

Austria 2016 Presidential Election, Election Forensics Statistics

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Table 1: Election Forensics Toolkit Statistics, Austria 2016, Round 1, *Gemeinden*

Level	Candidate	2BL	LastC	P05s	C05s	DipT	Obs
National	Hofer	4.25 (4.138, 4.374)	4.453 (4.329, 4.575)	0.215 (0.199, 0.232)	0.218 (0.201, 0.236)	0.891 –	2239
National	Van.der.Bellen	4.043 (3.928, 4.161)	4.497 (4.379, 4.621)	0.208 (0.191, 0.226)	0.205 (0.188, 0.221)	0.997 –	2239
National	Griss	4.076 (3.955, 4.197)	4.552 (4.432, 4.667)	0.212 (0.194, 0.23)	0.188 (0.172, 0.205)	0.998 –	2239
National	Hundstorfer	4.104 (3.98, 4.23)	4.457 (4.336, 4.577)	0.194 (0.177, 0.211)	0.207 (0.191, 0.225)	0.994 –	2239
National	Lugner	4.098 (3.975, 4.226)	4.45 (4.326, 4.568)	0.03 (0.023, 0.038)	0.188 (0.172, 0.203)	0.99 –	2239
National	Khol	4.15 (4.034, 4.276)	4.536 (4.419, 4.65)	0.213 (0.196, 0.229)	0.199 (0.182, 0.214)	0.958 –	2239

Note: *Gemeinde* observations except 23 election districts in Vienna. *Wahlkarten* (mail ballot aggregates) are separate observations. “2BL,” second-digit mean; “LastC,” last-digit mean; “C05s,” mean of variable indicating whether the last digit of the vote count is zero or five; “P05s,” mean of variable indicating whether the last digit of the rounded percentage of votes for the referent party or candidate is zero or five; “DipT,” p -value from test of unimodality; “Obs,” number of observations. Values in parentheses are nonparametric bootstrap confidence intervals. For description of the statistics see Hicken and Mebane (2015); Mebane (2015).

Table 2: Election Forensics Toolkit Statistics, Austria 2016, Round 2, *Gemeinden*

Level	Candidate	2BL	LastC	P05s	C05s	DipT	Obs
National	Hofer	4.25 (4.133, 4.366)	4.584 (4.463, 4.7)	0.201 (0.184, 0.218)	0.191 (0.176, 0.207)	0.959 –	2239
National	Van.der.Bellen	4.245 (4.12, 4.361)	4.447 (4.333, 4.569)	0.201 (0.184, 0.217)	0.194 (0.177, 0.209)	0.959 –	2239

Note: *Gemeinde* observations except 23 election districts in Vienna. *Wahlkarten* (mail ballot aggregates) are separate observations. “2BL,” second-digit mean; “LastC,” last-digit mean; “C05s,” mean of variable indicating whether the last digit of the vote count is zero or five; “P05s,” mean of variable indicating whether the last digit of the rounded percentage of votes for the referent party or candidate is zero or five; “DipT,” *p*-value from test of unimodality; “Obs,” number of observations. Values in parentheses are nonparametric bootstrap confidence intervals. For description of the statistics see Hicken and Mebane (2015); Mebane (2015).

Table 3: Election Forensics Toolkit Statistics, Austria 2016, Round 1, Districts

Level	Candidate	2BL	LastC	P05s	C05s	DipT	Obs
National	Turnout	4.53 (3.992, 5.051)	4.274 (3.838, 4.718)	0.205 (0.128, 0.274)	0.188 (0.12, 0.248)	0.46 –	117
National	Hofer	4.333 (3.821, 4.906)	4.538 (4.051, 5.06)	0.222 (0.145, 0.299)	0.197 (0.12, 0.265)	0.916 –	117
National	Van.der.Bellen	4.444 (3.957, 4.932)	4.427 (3.898, 4.983)	0.231 (0.145, 0.308)	0.171 (0.103, 0.239)	0.784 –	117
National	Griss	4.214 (3.701, 4.684)	4.368 (3.795, 4.949)	0.197 (0.12, 0.265)	0.197 (0.12, 0.265)	0.596 –	117
National	Hundstorfer	4.35 (3.804, 4.897)	4.615 (4.094, 5.162)	0.205 (0.128, 0.274)	0.12 (0.06, 0.179)	0.625 –	117
National	Khol	3.872 (3.342, 4.367)	4.419 (3.957, 4.931)	0.145 (0.077, 0.205)	0.179 (0.111, 0.248)	0.225 –	117
National	Lugner	3.735 (3.18, 4.282)	4.385 (3.872, 4.923)	0 (0, 0)	0.214 (0.137, 0.282)	0.993 –	117

Note: Election district observations comprising in-person *Gemeinden* and *Wahlkarten*. Using district observations is necessary because *Wahlkarten* observations do not include separate reports of the number of eligible voters. “2BL,” second-digit mean; “LastC,” last-digit mean; “C05s,” mean of variable indicating whether the last digit of the vote count is zero or five; “P05s,” mean of variable indicating whether the last digit of the rounded percentage of votes for the referent party or candidate is zero or five; “DipT,” *p*-value from test of unimodality; “Obs,” number of observations. Values in parentheses are nonparametric bootstrap confidence intervals. For description of the statistics see Hicken and Mebane (2015); Mebane (2015).

Table 4: Election Forensics Toolkit Statistics, Austria 2016, Round 1, Districts

Level	Candidate	2BL	LastC	P05s	C05s	DipT	Obs
National	Turnout	4.547 (3.983, 5.094)	5.137 (4.615, 5.632)	0.188 (0.111, 0.256)	0.171 (0.103, 0.239)	0.93 –	117
National	Van.der.Bellen	4.427 (3.906, 4.957)	3.991 (3.487, 4.461)	0.205 (0.128, 0.282)	0.179 (0.103, 0.239)	0.922 –	117
National	Hofer	4.111 (3.565, 4.658)	4.735 (4.257, 5.222)	0.205 (0.12, 0.274)	0.282 (0.197, 0.368)	0.922 –	117

Note: Election district observations comprising in-person *Gemeinden* and *Wahlkarten*. Using district observations is necessary because *Wahlkarten* observations do not include separate reports of the number of eligible voters. “2BL,” second-digit mean; “LastC,” last-digit mean; “C05s,” mean of variable indicating whether the last digit of the vote count is zero or five; “P05s,” mean of variable indicating whether the last digit of the rounded percentage of votes for the referent party or candidate is zero or five; “DipT,” p -value from test of unimodality; “Obs,” number of observations. Values in parentheses are nonparametric bootstrap confidence intervals. For description of the statistics see Hicken and Mebane (2015); Mebane (2015).

Table 5: Finite Mixture Model Parameter Estimates

Election	\hat{f}_i	\hat{f}_e	$\hat{\alpha}$	$\hat{\theta}$	$\hat{\tau}$	$\hat{\nu}$	LR	n
Austria 2016 President:								
round 1	0	0	—	—	.68	.35	0	117
round 2	.0184	0	.38	.17	.70	.47	25.514	117

Note: LR is the likelihood ratio test statistic for the hypothesis that there are no frauds (i.e., that $f_i = f_e = 0$). n is the number of election district (*Bezirke*) observations. For description of the statistics see Mebane (2016). $n = 117$ election district observations comprising in-person *Gemeinden* and *Wahlkarten*. Using district observations is necessary because *Wahlkarten* observations do not include separate reports of the number of eligible voters.

Table 6: Estimated Fraudulent Vote Counts and Proportions

Election	M_i	M_e	p_i	p_e	$p_i + p_e$
Austria 2016 President:					
round 1	0	0	0	0	0
round 2	3,870	0	.00087	0	.00087

Note: M_i is the estimated number of votes due to “incremental fraud.” M_e is the estimated number of votes due to “extreme fraud.” p_i and p_e are the proportions of “fraudulent” votes of each type. For description of the statistics see Mebane (2016).

References

- Hicken, Allen and Walter R. Mebane, Jr. 2015. "A Guide to Election Forensics." Working paper for IIE/USAID subaward #DFG-10-APS-UM, "Development of an Election Forensics Toolkit: Using Subnational Data to Detect Anomalies".
- Mebane, Jr., Walter R. 2015. "Election Forensics Toolkit DRG Center Working Paper." Working paper for IIE/USAID subaward #DFG-10-APS-UM, "Development of an Election Forensics Toolkit: Using Subnational Data to Detect Anomalies".
- Mebane, Jr., Walter R. 2016. "Election Forensics: Frauds Tests and Observation-level Frauds Probabilities." Paper presented at the 2016 Annual Meeting of the Midwest Political Science Association, Chicago, April 7–10, 2016.