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Errata for the paper "Optimization of the Gaussian and Jeffreys power priors with emphasis on the canonical parameters in the exponential family"

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This article is for errata of Ogasawara (2014), where bugs in the computer program for some of the theoretical values in Tables 2.1, 2.2, 2.4, 2.5 and 2.6 were found after publication. By this correction, the associated theoretical values have become somewhat closer to their corresponding simulated values. In the tables, the corrected values are shown with underscores.

Reference

Ogasawara, H. (2014). Optimization of the Gaussian and Jeffreys power priors with emphasis on the canonical parameters in the exponential family. *Behaviormetrika, 41,* 195-223.

Table 2.1 The powers minimizing the AMSEs assuming a correct model under correct or incorrect models in logistic regression

Methods	Correct model				Incorrect model	
	n = 50		*n* = 100		*n* = 50	
	minL	minT	minL	minT	minL	mint
Gaussian prior	2.16	3.08	1.65	1.84	3.68	6.91
Jeffreys prior	2.32	3.29	2.19	2.83	2.83	4.80
Pseudocounts	7.74	10.71	9.75	11.37	11.34	19.45

Note. minL = the power minimizing the AMSE of the linear predictor, minT = the power minimizing the total AMSE.

Table 2.2 Simulated and asymptotic standard errors under correct models

($n^{1/2}$ASE of $\hat{\beta}_i$ (not z or t) $=\alpha^{1/2}_{\text{ML}2}$)		$n = 50$						$n = 100$					
		$\beta_1 = 1.2$ (2.94)		$\beta_2 = .7$ (2.92)		$\beta_* = .1$ (2.44)		$\beta_1 = 1.2$ (3.31)		$\beta_2 = .7$ (2.41)		$\beta_* = .1$ (2.34)	
	ASE	SD	HASE	SD	HASE	SD	HASE	SD	HASE	SD	HASE	SD	HASE
z													
ML	1	1.30	1.18	1.19	1.14	1.15	1.10	1.09	1.08	1.08	1.07	1.05	1.04
G1	1	.80	.82	.81	.81	.88	.89	.84	.82	.92	.91	.94	.93
GminL	1	.62	*	.64	*	.73	.54	.75	.59	.85	.80	.88	.85
GminT	1	.54	*	.56	*	.66	*	.73	.50	.83	.76	.87	.83
J1	1	1.07	.1.06	1.04	1.04	1.02	1.02	1.02	1.03	1.01	1.02	1.01	1.00
JminL	1	.86	.87	.87	.89	.89	.89	.95	.97	.95	.95	.96	.96
JminT	1	.74	.71	.78	.77	.81	.78	.92	.93	.91	.92	.94	.93
P1	1	1.14	1.12	1.09	1.09	1.08	1.06	1.05	1.05	1.05	1.05	1.03	1.03
P3	1	.97	1.01	.95	.98	.97	.98	.99	1.00	1.00	1.01	.99	.99
PminL	1	.74	.65	.76	.66	.81	.76	.82	.78	.86	.84	.89	.87
PminT	1	.66	.24	.68	.33	.74	.57	.79	.72	.83	.79	.87	.83
t													
ML	1	.97	1.00	.98	1.00	.99	1.00	1.00	1.01	.99	1.00	1.00	1.00
G1	1	.84	.79	.82	.76	.85	.82	.89	.87	.92	.91	.92	.91
GminL	1	.74	.45	.71	.29	.75	.53	.85	.77	.88	.84	.89	.85
GminT	1	.68	*	.64	*	.69	*	.83	.74	.87	.82	.88	.83
J1	1	.95	.97	.94	.96	.94	.94	.99	1.01	.97	.98	.97	.97
JminL	1	.90	.93	.89	.90	.87	.84	.99	1.01	.94	.95	.94	.94
JminT	1	.86	.91	.84	.86	.82	.77	.98	1.01	.93	.93	.93	.92
P1	1	.96	.97	.96	.97	.96	.97	.99	.99	.98	.99	.98	.98
P3	1	.92	.92	.91	.91	.91	.90	.96	.97	.96	.96	.96	.96
PminL	1	.84	.80	.81	.74	.81	.72	.90	.90	.89	.88	.89	.86
PminT	1	.79	.71	.76	.62	.76	.59	.89	.88	.87	.85	.87	.83

Note. β_* = intercept, ASE of z and $t = (\alpha^{(v)}_{\text{ML}2})^{1/2} = 1 (v = z, t)$, SD = the standard deviations from simulations, HASE = $(1 + n^{-1}\alpha^{(v)}_{\text{ML}\Delta 2})^{1/2} (v = z, t)$, G = Gaussian, J = Jeffreys, P = pseudocounts. The asterisks indicate that the values are imaginary. See also the footnote of Table 2.1.

Table 2.4 Simulated and asymptotic skewnesses and kurtoses under correct models

	Sim. skewness (Th. skewness)						Sim. kurtosis (Th. kurtosis)					
	$n = 50$			$n = 100$			$n = 50$			$n = 100$		
	β_1	β_2	β_*	β_1	β_2	β_*	β_1	β_2	β_*	β_1	β_2	β_*
z												
(Th.)	(4.7	3.3	.3)	(5.2	3.4	.8)	(57	39	19)	(66	45	16)
ML	28.8	11.6	2.7	7.7	5.1	1.2	2491	517	159	124	75	26
G1	.9	.7	.0	1.8	1.7	.3	1	2	3	10	13	7
GminT	-.0	.0	-.0	.7	.8	.1	-0	-0	-0	2	47	3
J1	9.1	5.0	.8	6.2	4.1	1.0	248	102	43	89	54	21
JminT	1.4	1.2	-.0	4.2	2.7	.7	9	10	5	50	30	13
P1	10.0	5.5	.9	6.6	4.4	1.1	216	100	46	97	60	22
P3	3.8	2.4	.2	4.9	3.3	.8	38	25	15	60	39	17
PminT	.4	.3	-.0	1.7	1.2	.3	1	1	1	11	9	5
t												
(Th.)	(-2.3	-1.6	-.1)	(-2.6	-1.7	-.4)	(-6.7	-11.1	-14.5)	(9.7	-4.5	-11.7)
ML	-2.5	-1.7	-.3	-2.6	-1.7	-.3	-4.9	-11.7	-16.2	1.2	-10.9	-12.1
G1	-1.6	-1.0	-.1	-2.2	-1.4	-.3	-.9	-3.8	-6.3	3.0	-7.1	-8.0
GminT	-.8	-.4	-.0	-1.8	-1.2	-.2	-.2	-.9	-1.8	2.9	-5.6	-5.9
J1	-1.7	-1.1	-.1	-2.2	-1.3	-.3	-7.0	-10.1	-10.6	-2.7	-10.3	-10.1
JminT	-.5	-.2	-.0	-1.5	-.7	-.1	-4.6	-5.3	-4.2	-7.8	-8.5	-7.2
P1	-2.2	-1.4	-.2	-2.5	-1.6	-.3	-4.6	-9.9	-13.1	1.1	-10.3	-11.2
P3	-1.8	-1.1	-.1	-2.3	-1.4	-.3	-4.0	-7.3	-9.0	.9	-9.2	-9.6
PminT	-.8	-.5	-.0	-1.6	-.9	-.2	-2.2	-2.8	-2.8	.2	-6.0	-5.2

Note. Th. skewness $= \alpha_{\mathrm{ML3}}^{(v)}$, Th. kurtosis $= \alpha_{\mathrm{ML4}}^{(v)} \ (v = z, t)$. See also the footnotes given earlier.

Table 2.5 Simulated and asymptotic root mean square errors (RMSEs) under correct models

	$n = 50$						$n = 100$					
	β_1		β_*		L.P.		β_1		β_*		L.P.	
	Sim.	Th.	Sim.	Th.	Sim.	Th.	Sim.	Th.	Sim.	Th.	Sim.	Th.
RMSE												
ML	.564	.505	.399	.381	.943	.793	.367	.364	.245	.244	.623	.597
G1	.345	.348	.303	.307	.554	.576	.291	.284	.220	.218	.494	.525
GminT	.405	.346	.229	*	.653	.287	.300	.272	.206	.198	.506	.504
J1	.444	.438	.353	.351	.736	.708	.339	.341	.235	.235	.579	.573
JminT	.403	.417	.283	.273	.669	.618	.326	.332	.220	.219	.561	.555
P1	.484	.473	.372	.368	.793	.752	.351	.351	.240	.240	.596	.585
P3	.402	.418	.335	.340	.639	.676	.326	.330	.232	.232	.554	.564
PminT	.393	.375	.256	.202	.648	.521	.307	.299	.204	.197	.520	.522

Note. The asymptotic RMSE (Th. RMSE) $= \{n^{-1}\alpha_{\mathrm{ML2}} + n^{-2}(\alpha_{\mathrm{ML\Delta 2}} + \alpha_{\mathrm{ML1}}^2)\}^{1/2}$,

L.P. = linear predictor. The asterisk indicates that the value is imaginary. See also the footnotes given earlier.

Table 2.5 (continued)

	$n = 50$						$n = 100$					
	β_1		β_*		L.P.		β_1		β_*		L.P.	
	Sim.	Th.	Sim.	Th.	Sim.	Th.	Sim.	Th.	Sim.	Th.	Sim.	Th.
$\alpha_{W\Delta 2}$												
ML	297	165	97	64	869	534	197	184	54	46	545	566
G1	-156	-144	-70	-64	-459	-369	-319	-362	-67	-73	-956	-1040
GminT	-307	-785	-169	-329	-852	-2248	-517	-822	-132	-174	-1533	-2393
J1	62	49	13	10	191	214	53	67	7	5	160	255
JminT	-193	-216	-101	-115	-555	-518	-175	-146	-67	-71	-464	-313
P1	133	112	47	39	350	361	114	121	31	28	301	378
P3	-28	5	-18	-10	-146	14	-29	-48	-10	-10	-118	4
PminT	-243	-406	-137	-201	-758	-1321	-414	-531	-136	-166	-1245	-1565
α^2_{W1}												
ML	68	42	1	0.5	193	121	54	46	1	1	150	131
G1	24	15	0	0.0	62	39	74	75	3	3	207	207
GminT	286	653	1	4	755	1766	325	466	11	18	907	1304
J1	0	0	0	0	0	0	0	0	0	0	0	0
JminT	169	219	2	2	510	634	144	153	3	3	416	436
P1	22	17	0	0.2	58	47	23	21	0	0.4	62	59
P3	1	0.2	0	0.0	5	2	0	0.0	0	0.0	0	0.0
PminT	199	327	2	4	644	1104	262	334	4	6	760	967

Table 2.6 Simulated and asymptotic RMSEs under an incorrect model (n = 50)

	$\beta_1 \doteq .801$		$\beta_2 \doteq .479$		$\beta_* \doteq .117$		L.P.	
	Sim.	Th.	Sim.	Th.	Sim.	Th.	Sim.	Th.
ML	.283	.276	.245	.241	.222	.220	.440	.415
G1	.232	.169	.200	.090	.192	.143	.355	.216
GminT	.338	.296	.196	*	.124	*	.554	*
J1	.251	.223	.221	.184	.205	.183	.388	.326
J3	.259	.182	.210	.016	.179	.064	.419	.165
JminT	.301	.245	.225	*	.161	*	.507	.123
P1	.267	.256	.233	.219	.215	.205	.410	.381
P3	.247	.217	.216	.171	.202	.173	.374	.310
PminT	.307	.239	.221	*	.144	*	.525	*

Note. The asterisks indicate that the values are imaginary.

See also the footnotes given earlier.