballots they transmitted) would typically be “0.” It is also important to point out that 3,278 of the 6,461 jurisdictions (50.7 percent) transmitted 10 ballots or fewer in total.

Table 1. Stratification Based on *UOCAVA* Transmitted Ballots

Stratum Number	<i>UOCAVA</i> Transmitted Ballots	Total	Percent
1	0	1,015	15.71
2	1 to 10	2,263	35.03
3	11 to 30	1,237	19.15
4	31 to 100	1,042	16.13
5	101 to 500	589	9.12
6	501 to 1,000	138	2.14
7	1,001 to 5,000	142	2.2
8	5,001 or more	35	0.54
	Total	6,461	100

d. Survey Administration

The 2016 EAVS—including the Section B questions that comprise the 2016 Quant PEVS-LEO—began administration preceding the 2016 General Election. States and territories were asked to complete and submit the 2016 EAVS by February 1, 2017. Completed surveys were received by EAC and distributed to FMG in MS Excel files throughout the submission period. FMG analyzed the survey returns for data quality and had a working relationship with EAC to address data issues by asking specific States to edit or clarify their submitted

³ Previous EAVS survey data are available from the EAC website at www.eac.gov.

data. States then had two weeks to review and correct their submissions and certify their State’s 2016 EAVS data submission. The final data certification deadline was March 1, 2017.

1.4 | Weighting

a. Case Dispositions

Final case dispositions for weighting were determined using information from the returned surveys. A jurisdiction was considered to be a complete eligible respondent if it provided enough information about the number of absentee ballots transmitted to UOCAVA voters. Specifically, a jurisdiction needed to provide data that met at least one of the following three criteria:

- 1) B1a (UOCAVA ballots transmitted)
- 2) Both subparts of B1a (B1b: to Uniformed Service voters; B1c: non-military/civilians overseas voters)
- 3) All subparts of B24 (B24a: transmitted by postal mail; B24b: transmitted by email; and B24c: transmitted by other)

Table 2 shows the voting jurisdictions classified by whether they were considered a complete or incomplete response.

Table 2. Case Dispositions for Weighting

Case Disposition	Information Source	Conditions	Sample Size
4. Eligible, complete response	EAVS	Jurisdiction provided a response to any criteria identified above.	5,917
5. Eligible, incomplete response	EAVS	Jurisdiction did not provide a response to any criteria identified above.	544
Total			6,461

Note: The 2016 PEVS-LEO did not ask any eligibility questions. American Association for Public Opinion Research. 2015. *Standard definitions: Final dispositions of case codes and outcome rates for surveys* (8th edition). AAPOR.

b. Completion Adjustments and Final Weights

The final weights by stratum are displayed in Table 3. All jurisdictions had an initial base weight of 1 (due to the survey being a census). Base weights were adjusted for incomplete surveys only. The eligibility-adjusted weights for eligible respondents (disposition = 4) were adjusted to account for eligible jurisdictions that had not met the criteria to be a complete respondent (disposition = 5). Weighting adjustment factors were computed as the inverse of the completion probabilities within strata.⁴ Only four of the eight strata had weighting adjustments.

⁴ For the creation of State totals, each stratum was given separate weights for each State based on nonresponse patterns in that State.

Table 2. Final Weights by Stratification

Stratum Number	UOCAVA-Transmitted Ballots	Population Total	Complete Respondents	Final Weight
1	0	1,015	893	1.1366
2	1 to 10	2,263	1,972	1.1476
3	11 to 30	1,237	1,156	1.0701
4	31 to 100	1,042	1,004	1.0378
5	101 to 500	589	583	1.0103
6	501 to 1,000	138	134	1.0299
7	1,001 to 5,000	142	141	1.0071
8	5,001 or more	35	34	1.0294
	Total	6,461	5,917	

1.5 | Edit and Imputation Processes

To calculate estimated totals from the EAVS data, edit and imputation processes were developed for the items with missing data. Without an edit and imputation process, the estimated totals would underestimate the actual total (i.e., estimates would be biased low). For example, if a voting jurisdiction indicated it had UOCAVA voters but failed to report the number of Uniformed Service members covered by UOCAVA, the Uniformed Service members' number would be underestimated since it would be assumed to be 0 for this jurisdiction. The edit process is the inspection of collected data before statistical analysis. The goal of editing is to verify that the data have properties intended for the original design. An imputation process places an estimated answer into a data field for a record that previously had no data or had incorrect or implausible data.

c. Edit Process

The edit process was undertaken by FMG working on behalf of the EAC after having received data from the jurisdictions. Among the editing steps undertaken:

- Missing data was backfilled with -888888 for “Not Applicable”; or with -999999 when a jurisdiction indicated “Data Not Available.”
- When the total value (e.g., B1a) for a question was reported as 0 or missing, but the jurisdiction reported data for any of the subitems in that question (e.g., B1b, B1c, B1d or B1e), the total value was backfilled with the sum of the subitems.
- When a jurisdiction reported a number in an “other” subitem that clearly belonged in one of the other subitems listed, “other” was added to the correct subitem and subsequently filled with a 0.
 - For example, in some subitems that asked for “other” voter type (e.g., B1d and B1e), jurisdictions reported military spouses or dependents. Those voters were added to the “uniformed service members” category and the subitem was filled with a 0.

Further information about this editing process can be found in the 2016 EAVS Comprehensive report.⁵

⁵ EAC 2017. See https://www.eac.gov/assets/1/6/2016_EAVS_Comprehensive_Report.pdf

d. Imputation Process

The imputation process was designed to produce estimates for *respondents* who did not provide a value to any item or subitem that was required by FVAP. For the purpose of this analysis, “Not Applicable” entries were given a value of 0, whereas “Data Not Available” entries were treated as missing. Imputations were then created at the jurisdiction level and aggregated up to the State and national level. Though FMG does not advise using imputation produced at the jurisdiction level, these were created for responding jurisdictions with missing items and subitems.

Creating imputations involved a multiple weighted sequential hot deck imputation procedure which was executed by using HOTDECK program for STATA. HOTDECK was developed by Adrian Mander (2007).⁶ For weighted sequential hot deck imputation, the population was divided into the strata defined in Table 1. For jurisdictions with missing data, donor jurisdictions that were complete cases were selected at random from jurisdictions within the same subgroup that had answered the missing data. Imputation was carried out five times ($m = 5$) following standard imputation practices. Data sets were produced for each imputation and a master data set combined all five imputations. For estimation, standard procedures were used by averaging across the five data sets.

e. Variance Estimation

Estimates from the 2016 Quant PEVS-LEO have uncertainty due to unit and item nonresponse. Unit nonresponse was about 8 percent and item nonresponse ranged from zero to 80 percent (see Appendix A, Table A1) for most survey questions that estimated numeric totals. FMG used weighting to compensate for unit nonresponse and imputation to adjust for item nonresponse. To create national estimates, missing information from responding jurisdictions was imputed using HOTDECK as described in the previous section and a weighting process was developed so that totals would represent all jurisdictions.

Table A1 in the Appendix shows the final imputed national estimates and their associated precision (displayed as “margins of error”).⁷

⁶ Mander, Adrian. (2007). HOTDECK: Stata Module to Impute Missing Values Using the Hotdeck Method. MRC Human Nutrition Research, Cambridge, UK.

⁷ Margins of error were estimated using Stata’s `mi estimate` command. See Appendix A.

References



- American Association for Public Opinion Research. (2015). *Standard definitions: Final dispositions of case codes and outcome rates for surveys* (8th edition). AAPOR.
- EAC. (2017). *2016 EAC Election Administration and Voting Comprehension Report* (Report to 115th Congress). Retrieved from https://www.eac.gov/assets/1/6/2016_EAVS_Comprehensive_Report.pdf
- Federal Voting Assistance Program. (2017). *2016 FVAP Post-Election Survey Report to Congress*. Retrived from <https://www.fvap.gov/>
- Mander, Adrian. (2007). *HOTDECK: Stata Module to Impute Missing Values Using the Hotdeck Method*. MRC Human Nutrition Research, Cambridge, UK.

Appendix A: National Estimates

Table A1. Question by Final Estimate, Margin of Error and Relative Precision

Question	Description	Final Estimate (Weighted)	Margin of Error	Relative Precision
A1a	Total number of registered and eligible voters for the November 2016 General Election	218,092,523	2,809,722	1%
B1a_E	Total number of absentee ballots transmitted to UOCAVA voters for November 2016 General Election	950,836	14,252	1%
B8a_E	Total number of UOCAVA ballots counted in November 2016 General Election (include FWAB)	671,243	8,224	1%
B19a_E	Enter the total number of registered and eligible voters who were covered by UOCAVA in the November 2016 General Election	924,370	19,759	2%
B19b	Total number of registered and eligible UOCAVA voters who were Uniformed Service voters	381,791	8,264	2%
B19c	Total number of registered and eligible UOCAVA voters who were non-military/civilian	446,934	14,192	3%
B19d	Total number of registered and eligible UOCAVA voters who were Other (I)	19,385	9,180	47%
B19e	Total number of registered and eligible UOCAVA voters who were Other (II)	4	1	20%
B20a_E	Total number of Federal Post Card Applications received from UOCAVA voters	432,208	9,013	2%
B20b	Total number of Federal Post Card Applications received from Uniformed Service voters	137,793	2,873	2%
B20c	Total number of Federal Post Card Applications received from non-military/civilian	238,488	6,167	3%
B20d	Total number of Federal Post Card Applications received from Other (I)	5,602	5,652	101%

Question	Description	Final Estimate (Weighted)	Margin of Error	Relative Precision
B20e	Total number of Federal Post Card Applications received from Other (II)	8	4	52%
B21e_E	Total number of Federal Post Card Applications received that were rejected	15,933	1,213	8%
B21a	Federal Post Card Applications rejected from Uniformed Service voters	5,687	504	9%
B21b	Federal Post Card Applications rejected from non-military/civilian	9,527	818	9%
B21c	Federal Post Card Applications rejected from Other (I)	1,721	1,687	98%
B21d	Federal Post Card Applications rejected from Other (II)	11	16	138%
B22a	Total number of Federal Post Card Applications that were rejected because they were received after the absentee ballot request deadline	4,853	662	14%
B24ac_E	UOCAVA absentee ballots transmitted to UOCAVA voters via postal mail	282,671	122,387	43%
B24bc_E	UOCAVA absentee ballots transmitted to UOCAVA voters via email	399,392	95,125	24%
B24cc_E	UOCAVA absentee ballots transmitted to UOCAVA voters via Other mode	32,917	3,625	11%
B25a	Total number of UOCAVA absentee ballots transmitted returned as undeliverable via postal mail	7,838	492	6%
B25b	Total number of UOCAVA absentee ballots transmitted returned as undeliverable via email	2,327	364	16%
B25c	Total number of UOCAVA absentee ballots transmitted returned as undeliverable via Other	287	32	11%
B26a_E	UOCAVA absentee ballots received for the November 2016 General Election	623,577	7,284	1%
B26b	UOCAVA absentee ballots received for the November 2016 General Election from Uniformed Service voters	248,344	4,394	2%
B26c	UOCAVA absentee ballots received for the November 2016 General Election from non-military/civilian overseas voters	360,217	7,223	2%
B26d	UOCAVA absentee ballots received for the November 2016 General Election from Other (I)	6,789	1,413	21%
B26e	UOCAVA absentee ballots received for the November 2016 General Election from Other (II)	90	166	185%
B27ac_E	UOCAVA absentee ballots received via postal mail	283,333	72,084	25%

Question	Description	Final Estimate (Weighted)	Margin of Error	Relative Precision
B27bc_E	UOCAVA absentee ballots via email	117,200	11,351	10%
B27cc_E	UOCAVA absentee ballots received via Other	53,442	14,486	27%
B28a_E (B16_Total)	Total ballots rejected by UOCAVA voters	15,692	726	5%
B28a (B16a)	Total ballots rejected by UOCAVA military voters	5,985	181	3%
B28b (B16b)	Total ballots rejected from UOCAVA civilian voters	9,038	452	5%
B28c (B16c)	Total ballots rejected by UOCAVA other voters	669	525	79%
B29ac_E	Total number of absentee ballots that were rejected, how many were rejected because they were received after the statutory deadline: Postal Mail	7,714	2,001	26%
B29bc_E	Total number of absentee ballots that were rejected, how many were rejected because they were received after the statutory deadline: Email	3,784	1,223	32%
B29cc_E	Total number of absentee ballots that were rejected, how many were rejected because they were received after the statutory deadline: Other	468	140	30%
B30ac_E	Total number of UOCAVA ballots counted in your jurisdiction by the following modes of transmission: Postal Mail	239,928	75,140	31%
B30bc_E	Total number of UOCAVA ballots counted in your jurisdiction by the following modes of transmission: Email	152,734	17,939	12%
B31e_E	Total number of Federal Write-In Absentee Ballots (FWAB) received from UOCAVA voters	18,117	5,345	30%
B31a	Total number of Federal Write-In Absentee Ballots (FWAB): Uniformed Service voters	8,436	253	3%
B31b	Total number of Federal Write-In Absentee Ballots (FWAB): non-military/civilian	13,511	665	5%
B31c	Total number of Federal Write-In Absentee Ballots (FWAB): Other (I)	2,350	609	26%
B31d	Total number of Federal Write-In Absentee Ballots (FWAB): Other (II)	15	29	187%
B32a_E (B17_Total)	Total Federal Write-In Absentee Ballots rejected by UOCAVA	4,197	217	5%
B32a (B17a)	Total Federal Write-In Absentee Ballots rejected by UOCAVA military	1,688	133	8%

Question	Description	Final Estimate (Weighted)	Margin of Error	Relative Precision
B32b (B17b)	Total Federal Write-In Absentee Ballots rejected by UOCAVA civilians	1,944	97	5%
B33a	Total number of FWABs received that were rejected, how many were rejected because they were received after the ballot receipt deadline	1,213	152	13%
B34a	Total number of FWABs received that were rejected, how many were rejected because the votervoterecause the voterallot receipt deadlinestatutor	1,191	64	5%
B35a_E (B11_Total)	Total number of FWABS counted	17,930	1,047	6%
B35a (B11a)	Total number of FWABs received from UOCAVA military that were counted	5,830	119	2%
B35b (B11b)	Total number of FWABs received from UOCAVA civilians that were counted	10,277	627	6%

Note: B1a was imputed using 2012 EAC data. More information regarding B1a is covered in the Sample Design section. Relative precision refers to the percentage of the margin of error in relation to the final estimate: $(\text{Margin of Error} / \text{Final Estimate}) * 100$. Due to question changes between 2014 and 2016, certain duplicated question were used as substitutes: B16 substitutes for B28; B17 for B32; and B11 for B35.

Table A2. Question by Edited and Imputed Totals

Question	Edited Total (Unweighted)	Number Imputed	Imputed Total
QA1a	212,707,264	0	212,707,264
QB1a	930,156	1	930,290
QB8a	656,737	5	657,019
QB19a	899,820	263	903,410
QB20a	420,786	262	423,157
QB20b	133,645	290	134,663
QB20c	231,880	305	233,662
QB21a	5,559	1,775	5,569
QB21b	9,307	1,779	9,324
QB21e	15,594	0	15,594
QB22a	4,642	1,846	4,740
QB24ac	141,782	1,825	275,875
QB24bc	244,849	1,878	389,800
QB24cc	28,222	2,230	31,993
QB25a	7,628	51	7,643
QB26a	609,692	10	609,978
QB26b	242,468	19	242,617
QB26c	352,657	30	352,861
QB27ac	160,373	2,087	276,932
QB27bc	77,364	3,760	113,653
QB27cc	22,538	4,151	52,432
QB28a_E (QB16_Total)	11,530	3,071	15,336
QB28a (QB16a)	5,808	113	5,843
QB28b (QB16b)	8,761	116	8,832
QB28c (QB16c)	395	3,069	661
QB29ac	5,189	1,982	7,529
QB29bc	1,504	3,531	3,656
QB29cc	417	3,912	455
QB30ac	140,493	1,973	234,588
QB30bc	84,364	3,551	148,786
QB31a	8,215	317	8,231
QB31b	13,197	308	13,228
QB32a_E (QB17_Total)	3,068	2,854	4,114
QB32a (QB17a)	1,643	379	1,650
QB32b (QB17b)	1,886	383	1,905

Question	Edited Total (Unweighted)	Number Imputed	Imputed Total
QB33a	1,184	253	1,187
QB34a	1,139	610	1,164
QB35a_E (QB11_Total)	12,416	2,861	17,543
QB35a (QB11a)	5,674	363	5,696
QB35b (QB11b)	10,021	370	10,068

Note: The first column provides the question number. The second column provides the total for the question for all responding jurisdictions. The third column provides the number of jurisdictions with imputed data. The fourth column provides the total for all values (imputed and nonimputed). Due to question changes between 2014 and 2016, certain duplicated question were used as substitutes: B16 substitutes for B28; B17 for B32; and B11 for B35.



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