

Simulation Tables

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Table 1: Model results for simulated data with $n = 1,000$, $J = 4$, $p = 2$, $K = 3$, $r = 2$. 1,000 iterations were run with a burn in of 100. Missingness mechanism was MAR and $P(\text{miss}) = 0$. Model results for the multivariate skew normal (MSN) and multivariate normal (MN) mixtures are presented.

Component	Param.	Class 1			Class 2			Class 3		
		True	MSN Est. (95% CrI)	MN Est. (95% CrI)	True	MSN Est. (95% CrI)	MN Est. (95% CrI)	True	MSN Est. (95% CrI)	MN Est. (95% CrI)
MVSN Regression	β_{11}	11	11.23 (10.8, 11.7)	10.92 (10.68, 11.16)	-5	-4.93 (-5.44, -4.47)	-5 (-5.22, -4.76)	-10	-9.72 (-10.72, -9.03)	-9.83 (-10.2, -9.42)
	β_{21}	12	12.07 (11.96, 12.17)	12.02 (11.88, 12.16)	-4	-3.99 (-4.09, -3.9)	-3.99 (-4.09, -3.88)	-11	-10.92 (-11.05, -10.77)	-10.84 (-11.05, -10.63)
	β_{31}	13	13.69 (13.16, 13.98)	13 (12.73, 13.29)	-3	-2.91 (-3.69, -2.31)	-2.91 (-3.12, -2.69)	-12	-12.21 (-13.03, -11.11)	-11.89 (-12.32, -11.45)
	β_{41}	14	14.02 (13.92, 14.13)	13.98 (13.81, 14.12)	-2	-2 (-2.1, -1.9)	-2 (-2.1, -1.91)	-13	-12.9 (-13.05, -12.74)	-12.8 (-13.05, -12.55)
	β_{12}	2	1.92 (1.57, 2.41)	1.98 (1.77, 2.18)	5	4.78 (4.24, 5.47)	4.94 (4.71, 5.17)	-2	-2.08 (-2.75, -1.22)	-1.94 (-2.25, -1.62)
	β_{22}	2	2.01 (1.9, 2.1)	2 (1.9, 2.1)	5	5 (4.9, 5.1)	5 (4.88, 5.1)	-2	-1.84 (-1.99, -1.69)	-1.83 (-2, -1.66)
	β_{32}	2	2.28 (1.7, 2.6)	1.94 (1.74, 2.16)	5	4.41 (4.03, 5.24)	4.88 (4.67, 5.11)	-2	-2.01 (-2.81, -1.43)	-1.98 (-2.28, -1.69)
	β_{42}	2	1.92 (1.82, 2.02)	1.92 (1.82, 2.02)	5	4.98 (4.88, 5.09)	4.97 (4.86, 5.08)	-2	-2 (-2.14, -1.87)	-2 (-2.14, -1.86)
	Ω_{11}	1	1.04 (0.86, 1.48)	1.63 (1.42, 1.89)	1	1 (0.83, 1.36)	1.04 (0.89, 1.24)	1	1.14 (0.84, 1.97)	2.14 (1.77, 2.67)
	Ω_{12}	0.5	0.6 (0.36, 1.04)	1.24 (1.04, 1.49)	0.5	0.5 (0.31, 0.87)	0.49 (0.37, 0.62)	0.5	0.67 (0.23, 1.56)	2 (1.59, 2.6)
	Ω_{13}	0.25	0.22 (0.09, 0.48)	0.33 (0.2, 0.47)	0.25	0.2 (-0.01, 0.4)	0.08 (-0.03, 0.2)	0.25	0.31 (-0.06, 0.89)	0.53 (0.29, 0.82)
	Ω_{14}	0.12	0.11 (-0.06, 0.4)	0.17 (0.04, 0.31)	0.12	0.07 (-0.21, 0.29)	-0.02 (-0.15, 0.09)	0.12	0.15 (-0.19, 0.65)	0.38 (0.18, 0.64)
	Ω_{22}	1	1.42 (1.03, 1.95)	1.95 (1.71, 2.23)	1	1.13 (0.88, 1.64)	0.99 (0.86, 1.16)	1	1.44 (1.02, 2.37)	2.9 (2.38, 3.63)
	Ω_{23}	0.5	0.47 (0.27, 0.82)	0.64 (0.5, 0.8)	0.5	0.59 (0.38, 1.03)	0.47 (0.34, 0.61)	0.5	0.79 (0.47, 1.45)	0.92 (0.61, 1.28)
	Ω_{24}	0.25	0.42 (0.12, 0.77)	0.38 (0.24, 0.54)	0.25	0.18 (-0.11, 0.51)	0.13 (0.01, 0.25)	0.25	0.44 (0.11, 0.9)	0.64 (0.4, 0.95)
	Ω_{33}	1	1 (0.86, 1.25)	1.01 (0.88, 1.16)	1	1.19 (0.98, 1.69)	1.19 (1.03, 1.4)	1	1.32 (0.99, 1.96)	1.2 (0.97, 1.49)
	Ω_{34}	0.5	0.48 (0.32, 0.67)	0.51 (0.41, 0.64)	0.5	0.64 (0.35, 1.09)	0.65 (0.52, 0.81)	0.5	0.66 (0.41, 1.12)	0.63 (0.47, 0.82)
	Ω_{44}	1	1.07 (0.88, 1.42)	0.99 (0.86, 1.14)	1	1.32 (0.94, 1.9)	1.12 (0.97, 1.34)	1	1.06 (0.81, 1.6)	1.01 (0.82, 1.23)
	α_1	0	0.05 (-0.89, 0.61)	0 (0, 0)	0	-0.17 (-0.79, 0.65)	0 (0, 0)	0	-0.55 (-1.8, 1.11)	0 (0, 0)
	α_2	0	-1.24 (-2.02, 0.17)	0 (0, 0)	0	-0.01 (-1.4, 1.36)	0 (0, 0)	0	0.22 (-1.09, 1.95)	0 (0, 0)
	α_3	0	0.96 (-0.41, 1.55)	0 (0, 0)	0	0.15 (-1.46, 1.04)	0 (0, 0)	0	0.11 (-1.13, 1.08)	0 (0, 0)
	α_4	0	-0.67 (-1.41, 0.31)	0 (0, 0)	0	0.82 (-0.67, 1.82)	0 (0, 0)	0	-0.12 (-0.91, 1.53)	0 (0, 0)
Multinom.	δ_{11}	-0.22	-0.01 (-0.22, 0.18)	0.09 (-0.12, 0.32)	-0.22	-0.01 (-0.22, 0.18)	0.09 (-0.12, 0.32)	-0.22	-0.01 (-0.22, 0.18)	0.09 (-0.12, 0.32)
	δ_{12}	-0.04	-0.23 (-0.52, 0.03)	0.79 (0.49, 1.08)	-0.04	-0.23 (-0.52, 0.03)	0.79 (0.49, 1.08)	-0.04	-0.23 (-0.52, 0.03)	0.79 (0.49, 1.08)
	δ_{21}	-0.67	-0.57 (-0.8, -0.34)	0.03 (-0.17, 0.26)	-0.67	-0.57 (-0.8, -0.34)	0.03 (-0.17, 0.26)	-0.67	-0.57 (-0.8, -0.34)	0.03 (-0.17, 0.26)
	δ_{22}	-0.24	-0.35 (-0.67, -0.01)	-0.59 (-0.95, -0.21)	-0.24	-0.35 (-0.67, -0.01)	-0.59 (-0.95, -0.21)	-0.24	-0.35 (-0.67, -0.01)	-0.59 (-0.95, -0.21)
Clustering	π_l	0.43	0.42 (0.41, 0.43)	0.42 (0.39, 0.45)	0.37	0.37 (0.36, 0.38)	0.37 (0.34, 0.4)	0.2	0.2 (0.2, 0.21)	0.21 (0.18, 0.23)