

Supplementary information of the paper
*Tempered Expectation-Maximization algorithm for the estimation of
discrete latent variable models*

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S1. Complete results of the simulated scenarios

We report the complete results of the simulation studies comparing EM algorithm with T-EM algorithms with optimally tuned tempering profiles. These results are thoroughly commented in Section 4 of the main paper. The scenarios analyzed are summarized in Tables 1, 2, and 3.

Table 1: Description of the scenarios for the LC model: sample size (n), response variables (r), categories (c), and latent classes (k)

Scenario	n	r	c	k
A	500	6	3	3
B	1000	6	3	3
C	500	12	3	3
D	500	6	6	3
E	500	6	3	6

Specifically:

- Tables 4 to 8 pertain to the estimation of LC models when the latent structure is correctly specified. They refer to simulated scenarios from A to E presented in Table 1;
- Tables 9 to 13 pertain to the estimation of LC models when the latent structure is not correctly specified. They refer to simulated scenarios from A to E presented in Table 1;

Table 2: Description of the scenarios for the HM model with categorical response variables: sample size (n), number of response variables (r), categories (c), time occasions (T), and latent states (k)

Scenario	n	r	c	T	k
A	500	6	3	5	3
B	1000	6	3	5	3
C	500	12	3	5	3
D	500	6	6	5	3
E	500	6	3	10	3
F	500	6	3	5	6

Table 3: Description of the scenarios for the HM model with continuous response variables: sample size (n), number of response variables (r), time occasions (T), and latent states (k)

Scenario	n	r	T	k
A	500	6	5	3
B	1000	6	5	3
C	500	12	5	3
D	500	6	10	3
E	500	6	5	6

- Tables 14 to 19 pertain to the estimation of HM models with categorical response variables when the latent structure is correctly specified. They refer to simulated scenarios from A to F presented in Table 2;
- Tables 20 to 25 pertain to the estimation of HM models with categorical response variables when the latent structure is not correctly specified. They refer to simulated scenarios from A to F presented in Table 2;
- Tables 26 to 30 pertain to the estimation of HM models with continuous response variables when the latent structure is correctly specified. They refer to simulated scenarios from A to E presented in Table 3;
- Tables 31 to 35 pertain to the estimation of HM models with continuous response variables when the latent structure is not correctly specified. They refer to simulated scenarios from A to E presented in Table 3.

In every table, each row refers to a specific sample among the 50 analyzed for each scenario; values in bold highlight the best results.

Table 4: Percentage (*Perc.*) of global maximum with mean distance from it (*Dist*), *Mean* and *Median* of maximized log-likelihood values, using EM and M-T-EM algorithms under simulated **scenario A** presented in Table 16 of the paper for the LC model when the latent structure is correctly specified. Each row corresponds to a specific sample, values in bold highlight the best results

Perc. [Dist.] (Glob. Max)		Mean		Median	
EM	M-T-EM	EM	M-T-EM	EM	M-T-EM
20% [0.00]	100% [0.00]	-2,834.66	-2,834.66	-2,834.66	-2,834.66
100% [0.00]	100% [0.00]	-2,824.72	-2,824.71	-2,824.72	-2,824.71
71% [0.00]	100% [0.00]	-2,878.82	-2,878.82	-2,878.82	-2,878.82
86% [0.00]	100% [0.00]	-2,852.28	-2,852.27	-2,852.28	-2,852.27
99% [0.00]	100% [0.00]	-2,819.62	-2,819.62	-2,819.62	-2,819.62
95% [0.00]	100% [0.00]	-2,845.87	-2,845.87	-2,845.87	-2,845.87
39% [0.00]	100% [0.00]	-2,816.81	-2,816.80	-2,816.81	-2,816.80
79% [0.00]	100% [0.00]	-2,813.10	-2,813.09	-2,813.10	-2,813.09
33% [0.13]	100% [0.00]	-2,839.85	-2,839.73	-2,839.73	-2,839.73
67% [0.00]	100% [0.00]	-2,788.88	-2,788.88	-2,788.88	-2,788.88
78% [0.00]	100% [0.00]	-2,833.65	-2,833.64	-2,833.65	-2,833.64
49% [0.00]	100% [0.00]	-2,807.66	-2,807.66	-2,807.66	-2,807.66
88% [0.00]	100% [0.00]	-2,792.79	-2,792.78	-2,792.79	-2,792.78
75% [1.53]	100% [0.00]	-2,800.08	-2,798.55	-2,798.55	-2,798.55
100% [0.00]	100% [0.00]	-2,824.90	-2,824.90	-2,824.90	-2,824.90
88% [0.00]	100% [0.00]	-2,849.91	-2,849.91	-2,849.91	-2,849.91
98% [0.00]	100% [0.00]	-2,876.81	-2,876.81	-2,876.81	-2,876.81
46% [0.00]	100% [0.00]	-2,845.81	-2,845.81	-2,845.81	-2,845.81
100% [0.00]	100% [0.00]	-2,790.03	-2,790.03	-2,790.03	-2,790.03
92% [0.00]	100% [0.00]	-2,817.44	-2,817.44	-2,817.44	-2,817.44
72% [0.00]	100% [0.00]	-2,860.19	-2,860.19	-2,860.19	-2,860.19
93% [0.00]	100% [0.00]	-2,853.09	-2,853.09	-2,853.09	-2,853.09
100% [0.00]	100% [0.00]	-2,824.99	-2,824.99	-2,824.99	-2,824.99
77% [0.00]	100% [0.00]	-2,852.05	-2,852.05	-2,852.06	-2,852.05
87% [0.00]	100% [0.00]	-2,846.37	-2,846.37	-2,846.37	-2,846.37
74% [0.00]	100% [0.00]	-2,838.76	-2,838.76	-2,838.76	-2,838.76
87% [0.00]	100% [0.00]	-2,837.62	-2,837.61	-2,837.62	-2,837.61
87% [0.00]	100% [0.00]	-2,815.87	-2,815.87	-2,815.87	-2,815.87
98% [0.00]	100% [0.00]	-2,830.20	-2,830.20	-2,830.20	-2,830.20
69% [0.16]	100% [0.00]	-2,865.46	-2,865.31	-2,865.31	-2,865.31
68% [0.00]	100% [0.00]	-2,869.17	-2,869.17	-2,869.17	-2,869.17
100% [0.00]	100% [0.00]	-2,867.49	-2,867.49	-2,867.49	-2,867.49
99% [0.00]	100% [0.00]	-2,842.11	-2,842.11	-2,842.11	-2,842.11
97% [0.00]	100% [0.00]	-2,858.87	-2,858.87	-2,858.87	-2,858.87
74% [0.00]	100% [0.00]	-2,831.52	-2,831.51	-2,831.52	-2,831.51
43% [0.00]	100% [0.00]	-2,848.43	-2,848.43	-2,848.43	-2,848.43
100% [0.00]	100% [0.00]	-2,790.36	-2,790.36	-2,790.36	-2,790.36
89% [0.00]	100% [0.00]	-2,864.10	-2,864.10	-2,864.10	-2,864.10
99% [0.00]	100% [0.00]	-2,810.70	-2,810.70	-2,810.70	-2,810.70
99% [0.00]	100% [0.00]	-2,889.11	-2,889.10	-2,889.11	-2,889.10
100% [0.00]	100% [0.00]	-2,800.98	-2,800.98	-2,800.98	-2,800.98
100% [0.00]	100% [0.00]	-2,826.85	-2,826.85	-2,826.85	-2,826.85
97% [0.00]	100% [0.00]	-2,825.15	-2,825.15	-2,825.15	-2,825.15
64% [0.00]	100% [0.00]	-2,854.62	-2,854.62	-2,854.62	-2,854.62
56% [0.00]	100% [0.00]	-2,811.55	-2,811.55	-2,811.55	-2,811.55
99% [0.00]	100% [0.00]	-2,780.46	-2,780.46	-2,780.46	-2,780.46
99% [1.73]	100% [0.00]	-2,824.00	-2,822.28	-2,822.28	-2,822.28
100% [0.00]	100% [0.00]	-2,821.76	-2,821.76	-2,821.76	-2,821.76
9% [0.00]	28% [0.00]	-2,855.59	-2,855.59	-2,855.59	-2,855.59
99% [0.21]	100% [0.00]	-2,837.96	-2,837.75	-2,837.75	-2,837.75

Table 5: Percentage (*Perc.*) of global maximum with mean distance from it (*Dist*), *Mean* and *Median* of maximized log-likelihood values, using EM and M-T-EM algorithms under simulated **scenario B** presented in Table 16 of the paper for the LC model when the latent structure is correctly specified. Each row corresponds to a specific sample, values in bold highlight the best results

Perc. [Dist.] (Glob. Max)		Mean		Median	
EM	M-T-EM	EM	M-T-EM	EM	M-T-EM
60% [0.01]	100% [0.00]	-5,799.06	-5,799.05	-5,799.06	-5,799.05
86% [2.72]	100% [0.00]	-5,700.58	-5,697.85	-5,697.86	-5,697.85
79% [0.00]	100% [0.00]	-5,687.67	-5,687.67	-5,687.67	-5,687.67
94% [0.00]	100% [0.00]	-5,711.96	-5,711.96	-5,711.96	-5,711.96
100% [0.00]	100% [0.00]	-5,794.92	-5,794.91	-5,794.92	-5,794.91
37% [0.01]	100% [0.00]	-5,817.09	-5,817.08	-5,817.09	-5,817.08
81% [0.00]	100% [0.00]	-5,724.06	-5,724.06	-5,724.06	-5,724.06
53% [0.01]	100% [0.00]	-5,742.57	-5,742.57	-5,742.57	-5,742.57
93% [0.00]	100% [0.00]	-5,640.37	-5,640.36	-5,640.37	-5,640.36
97% [0.00]	100% [0.00]	-5,671.04	-5,671.04	-5,671.04	-5,671.04
100% [0.00]	100% [0.00]	-5,681.67	-5,681.66	-5,681.67	-5,681.66
95% [0.00]	100% [0.00]	-5,699.42	-5,699.41	-5,699.42	-5,699.41
93% [0.00]	100% [0.00]	-5,731.21	-5,731.20	-5,731.21	-5,731.20
100% [0.00]	100% [0.00]	-5,590.55	-5,590.54	-5,590.55	-5,590.54
60% [2.52]	100% [0.00]	-5,802.03	-5,799.51	-5,799.51	-5,799.51
96% [0.00]	100% [0.00]	-5,661.15	-5,661.14	-5,661.15	-5,661.14
86% [0.00]	100% [0.00]	-5,801.51	-5,801.51	-5,801.51	-5,801.51
96% [0.00]	100% [0.00]	-5,756.37	-5,756.37	-5,756.37	-5,756.37
73% [0.00]	100% [0.00]	-5,750.56	-5,750.56	-5,750.56	-5,750.56
16% [0.01]	94% [0.00]	-5,716.86	-5,716.85	-5,716.86	-5,716.85
27% [0.01]	100% [0.00]	-5,787.80	-5,787.80	-5,787.80	-5,787.80
54% [0.01]	100% [0.00]	-5,713.33	-5,713.32	-5,713.33	-5,713.32
42% [0.01]	100% [0.00]	-5,770.35	-5,770.35	-5,770.35	-5,770.35
98% [0.00]	100% [0.00]	-5,676.60	-5,676.60	-5,676.60	-5,676.60
96% [0.00]	100% [0.00]	-5,668.46	-5,668.46	-5,668.46	-5,668.46
59% [0.01]	100% [0.00]	-5,707.79	-5,707.78	-5,707.79	-5,707.78
90% [0.00]	100% [0.00]	-5,757.14	-5,757.14	-5,757.14	-5,757.14
22% [0.01]	100% [0.00]	-5,742.85	-5,742.85	-5,742.85	-5,742.84
98% [0.00]	100% [0.00]	-5,648.57	-5,648.56	-5,648.57	-5,648.56
80% [0.00]	100% [0.00]	-5,771.68	-5,771.67	-5,771.68	-5,771.67
87% [0.00]	100% [0.00]	-5,723.88	-5,723.88	-5,723.88	-5,723.88
95% [0.00]	100% [0.00]	-5,726.17	-5,726.17	-5,726.17	-5,726.17
70% [0.00]	100% [0.00]	-5,618.16	-5,618.16	-5,618.16	-5,618.16
83% [0.00]	100% [0.00]	-5,715.68	-5,715.67	-5,715.68	-5,715.67
27% [0.01]	100% [0.00]	-5,669.16	-5,669.15	-5,669.16	-5,669.15
60% [0.01]	100% [0.00]	-5,697.83	-5,697.83	-5,697.83	-5,697.83
100% [0.00]	100% [0.00]	-5,760.91	-5,760.91	-5,760.91	-5,760.91
80% [0.00]	100% [0.00]	-5,669.51	-5,669.51	-5,669.51	-5,669.51
100% [0.00]	100% [0.00]	-5,659.50	-5,659.50	-5,659.50	-5,659.50
100% [0.00]	100% [0.00]	-5,636.65	-5,636.65	-5,636.65	-5,636.65
100% [0.00]	100% [0.00]	-5,665.49	-5,665.49	-5,665.49	-5,665.49
87% [0.00]	100% [0.00]	-5,606.63	-5,606.63	-5,606.63	-5,606.63
100% [0.00]	100% [0.00]	-5,725.14	-5,725.14	-5,725.14	-5,725.14
69% [0.00]	100% [0.00]	-5,670.31	-5,670.30	-5,670.31	-5,670.30
99% [0.00]	100% [0.00]	-5,649.20	-5,649.20	-5,649.20	-5,649.20
45% [0.01]	100% [0.00]	-5,727.82	-5,727.81	-5,727.82	-5,727.81
16% [0.01]	100% [0.00]	-5,760.00	-5,759.99	-5,760.00	-5,759.99
58% [0.01]	100% [0.00]	-5,759.48	-5,759.48	-5,759.48	-5,759.48
71% [0.01]	100% [0.00]	-5,739.12	-5,739.12	-5,739.12	-5,739.12
43% [0.01]	100% [0.00]	-5,703.48	-5,703.47	-5,703.48	-5,703.47

Table 6: Percentage (*Perc.*) of global maximum with mean distance from it (*Dist*), *Mean* and *Median* of maximized log-likelihood values, using EM and M-T-EM algorithms under simulated **scenario C** presented in Table 16 of the paper for the LC model when the latent structure is correctly specified. Each row corresponds to a specific sample, values in bold highlight the best results

Perc. [Dist.] (Glob. Max)		Mean		Median	
EM	M-T-EM	EM	M-T-EM	EM	M-T-EM
98% [9.74]	100% [0.00]	-5,319.60	-5,309.86	-5,309.86	-5,309.86
99% [4.66]	100% [0.00]	-5,257.38	-5,252.72	-5,252.72	-5,252.72
98% [8.49]	100% [0.00]	-5,412.87	-5,404.37	-5,404.37	-5,404.37
99% [4.47]	100% [0.00]	-5,395.27	-5,390.80	-5,390.80	-5,390.80
100% [0.00]	100% [0.00]	-5,374.34	-5,374.34	-5,374.34	-5,374.34
100% [0.00]	100% [0.00]	-5,270.07	-5,270.07	-5,270.07	-5,270.07
100% [0.00]	100% [0.00]	-5,387.86	-5,387.86	-5,387.86	-5,387.86
100% [0.00]	100% [0.00]	-5,355.42	-5,355.42	-5,355.42	-5,355.42
97% [13.72]	100% [0.00]	-5,293.59	-5,279.87	-5,279.87	-5,279.87
99% [4.68]	100% [0.00]	-5,359.05	-5,354.37	-5,354.37	-5,354.37
100% [0.00]	100% [0.00]	-5,328.91	-5,328.91	-5,328.91	-5,328.91
100% [0.00]	100% [0.00]	-5,391.62	-5,391.62	-5,391.62	-5,391.62
96% [16.37]	100% [0.00]	-5,392.29	-5,375.93	-5,375.93	-5,375.93
99% [3.98]	100% [0.00]	-5,376.82	-5,372.84	-5,372.84	-5,372.84
99% [4.35]	100% [0.00]	-5,329.00	-5,324.65	-5,324.65	-5,324.65
99% [4.52]	100% [0.00]	-5,292.07	-5,287.55	-5,287.55	-5,287.55
100% [0.00]	100% [0.00]	-5,287.03	-5,287.03	-5,287.03	-5,287.03
98% [5.46]	100% [0.00]	-5,311.77	-5,306.31	-5,306.31	-5,306.31
99% [3.88]	100% [0.00]	-5,367.39	-5,363.50	-5,363.50	-5,363.50
99% [4.27]	100% [0.00]	-5,346.63	-5,342.36	-5,342.36	-5,342.36
97% [13.43]	100% [0.00]	-5,381.35	-5,367.92	-5,367.92	-5,367.92
100% [0.00]	100% [0.00]	-5,327.60	-5,327.60	-5,327.60	-5,327.60
96% [20.09]	100% [0.00]	-5,356.98	-5,336.89	-5,336.89	-5,336.89
99% [4.39]	100% [0.00]	-5,299.24	-5,294.85	-5,294.85	-5,294.85
99% [0.16]	100% [0.00]	-5,298.18	-5,298.02	-5,298.02	-5,298.02
100% [0.00]	100% [0.00]	-5,370.02	-5,370.02	-5,370.02	-5,370.02
97% [13.92]	100% [0.00]	-5,365.44	-5,351.52	-5,351.52	-5,351.52
100% [0.00]	100% [0.00]	-5,406.18	-5,406.18	-5,406.18	-5,406.18
95% [23.60]	100% [0.00]	-5,305.40	-5,281.80	-5,281.80	-5,281.80
100% [0.00]	100% [0.00]	-5,321.19	-5,321.19	-5,321.19	-5,321.19
99% [4.93]	100% [0.00]	-5,369.05	-5,364.12	-5,364.12	-5,364.12
100% [0.00]	100% [0.00]	-5,309.96	-5,309.96	-5,309.96	-5,309.96
100% [0.00]	100% [0.00]	-5,247.21	-5,247.21	-5,247.21	-5,247.21
100% [0.00]	100% [0.00]	-5,319.54	-5,319.54	-5,319.54	-5,319.54
100% [0.00]	100% [0.00]	-5,352.71	-5,352.71	-5,352.71	-5,352.71
99% [4.38]	100% [0.00]	-5,431.96	-5,427.58	-5,427.58	-5,427.58
100% [0.00]	100% [0.00]	-5,292.58	-5,292.58	-5,292.58	-5,292.58
99% [0.94]	100% [0.00]	-5,261.73	-5,260.80	-5,260.80	-5,260.80
91% [46.14]	100% [0.00]	-5,228.26	-5,182.13	-5,182.13	-5,182.13
99% [4.38]	100% [0.00]	-5,356.29	-5,351.91	-5,351.91	-5,351.91
98% [8.73]	100% [0.00]	-5,417.83	-5,409.10	-5,409.10	-5,409.10
98% [8.44]	100% [0.00]	-5,349.64	-5,341.20	-5,341.20	-5,341.20
98% [9.76]	100% [0.00]	-5,346.60	-5,336.84	-5,336.84	-5,336.84
99% [4.27]	100% [0.00]	-5,276.72	-5,272.45	-5,272.45	-5,272.45
99% [4.85]	100% [0.00]	-5,340.17	-5,335.32	-5,335.32	-5,335.32
97% [17.09]	100% [0.00]	-5,289.61	-5,272.53	-5,272.53	-5,272.53
98% [8.15]	100% [0.00]	-5,377.32	-5,369.17	-5,369.17	-5,369.17
98% [8.27]	99% [4.11]	-5,374.43	-5,370.28	-5,366.16	-5,366.16
99% [4.09]	100% [0.00]	-5,390.27	-5,386.18	-5,386.18	-5,386.18
94% [26.48]	100% [0.00]	-5,381.03	-5,354.55	-5,354.55	-5,354.55

Table 7: Percentage (*Perc.*) of global maximum with mean distance from it (*Dist*), *Mean* and *Median* of maximized log-likelihood values, using EM and M-T-EM algorithms under simulated **scenario D** presented in Table 16 of the paper for the LC model when the latent structure is correctly specified. Each row corresponds to a specific sample, values in bold highlight the best results

Perc. [Dist.] (Glob. Max)		Mean		Median	
EM	M-T-EM	EM	M-T-EM	EM	M-T-EM
95% [31.13]	100% [0.00]	-3,608.78	-3,577.65	-3,577.65	-3,577.65
21% [22.42]	89% [0.00]	-3,581.29	-3,558.88	-3,558.88	-3,558.88
98% [12.74]	100% [0.00]	-3,620.17	-3,607.43	-3,607.43	-3,607.43
49% [19.17]	49% [0.00]	-3,698.64	-3,679.48	-3,679.48	-3,679.48
98% [12.74]	100% [0.00]	-3,638.32	-3,625.58	-3,625.58	-3,625.58
94% [48.32]	100% [0.00]	-3,646.81	-3,598.49	-3,598.49	-3,598.49
98% [11.51]	100% [0.00]	-3,689.65	-3,678.14	-3,678.14	-3,678.14
98% [12.33]	100% [0.00]	-3,633.56	-3,621.23	-3,621.23	-3,621.23
98% [12.32]	100% [0.00]	-3,650.00	-3,637.68	-3,637.68	-3,637.68
3% [12.35]	5% [0.01]	-3,709.09	-3,696.74	-3,696.74	-3,696.74
96% [19.73]	100% [0.00]	-3,674.14	-3,654.42	-3,654.42	-3,654.42
96% [24.12]	100% [0.00]	-3,643.04	-3,618.93	-3,618.93	-3,618.93
93% [36.76]	100% [0.00]	-3,750.21	-3,713.45	-3,713.45	-3,713.45
81% [18.60]	100% [0.00]	-3,700.37	-3,681.77	-3,681.77	-3,681.77
97% [14.79]	100% [0.00]	-3,655.58	-3,640.79	-3,640.79	-3,640.79
98% [12.05]	100% [0.00]	-3,603.62	-3,591.57	-3,591.57	-3,591.57
96% [20.25]	100% [0.00]	-3,560.06	-3,539.81	-3,539.81	-3,539.81
97% [17.29]	100% [0.00]	-3,723.10	-3,705.81	-3,705.81	-3,705.81
97% [17.99]	100% [0.00]	-3,630.33	-3,612.34	-3,612.34	-3,612.34
93% [41.50]	100% [0.00]	-3,673.65	-3,632.14	-3,632.14	-3,632.14
95% [26.18]	100% [0.00]	-3,629.48	-3,603.30	-3,603.30	-3,603.30
95% [31.98]	100% [0.00]	-3,683.20	-3,651.22	-3,651.22	-3,651.22
95% [27.43]	100% [0.00]	-3,652.38	-3,624.95	-3,624.95	-3,624.95
96% [19.32]	100% [0.00]	-3,669.14	-3,649.82	-3,649.82	-3,649.82
97% [14.36]	100% [0.00]	-3,725.48	-3,711.12	-3,711.12	-3,711.12
98% [12.38]	100% [0.00]	-3,626.59	-3,614.21	-3,614.21	-3,614.21
88% [18.95]	100% [0.00]	-3,652.09	-3,633.14	-3,633.14	-3,633.14
98% [12.10]	100% [0.00]	-3,597.44	-3,585.34	-3,585.34	-3,585.34
52% [18.52]	99% [1.55]	-3,638.21	-3,621.23	-3,619.69	-3,619.69
97% [18.18]	100% [0.00]	-3,626.81	-3,608.63	-3,608.63	-3,608.63
98% [17.49]	100% [0.00]	-3,626.65	-3,609.16	-3,609.16	-3,609.16
97% [13.46]	100% [0.00]	-3,645.09	-3,631.63	-3,631.63	-3,631.63
74% [38.22]	99% [6.28]	-3,681.59	-3,649.65	-3,643.37	-3,643.37
94% [23.64]	100% [0.00]	-3,618.19	-3,594.55	-3,594.55	-3,594.55
97% [16.30]	100% [0.00]	-3,678.11	-3,661.81	-3,661.81	-3,661.81
97% [23.82]	100% [0.00]	-3,651.51	-3,627.68	-3,627.68	-3,627.68
95% [25.92]	100% [0.00]	-3,634.55	-3,608.63	-3,608.63	-3,608.63
96% [23.21]	100% [0.00]	-3,677.45	-3,654.24	-3,654.24	-3,654.24
96% [23.28]	100% [0.00]	-3,649.11	-3,625.83	-3,625.83	-3,625.83
97% [10.56]	100% [0.00]	-3,651.69	-3,641.13	-3,641.13	-3,641.13
97% [18.75]	100% [0.00]	-3,638.79	-3,620.04	-3,620.04	-3,620.04
99% [5.56]	100% [0.00]	-3,666.36	-3,660.80	-3,660.80	-3,660.80
96% [25.36]	100% [0.00]	-3,626.80	-3,601.44	-3,601.44	-3,601.44
96% [23.72]	100% [0.00]	-3,666.35	-3,642.62	-3,642.62	-3,642.62
97% [20.19]	100% [0.00]	-3,579.21	-3,559.02	-3,559.02	-3,559.02
98% [7.84]	100% [0.00]	-3,687.54	-3,679.70	-3,679.70	-3,679.70
76% [18.42]	100% [0.00]	-3,630.11	-3,611.68	-3,611.68	-3,611.68
97% [18.27]	100% [0.00]	-3,646.99	-3,628.71	-3,628.71	-3,628.71
95% [31.01]	100% [0.00]	-3,595.96	-3,564.95	-3,564.95	-3,564.95
97% [19.80]	100% [0.00]	-3,616.41	-3,596.62	-3,596.62	-3,596.62

Table 8: Percentage (*Perc.*) of global maximum with mean distance from it (*Dist*), *Mean* and *Median* of maximized log-likelihood values, using EM, M-T-EM, and O-T-EM algorithms under simulated **scenario E** presented in Table 16 of the paper for the LC when the latent structure is correctly specified. Each row corresponds to a specific sample, values in bold highlight the best results

Perc. [Dist.] (Glob. Max)			Mean			Median		
EM	M-T-EM	O-T-EM	EM	M-T-EM	O-T-EM	EM	M-T-EM	O-T-EM
23% [3.15]	28% [2.60]	27% [2.31]	-2,660.51	-2,659.96	-2,659.68	-2,659.70	-2,659.65	-2,659.52
8% [3.99]	63% [1.56]	96% [0.14]	-2,513.58	-2,511.16	-2,509.73	-2,513.05	-2,510.27	-2,509.63
24% [3.31]	33% [2.16]	98% [1.22]	-2,625.31	-2,624.16	-2,623.21	-2,624.68	-2,623.82	-2,623.20
5% [5.01]	6% [4.33]	36% [4.14]	-2,547.63	-2,546.95	-2,546.76	-2,547.32	-2,546.33	-2,547.83
9% [3.90]	3% [2.62]	0% [1.92]	-2,533.84	-2,532.56	-2,531.86	-2,533.32	-2,532.38	-2,531.84
18% [6.02]	26% [4.91]	14% [4.88]	-2,519.87	-2,518.76	-2,518.74	-2,519.94	-2,519.88	-2,519.81
33% [3.10]	80% [1.03]	79% [0.47]	-2,565.80	-2,563.73	-2,563.17	-2,565.05	-2,563.43	-2,562.70
15% [3.49]	70% [1.75]	63% [1.77]	-2,601.40	-2,599.66	-2,599.68	-2,601.09	-2,599.10	-2,599.09
22% [3.20]	96% [0.53]	100% [0.04]	-2,584.33	-2,581.66	-2,581.17	-2,583.76	-2,581.43	-2,581.17
10% [4.10]	33% [2.47]	32% [2.51]	-2,574.35	-2,572.73	-2,572.76	-2,574.03	-2,573.44	-2,573.93
12% [4.19]	19% [3.44]	39% [2.32]	-2,582.31	-2,581.56	-2,580.44	-2,581.85	-2,581.65	-2,579.98
26% [3.69]	88% [0.46]	100% [0.00]	-2,562.42	-2,559.19	-2,558.73	-2,562.38	-2,558.77	-2,558.73
6% [6.28]	15% [4.87]	8% [4.93]	-2,603.87	-2,602.46	-2,602.52	-2,603.31	-2,601.76	-2,601.87
24% [4.63]	79% [1.70]	83% [1.14]	-2,503.42	-2,500.49	-2,499.93	-2,502.97	-2,499.65	-2,499.37
21% [3.24]	33% [2.24]	17% [1.85]	-2,548.69	-2,547.70	-2,547.30	-2,548.18	-2,547.32	-2,547.15
17% [3.68]	23% [2.59]	34% [2.36]	-2,640.58	-2,639.50	-2,639.27	-2,639.97	-2,639.35	-2,639.33
27% [3.55]	65% [1.70]	100% [0.01]	-2,457.97	-2,456.13	-2,454.44	-2,457.49	-2,455.38	-2,454.44
32% [4.68]	41% [3.49]	100% [0.03]	-2,582.35	-2,581.16	-2,577.70	-2,579.45	-2,579.44	-2,577.70
15% [4.66]	28% [2.65]	100% [0.00]	-2,613.97	-2,611.96	-2,609.31	-2,613.79	-2,611.01	-2,609.31
16% [3.45]	21% [3.10]	0% [1.88]	-2,538.84	-2,538.50	-2,537.28	-2,538.58	-2,538.27	-2,537.28
8% [4.02]	10% [2.81]	16% [2.73]	-2,649.95	-2,648.74	-2,648.66	-2,649.45	-2,648.46	-2,648.47
15% [5.22]	41% [3.54]	45% [2.62]	-2,648.39	-2,646.71	-2,645.79	-2,648.08	-2,647.06	-2,644.59
13% [3.01]	21% [2.44]	20% [2.77]	-2,542.81	-2,542.25	-2,542.57	-2,542.39	-2,542.06	-2,542.33
12% [4.77]	23% [3.64]	16% [3.30]	-2,534.01	-2,532.89	-2,532.54	-2,533.36	-2,531.26	-2,531.21
12% [3.66]	25% [2.72]	100% [0.96]	-2,650.77	-2,649.84	-2,648.08	-2,650.75	-2,649.73	-2,648.08
23% [3.36]	50% [2.10]	64% [1.73]	-2,565.14	-2,563.88	-2,563.51	-2,564.78	-2,563.06	-2,562.98
10% [4.28]	5% [3.87]	13% [3.46]	-2,584.43	-2,584.02	-2,583.60	-2,584.18	-2,583.87	-2,583.66
36% [3.69]	46% [2.69]	56% [0.90]	-2,504.66	-2,503.66	-2,501.87	-2,504.21	-2,502.46	-2,501.00
18% [5.61]	32% [4.06]	44% [3.70]	-2,533.46	-2,531.91	-2,531.55	-2,533.65	-2,531.82	-2,533.40
24% [3.13]	91% [0.32]	100% [0.30]	-2,539.51	-2,536.70	-2,536.68	-2,539.21	-2,536.45	-2,536.85
6% [5.00]	11% [4.24]	9% [4.03]	-2,626.31	-2,625.56	-2,625.35	-2,625.93	-2,625.55	-2,625.41
22% [3.70]	35% [3.04]	97% [0.15]	-2,627.90	-2,627.24	-2,624.35	-2,628.14	-2,628.03	-2,624.25
9% [3.87]	20% [2.85]	46% [2.61]	-2,573.00	-2,571.99	-2,571.74	-2,572.83	-2,572.11	-2,571.84
19% [4.18]	34% [3.44]	47% [2.74]	-2,536.76	-2,536.02	-2,535.33	-2,536.16	-2,534.77	-2,534.57
14% [5.42]	24% [3.86]	47% [3.13]	-2,558.84	-2,557.28	-2,556.55	-2,559.13	-2,557.84	-2,556.49
14% [3.23]	22% [2.68]	37% [1.50]	-2,531.11	-2,530.57	-2,529.38	-2,531.29	-2,530.97	-2,529.22
25% [3.50]	62% [1.41]	64% [1.49]	-2,612.67	-2,610.59	-2,610.67	-2,612.68	-2,609.21	-2,609.20
19% [4.08]	25% [3.48]	5% [2.56]	-2,546.25	-2,545.64	-2,544.72	-2,546.20	-2,545.21	-2,544.80
18% [3.29]	37% [1.74]	61% [1.53]	-2,607.81	-2,606.26	-2,606.05	-2,607.58	-2,606.80	-2,605.41
3% [5.51]	6% [4.69]	6% [3.79]	-2,581.18	-2,580.36	-2,579.46	-2,580.79	-2,579.27	-2,578.74
30% [3.85]	67% [1.45]	100% [0.00]	-2,567.22	-2,564.81	-2,563.37	-2,566.57	-2,564.29	-2,563.37
7% [3.51]	15% [2.56]	0% [3.41]	-2,563.06	-2,562.11	-2,562.96	-2,562.99	-2,561.95	-2,562.97
17% [7.35]	25% [5.63]	100% [0.01]	-2,578.28	-2,576.55	-2,570.94	-2,578.54	-2,577.00	-2,570.94
22% [4.28]	44% [3.18]	0% [4.72]	-2,506.51	-2,505.41	-2,506.95	-2,507.27	-2,504.73	-2,506.95
21% [3.48]	59% [0.97]	100% [0.37]	-2,551.94	-2,549.43	-2,548.82	-2,551.08	-2,549.02	-2,548.82
18% [3.34]	96% [1.03]	35% [2.10]	-2,506.59	-2,504.28	-2,505.35	-2,505.93	-2,504.25	-2,504.82
7% [5.48]	9% [4.75]	100% [0.00]	-2,559.16	-2,558.43	-2,553.68	-2,559.23	-2,558.16	-2,553.68
32% [4.44]	41% [3.16]	44% [2.78]	-2,469.09	-2,467.81	-2,467.43	-2,468.21	-2,467.34	-2,467.26
22% [3.76]	34% [2.79]	56% [1.49]	-2,550.92	-2,549.94	-2,548.65	-2,550.73	-2,550.07	-2,547.39
20% [4.00]	37% [3.33]	39% [3.19]	-2,550.98	-2,550.30	-2,550.16	-2,551.24	-2,550.62	-2,549.36

Table 9: Percentage (*Perc.*) of global maximum with mean distance from it (*Dist*), *Mean* and *Median* of maximized log-likelihood values, using EM and M-T-EM algorithms under simulated **scenario A** presented in Table 16 of the paper for the LC model when the latent structure is not correctly specified. Each row corresponds to a specific sample, values in bold highlight the best results

Perc. [Dist.] (Glob. Max)		Mean		Median	
EM	M-T-EM	EM	M-T-EM	EM	M-T-EM
34% [1.58]	84% [0.39]	-2,821.79	-2,820.59	-2,820.80	-2,820.20
11% [1.75]	17% [1.43]	-2,859.49	-2,859.17	-2,859.97	-2,858.32
11% [3.26]	4% [0.87]	-2,816.34	-2,813.95	-2,813.99	-2,813.99
60% [2.80]	94% [0.36]	-2,771.62	-2,769.18	-2,768.82	-2,768.82
64% [1.57]	89% [0.43]	-2,834.76	-2,833.62	-2,833.19	-2,833.19
5% [1.60]	3% [1.40]	-2,841.04	-2,840.85	-2,840.95	-2,840.95
4% [2.42]	0% [0.82]	-2,807.84	-2,806.24	-2,807.49	-2,805.89
31% [2.86]	90% [0.43]	-2,802.44	-2,800.01	-2,801.32	-2,799.58
16% [1.65]	30% [1.16]	-2,880.24	-2,879.76	-2,879.10	-2,879.06
27% [2.56]	4% [1.30]	-2,846.62	-2,845.37	-2,845.14	-2,845.07
37% [2.76]	96% [0.20]	-2,802.72	-2,800.16	-2,803.74	-2,799.96
53% [0.75]	90% [0.24]	-2,842.97	-2,842.46	-2,842.35	-2,842.35
45% [2.42]	100% [0.00]	-2,876.70	-2,874.28	-2,877.85	-2,874.28
65% [0.73]	100% [0.02]	-2,823.15	-2,822.44	-2,822.44	-2,822.44
12% [1.34]	0% [0.40]	-2,809.72	-2,808.78	-2,809.94	-2,808.68
16% [4.09]	15% [3.68]	-2,839.11	-2,838.70	-2,839.55	-2,839.55
40% [2.10]	32% [2.13]	-2,853.99	-2,854.02	-2,854.71	-2,854.71
28% [1.55]	3% [1.25]	-2,837.88	-2,837.59	-2,837.38	-2,837.38
2% [2.19]	0% [1.22]	-2,832.56	-2,831.59	-2,831.89	-2,830.77
50% [1.66]	91% [0.40]	-2,838.26	-2,836.99	-2,836.97	-2,836.59
42% [2.72]	44% [2.51]	-2,828.32	-2,828.11	-2,828.75	-2,828.47
10% [2.47]	13% [2.37]	-2,867.98	-2,867.88	-2,868.11	-2,868.11
35% [0.87]	29% [0.56]	-2,809.98	-2,809.67	-2,809.53	-2,809.42
7% [3.52]	0% [1.71]	-2,843.50	-2,841.69	-2,843.67	-2,841.69
31% [4.60]	36% [4.40]	-2,886.98	-2,886.78	-2,889.14	-2,889.14
20% [3.70]	13% [3.63]	-2,835.66	-2,835.59	-2,836.22	-2,836.22
29% [2.18]	17% [1.84]	-2,829.18	-2,828.84	-2,828.88	-2,828.88
20% [2.63]	53% [2.11]	-2,797.55	-2,797.02	-2,797.79	-2,794.92
34% [2.73]	77% [0.81]	-2,829.42	-2,827.49	-2,830.34	-2,826.68
78% [1.48]	100% [0.00]	-2,835.57	-2,834.09	-2,834.09	-2,834.09
17% [1.48]	99% [0.01]	-2,800.00	-2,798.53	-2,800.09	-2,798.52
15% [2.21]	1% [1.33]	-2,846.75	-2,845.88	-2,847.49	-2,845.45
42% [2.67]	49% [2.65]	-2,786.07	-2,786.04	-2,786.62	-2,786.36
34% [1.31]	98% [0.03]	-2,867.13	-2,865.86	-2,866.99	-2,865.83
4% [1.99]	0% [1.17]	-2,834.86	-2,834.03	-2,834.47	-2,833.70
34% [4.54]	43% [4.19]	-2,848.23	-2,847.87	-2,849.49	-2,849.49
33% [1.67]	39% [0.68]	-2,835.08	-2,834.09	-2,834.29	-2,834.29
31% [3.27]	32% [2.96]	-2,787.69	-2,787.38	-2,787.89	-2,787.89
10% [4.09]	17% [2.91]	-2,863.87	-2,862.69	-2,864.78	-2,863.79
44% [1.82]	99% [0.03]	-2,808.50	-2,806.71	-2,807.52	-2,806.69
36% [5.66]	79% [1.57]	-2,869.64	-2,865.55	-2,871.13	-2,863.98
29% [1.80]	5% [1.82]	-2,805.98	-2,806.00	-2,806.06	-2,806.06
37% [1.15]	89% [0.19]	-2,818.06	-2,817.11	-2,817.89	-2,816.91
10% [1.44]	0% [0.60]	-2,825.63	-2,824.79	-2,824.61	-2,824.61
53% [3.86]	91% [0.82]	-2,838.92	-2,835.87	-2,835.06	-2,835.06
7% [4.44]	9% [4.28]	-2,764.98	-2,764.81	-2,765.83	-2,765.40
16% [3.83]	21% [3.49]	-2,801.62	-2,801.27	-2,801.64	-2,801.64
24% [2.53]	16% [2.43]	-2,848.53	-2,848.43	-2,849.51	-2,849.58
47% [2.43]	96% [0.27]	-2,853.88	-2,851.72	-2,854.04	-2,851.45
16% [4.55]	22% [4.03]	-2,847.62	-2,847.10	-2,848.03	-2,847.47

Table 10: Percentage (*Perc.*) of global maximum with mean distance from it (*Dist*), *Mean* and *Median* of maximized log-likelihood values, using EM and M-T-EM algorithms under simulated **scenario B** presented in Table 16 of the paper for the LC model when the latent structure is not correctly specified. Each row corresponds to a specific sample, values in bold highlight the best results

Perc. [Dist.] (Glob. Max)		Mean		Median	
EM	M-T-EM	EM	M-T-EM	EM	M-T-EM
34% [1.91]	82% [0.64]	-5,711.85	-5,710.58	-5,711.57	-5,710.28
36% [2.65]	51% [2.02]	-5,714.02	-5,713.39	-5,712.92	-5,711.64
31% [1.96]	31% [1.93]	-5,713.42	-5,713.39	-5,713.16	-5,712.97
30% [2.14]	91% [0.27]	-5,651.14	-5,649.27	-5,650.94	-5,649.06
33% [4.24]	81% [1.20]	-5,700.24	-5,697.19	-5,701.39	-5,696.19
12% [1.93]	32% [1.28]	-5,684.72	-5,684.06	-5,684.77	-5,684.74
24% [2.74]	27% [1.85]	-5,694.95	-5,694.07	-5,694.19	-5,694.18
14% [5.25]	17% [4.89]	-5,722.46	-5,722.10	-5,723.21	-5,723.21
14% [2.06]	15% [1.81]	-5,745.18	-5,744.93	-5,744.96	-5,744.91
20% [2.00]	49% [1.46]	-5,680.39	-5,679.85	-5,680.28	-5,678.98
21% [4.07]	49% [1.86]	-5,684.30	-5,682.09	-5,685.65	-5,681.45
39% [2.12]	50% [1.53]	-5,759.92	-5,759.34	-5,759.36	-5,758.37
28% [2.92]	27% [2.72]	-5,707.27	-5,707.07	-5,707.29	-5,707.27
28% [4.96]	28% [4.70]	-5,738.64	-5,738.38	-5,738.25	-5,737.80
62% [1.65]	99% [0.22]	-5,670.23	-5,668.80	-5,669.01	-5,668.77
37% [2.76]	85% [0.60]	-5,669.81	-5,667.65	-5,669.34	-5,667.09
26% [1.11]	73% [0.31]	-5,602.47	-5,601.68	-5,602.12	-5,601.47
49% [1.97]	72% [0.97]	-5,635.90	-5,634.90	-5,634.50	-5,634.08
39% [1.82]	64% [1.20]	-5,686.84	-5,686.21	-5,686.53	-5,685.15
14% [3.99]	85% [0.85]	-5,693.08	-5,689.94	-5,692.85	-5,689.51
37% [2.55]	82% [0.47]	-5,754.15	-5,752.08	-5,754.11	-5,751.66
21% [5.94]	28% [4.85]	-5,682.66	-5,681.57	-5,681.55	-5,681.55
58% [1.48]	93% [0.26]	-5,737.58	-5,736.36	-5,736.20	-5,736.19
53% [4.52]	76% [2.41]	-5,716.42	-5,714.31	-5,712.10	-5,711.93
17% [3.05]	68% [1.46]	-5,706.20	-5,704.61	-5,705.99	-5,703.20
36% [3.24]	92% [0.35]	-5,743.66	-5,740.77	-5,742.11	-5,740.49
44% [2.42]	56% [1.90]	-5,763.46	-5,762.94	-5,763.69	-5,761.08
45% [2.37]	56% [1.79]	-5,752.70	-5,752.12	-5,752.11	-5,750.35
24% [3.16]	56% [1.60]	-5,660.78	-5,659.22	-5,661.06	-5,657.64
4% [1.94]	8% [1.03]	-5,701.21	-5,700.30	-5,700.45	-5,700.44
44% [3.46]	54% [2.72]	-5,603.89	-5,603.14	-5,605.03	-5,600.47
30% [3.41]	90% [0.50]	-5,688.36	-5,685.45	-5,689.23	-5,684.98
54% [4.04]	59% [3.72]	-5,661.20	-5,660.88	-5,657.44	-5,657.43
26% [4.00]	64% [1.83]	-5,680.51	-5,678.34	-5,681.25	-5,676.51
22% [2.87]	65% [1.44]	-5,691.62	-5,690.19	-5,691.81	-5,689.01
36% [2.43]	87% [0.67]	-5,701.99	-5,700.23	-5,701.29	-5,699.98
26% [1.21]	28% [1.02]	-5,619.02	-5,618.83	-5,619.28	-5,619.26
25% [2.00]	31% [1.29]	-5,758.67	-5,757.96	-5,758.45	-5,758.44
43% [1.27]	45% [1.06]	-5,671.80	-5,671.59	-5,671.65	-5,671.63
30% [3.32]	35% [2.62]	-5,746.69	-5,746.00	-5,746.35	-5,746.31
43% [1.71]	81% [0.56]	-5,704.03	-5,702.88	-5,704.37	-5,702.34
6% [3.39]	6% [2.34]	-5,653.80	-5,652.75	-5,653.13	-5,652.06
34% [1.45]	96% [0.13]	-5,761.08	-5,759.76	-5,761.13	-5,759.70
9% [2.34]	10% [1.85]	-5,628.34	-5,627.85	-5,627.59	-5,627.58
52% [3.43]	91% [0.84]	-5,674.52	-5,671.92	-5,671.51	-5,671.39
21% [3.49]	16% [3.04]	-5,753.35	-5,752.90	-5,753.32	-5,753.32
37% [3.07]	84% [0.92]	-5,687.65	-5,685.51	-5,685.49	-5,684.60
26% [3.01]	28% [2.27]	-5,681.56	-5,680.82	-5,681.95	-5,681.45
54% [2.27]	72% [1.45]	-5,723.49	-5,722.67	-5,721.79	-5,721.75
47% [1.97]	61% [1.19]	-5,722.67	-5,721.89	-5,722.14	-5,720.88

Table 11: Percentage (*Perc.*) of global maximum with mean distance from it (*Dist*), *Mean* and *Median* of maximized log-likelihood values, using EM and M-T-EM algorithms under simulated **scenario C** presented in Table 16 of the paper for the LC model when the latent structure is not correctly specified. Each row corresponds to a specific sample, values in bold highlight the best results

Perc. [Dist.] (Glob. Max)		Mean		Median			
EM	M-T-EM	EM	M-T-EM	EM	M-T-EM		
11%	[4.86]	19%	[4.48]	-5,350.96	-5,350.57	-5,350.73	-5,350.06
5%	[8.39]	7%	[7.46]	-5,308.01	-5,307.08	-5,307.97	-5,307.51
17%	[6.95]	38%	[3.15]	-5,202.13	-5,198.32	-5,202.67	-5,198.54
11%	[3.89]	23%	[2.33]	-5,287.59	-5,286.03	-5,286.15	-5,285.46
14%	[3.99]	54%	[2.18]	-5,302.76	-5,300.96	-5,302.68	-5,298.78
15%	[10.70]	48%	[3.01]	-5,203.97	-5,196.27	-5,198.88	-5,195.42
9%	[5.03]	15%	[3.70]	-5,327.95	-5,326.62	-5,328.66	-5,326.75
28%	[4.07]	57%	[0.84]	-5,291.15	-5,287.91	-5,292.20	-5,287.18
9%	[5.64]	52%	[2.59]	-5,248.67	-5,245.62	-5,249.32	-5,243.25
18%	[5.79]	21%	[4.60]	-5,305.59	-5,304.39	-5,305.56	-5,305.06
22%	[4.75]	76%	[0.93]	-5,349.44	-5,345.61	-5,349.37	-5,344.69
9%	[2.93]	11%	[2.69]	-5,387.67	-5,387.42	-5,387.45	-5,387.36
5%	[8.69]	36%	[5.86]	-5,275.67	-5,272.85	-5,275.71	-5,273.44
15%	[7.19]	18%	[3.56]	-5,261.51	-5,257.88	-5,262.67	-5,258.10
10%	[5.11]	14%	[4.31]	-5,313.91	-5,313.11	-5,314.18	-5,314.15
42%	[3.40]	75%	[0.94]	-5,254.68	-5,252.22	-5,254.60	-5,251.30
18%	[3.10]	34%	[1.57]	-5,380.01	-5,378.48	-5,379.14	-5,378.02
15%	[8.08]	56%	[3.28]	-5,285.34	-5,280.55	-5,287.24	-5,277.28
10%	[4.85]	18%	[2.99]	-5,314.38	-5,312.52	-5,314.08	-5,312.09
19%	[5.16]	33%	[3.14]	-5,284.80	-5,282.79	-5,284.90	-5,280.92
11%	[4.98]	13%	[4.45]	-5,361.72	-5,361.19	-5,362.08	-5,360.53
26%	[4.08]	31%	[3.99]	-5,210.75	-5,210.66	-5,209.96	-5,209.28
1%	[5.29]	2%	[4.55]	-5,260.85	-5,260.11	-5,260.32	-5,260.31
13%	[4.61]	22%	[2.04]	-5,209.54	-5,206.96	-5,209.94	-5,206.10
11%	[3.55]	34%	[1.27]	-5,264.07	-5,261.78	-5,263.66	-5,261.46
27%	[5.24]	28%	[4.54]	-5,284.52	-5,283.82	-5,285.20	-5,283.57
11%	[7.41]	24%	[5.94]	-5,249.46	-5,248.00	-5,250.43	-5,250.37
11%	[3.36]	38%	[1.84]	-5,343.74	-5,342.22	-5,343.45	-5,341.13
16%	[4.93]	44%	[3.05]	-5,239.66	-5,237.78	-5,239.35	-5,237.85
9%	[6.05]	22%	[4.51]	-5,366.15	-5,364.61	-5,366.14	-5,362.81
18%	[9.89]	24%	[4.75]	-5,348.15	-5,343.01	-5,343.47	-5,343.47
11%	[6.38]	22%	[4.84]	-5,263.02	-5,261.48	-5,263.06	-5,261.79
8%	[3.44]	21%	[1.56]	-5,216.78	-5,214.91	-5,215.67	-5,215.11
8%	[5.58]	17%	[3.88]	-5,300.44	-5,298.75	-5,299.83	-5,298.98
10%	[4.12]	14%	[3.66]	-5,273.82	-5,273.36	-5,273.81	-5,273.66
14%	[7.49]	15%	[5.48]	-5,255.44	-5,253.43	-5,256.18	-5,252.71
19%	[4.62]	25%	[2.80]	-5,295.03	-5,293.21	-5,295.60	-5,293.19
11%	[5.62]	21%	[4.62]	-5,278.75	-5,277.74	-5,277.43	-5,277.13
12%	[4.70]	17%	[3.72]	-5,377.37	-5,376.38	-5,377.74	-5,376.52
9%	[6.68]	37%	[4.67]	-5,344.93	-5,342.92	-5,344.62	-5,343.95
12%	[4.96]	26%	[2.95]	-5,250.87	-5,248.86	-5,249.76	-5,248.25
5%	[5.49]	5%	[3.66]	-5,279.29	-5,277.46	-5,279.10	-5,276.35
10%	[4.72]	27%	[3.50]	-5,278.56	-5,277.35	-5,278.44	-5,276.93
10%	[4.18]	25%	[2.28]	-5,298.44	-5,296.54	-5,298.29	-5,296.23
3%	[3.92]	7%	[2.62]	-5,306.63	-5,305.33	-5,306.20	-5,304.58
26%	[4.31]	38%	[3.14]	-5,247.90	-5,246.73	-5,246.86	-5,246.78
26%	[5.74]	57%	[2.11]	-5,320.39	-5,316.76	-5,320.11	-5,314.68
23%	[3.99]	34%	[3.02]	-5,353.37	-5,352.40	-5,353.36	-5,353.15
8%	[3.92]	12%	[3.31]	-5,349.99	-5,349.37	-5,349.99	-5,349.47
24%	[8.62]	34%	[5.67]	-5,271.76	-5,268.81	-5,274.37	-5,265.20

Table 12: Percentage (*Perc.*) of global maximum with mean distance from it (*Dist*), *Mean* and *Median* of maximized log-likelihood values, using EM and M-T-EM algorithms under simulated **scenario D** presented in Table 16 of the paper for the LC model when the latent structure is not correctly specified. Each row corresponds to a specific sample, values in bold highlight the best results

Perc. [Dist.] (Glob. Max)		Mean		Median	
EM	M-T-EM	EM	M-T-EM	EM	M-T-EM
11% [7.24]	13% [4.25]	-3,605.45	-3,602.46	-3,607.73	-3,601.92
16% [5.72]	18% [5.18]	-3,631.11	-3,630.57	-3,630.96	-3,629.58
15% [4.45]	57% [2.75]	-3,629.89	-3,628.18	-3,629.93	-3,625.52
7% [8.97]	13% [6.06]	-3,602.93	-3,600.02	-3,602.26	-3,595.98
17% [5.64]	35% [3.42]	-3,577.88	-3,575.66	-3,578.89	-3,575.99
15% [5.88]	55% [4.58]	-3,663.66	-3,662.36	-3,662.67	-3,657.80
3% [3.99]	11% [2.82]	-3,512.83	-3,511.66	-3,513.11	-3,511.80
26% [13.58]	62% [5.26]	-3,635.67	-3,627.34	-3,630.96	-3,622.10
21% [12.61]	51% [3.84]	-3,532.96	-3,524.19	-3,526.69	-3,520.35
5% [4.25]	12% [3.23]	-3,615.59	-3,614.57	-3,615.80	-3,613.25
18% [2.00]	36% [0.94]	-3,589.36	-3,588.29	-3,589.13	-3,588.10
12% [4.69]	17% [2.44]	-3,642.47	-3,640.22	-3,640.45	-3,639.67
18% [6.65]	58% [3.97]	-3,636.25	-3,633.57	-3,636.19	-3,629.92
21% [4.19]	24% [2.35]	-3,638.63	-3,636.79	-3,638.89	-3,636.50
17% [3.06]	34% [1.98]	-3,695.82	-3,694.74	-3,695.58	-3,695.46
26% [3.58]	60% [1.82]	-3,614.66	-3,612.90	-3,613.87	-3,611.08
18% [5.13]	63% [2.85]	-3,692.01	-3,689.72	-3,692.86	-3,686.90
15% [5.71]	39% [2.73]	-3,637.69	-3,634.71	-3,637.26	-3,635.47
10% [2.89]	39% [1.62]	-3,599.14	-3,597.87	-3,598.54	-3,598.25
30% [11.15]	56% [4.16]	-3,558.02	-3,551.03	-3,553.64	-3,546.95
13% [10.81]	51% [3.68]	-3,609.48	-3,602.34	-3,606.38	-3,598.67
27% [4.86]	62% [2.91]	-3,613.16	-3,611.21	-3,614.44	-3,608.32
8% [4.43]	20% [3.57]	-3,585.06	-3,584.20	-3,585.42	-3,584.92
31% [5.67]	49% [4.52]	-3,638.40	-3,637.25	-3,640.69	-3,640.69
19% [6.74]	56% [4.09]	-3,598.90	-3,596.25	-3,600.22	-3,592.37
16% [5.98]	53% [3.32]	-3,559.72	-3,557.06	-3,560.49	-3,553.79
13% [7.46]	63% [3.51]	-3,613.00	-3,609.04	-3,612.94	-3,605.54
17% [4.85]	65% [2.01]	-3,597.95	-3,595.12	-3,597.54	-3,593.12
14% [7.13]	21% [4.74]	-3,576.40	-3,574.00	-3,574.59	-3,571.27
21% [4.41]	56% [2.96]	-3,703.05	-3,701.60	-3,702.83	-3,698.66
19% [4.45]	28% [3.64]	-3,564.56	-3,563.76	-3,564.75	-3,563.99
1% [5.33]	2% [4.61]	-3,623.61	-3,622.89	-3,623.55	-3,623.49
13% [8.16]	48% [5.99]	-3,648.22	-3,646.05	-3,648.66	-3,642.97
4% [4.13]	5% [3.62]	-3,627.90	-3,627.39	-3,627.13	-3,627.13
6% [2.78]	7% [1.33]	-3,603.55	-3,602.10	-3,602.67	-3,601.69
19% [7.01]	29% [5.02]	-3,581.08	-3,579.09	-3,580.51	-3,576.92
6% [4.51]	8% [3.34]	-3,597.68	-3,596.51	-3,597.75	-3,594.69
13% [9.98]	65% [4.70]	-3,557.66	-3,552.38	-3,559.93	-3,547.69
23% [6.50]	58% [3.78]	-3,616.93	-3,614.21	-3,617.91	-3,610.46
12% [6.43]	13% [5.26]	-3,536.98	-3,535.81	-3,536.18	-3,534.10
11% [6.66]	19% [4.91]	-3,605.21	-3,603.46	-3,603.46	-3,603.45
23% [7.08]	56% [3.96]	-3,596.08	-3,592.96	-3,596.84	-3,589.00
16% [7.20]	23% [5.87]	-3,656.09	-3,654.76	-3,657.17	-3,655.21
2% [4.35]	4% [3.95]	-3,595.04	-3,594.64	-3,594.37	-3,593.80
26% [4.80]	49% [2.83]	-3,638.35	-3,636.38	-3,638.58	-3,634.44
26% [4.83]	56% [3.36]	-3,629.64	-3,628.18	-3,630.61	-3,624.94
17% [4.17]	28% [3.33]	-3,581.02	-3,580.18	-3,580.78	-3,580.64
26% [8.42]	32% [5.33]	-3,631.46	-3,628.37	-3,635.32	-3,623.81
17% [5.46]	56% [3.51]	-3,580.97	-3,579.03	-3,581.69	-3,575.71
15% [15.05]	26% [2.62]	-3,644.40	-3,631.97	-3,633.75	-3,630.00

Table 13: Percentage (*Perc.*) of global maximum with mean distance from it (*Dist*), *Mean* and *Median* of maximized log-likelihood values, using EM and M-T-EM algorithms under simulated **scenario E** presented in Table 16 of the paper for the LC model when the latent structure is not correctly specified. Each row corresponds to a specific sample, values in bold highlight the best results

Perc. [Dist.] (Glob. Max)		Mean		Median	
EM	M-T-EM	EM	M-T-EM	EM	M-T-EM
0%	[7.52]		-2,577.54	-2,576.79	-2,575.95
2%	[4.50]		-2,537.75	-2,537.30	-2,536.32
1%	[6.23]		-2,561.22	-2,561.01	-2,560.93
3%	[6.63]		-2,618.25	-2,617.41	-2,617.65
2%	[3.62]		-2,556.23	-2,555.00	-2,554.54
8%	[6.00]		-2,549.12	-2,548.05	-2,548.56
5%	[4.62]		-2,518.53	-2,516.41	-2,516.12
1%	[5.10]		-2,538.24	-2,537.18	-2,537.09
7%	[6.98]		-2,553.13	-2,552.22	-2,552.30
3%	[5.77]		-2,570.44	-2,569.01	-2,568.82
1%	[4.82]		-2,584.15	-2,583.00	-2,581.85
4%	[4.53]		-2,533.41	-2,530.88	-2,530.64
22%	[3.72]		-2,520.84	-2,518.85	-2,517.95
1%	[5.74]		-2,546.14	-2,544.61	-2,544.29
1%	[6.37]		-2,479.45	-2,479.04	-2,479.15
1%	[5.10]		-2,494.84	-2,493.90	-2,493.52
3%	[5.97]		-2,598.82	-2,597.20	-2,597.29
3%	[3.50]		-2,575.14	-2,574.01	-2,573.67
3%	[3.59]		-2,573.43	-2,572.55	-2,572.60
2%	[5.32]		-2,506.81	-2,505.50	-2,504.31
4%	[6.86]		-2,569.06	-2,567.93	-2,568.53
2%	[4.35]		-2,643.01	-2,642.37	-2,642.14
2%	[6.19]		-2,569.94	-2,568.12	-2,568.80
2%	[4.77]		-2,665.71	-2,664.83	-2,664.30
4%	[5.25]		-2,584.11	-2,582.10	-2,581.77
5%	[4.28]		-2,629.08	-2,627.71	-2,627.20
7%	[6.85]		-2,556.93	-2,554.88	-2,553.92
3%	[5.63]		-2,590.97	-2,585.99	-2,585.45
1%	[6.62]		-2,455.64	-2,455.04	-2,455.15
1%	[6.92]		-2,460.67	-2,460.02	-2,460.09
6%	[5.19]		-2,488.46	-2,487.19	-2,486.76
5%	[4.06]		-2,467.48	-2,465.63	-2,465.41
10%	[4.92]		-2,576.26	-2,574.98	-2,574.52
1%	[3.67]		-2,603.56	-2,602.75	-2,602.50
3%	[3.78]		-2,596.29	-2,593.31	-2,592.99
2%	[7.78]		-2,506.11	-2,505.51	-2,505.24
9%	[6.23]		-2,567.39	-2,564.14	-2,564.06
1%	[5.53]		-2,562.65	-2,560.95	-2,561.44
13%	[3.62]		-2,657.56	-2,655.03	-2,654.03
7%	[4.29]		-2,543.22	-2,542.14	-2,541.80
5%	[3.99]		-2,504.38	-2,503.98	-2,503.49
4%	[4.76]		-2,534.11	-2,532.84	-2,532.41
1%	[5.46]		-2,542.33	-2,541.82	-2,541.50
4%	[6.63]		-2,502.73	-2,499.89	-2,500.05
10%	[4.14]		-2,526.27	-2,525.38	-2,525.08
2%	[3.98]		-2,435.43	-2,434.29	-2,434.32
3%	[6.34]		-2,574.50	-2,573.44	-2,573.11
5%	[6.40]		-2,449.21	-2,447.79	-2,448.04
4%	[3.59]		-2,515.10	-2,512.35	-2,511.52
2%	[7.78]		-2,515.95	-2,515.09	-2,515.72

Table 14: Percentage (*Perc.*) of global maximum with mean distance from it (*Dist*), *Mean* and *Median* of maximized log-likelihood values, using EM and M-T-EM algorithms under simulated **scenario A** presented in Table 17 of the paper for the HM model with categorical response variables when the latent structure is correctly specified. Each row corresponds to a specific sample, values in bold highlight the best results

Perc. [Dist.] (Glob. Max)		Mean		Median	
EM	M-T-EM	EM	M-T-EM	EM	M-T-EM
100% [0.00]	100% [0.00]	-11,113.33	-11,113.33	-11,113.33	-11,113.33
100% [0.00]	100% [0.00]	-11,153.86	-11,153.86	-11,153.86	-11,153.86
100% [0.00]	100% [0.00]	-11,007.39	-11,007.39	-11,007.39	-11,007.39
100% [0.00]	100% [0.00]	-11,104.24	-11,104.24	-11,104.24	-11,104.24
100% [0.00]	100% [0.00]	-10,972.30	-10,972.30	-10,972.30	-10,972.30
100% [0.00]	100% [0.00]	-10,941.36	-10,941.36	-10,941.36	-10,941.36
100% [0.00]	100% [0.00]	-10,898.65	-10,898.65	-10,898.65	-10,898.65
97% [58.09]	100% [0.00]	-11,059.56	-11,001.47	-11,001.47	-11,001.47
98% [40.95]	100% [0.00]	-11,130.46	-11,089.51	-11,089.51	-11,089.51
97% [65.24]	100% [0.00]	-11,001.20	-10,935.96	-10,935.96	-10,935.96
100% [0.00]	100% [0.00]	-11,102.01	-11,102.01	-11,102.01	-11,102.01
100% [0.00]	100% [0.00]	-11,062.25	-11,062.25	-11,062.25	-11,062.25
100% [0.00]	100% [0.00]	-10,872.96	-10,872.96	-10,872.96	-10,872.96
100% [0.00]	100% [0.00]	-11,098.07	-11,098.07	-11,098.07	-11,098.07
98% [43.29]	100% [0.00]	-11,049.50	-11,006.20	-11,006.20	-11,006.20
99% [22.02]	100% [0.00]	-11,031.70	-11,009.67	-11,009.67	-11,009.67
100% [0.00]	100% [0.00]	-10,992.65	-10,992.65	-10,992.65	-10,992.65
99% [20.42]	100% [0.00]	-11,015.24	-10,994.82	-10,994.82	-10,994.82
100% [0.00]	100% [0.00]	-11,047.21	-11,047.21	-11,047.21	-11,047.21
100% [0.00]	100% [0.00]	-11,166.62	-11,166.62	-11,166.62	-11,166.62
100% [0.00]	100% [0.00]	-10,904.38	-10,904.38	-10,904.38	-10,904.38
99% [20.09]	100% [0.00]	-11,058.96	-11,038.87	-11,038.87	-11,038.87
100% [0.00]	100% [0.00]	-11,041.00	-11,041.00	-11,041.00	-11,041.00
100% [0.00]	100% [0.00]	-11,038.88	-11,038.88	-11,038.88	-11,038.88
100% [0.00]	100% [0.00]	-11,123.15	-11,123.15	-11,123.15	-11,123.15
100% [0.00]	100% [0.00]	-10,804.23	-10,804.23	-10,804.23	-10,804.23
100% [0.00]	100% [0.00]	-11,047.70	-11,047.70	-11,047.70	-11,047.70
100% [0.00]	100% [0.00]	-10,870.39	-10,870.39	-10,870.39	-10,870.39
99% [20.47]	100% [0.00]	-11,032.44	-11,011.97	-11,011.97	-11,011.97
96% [77.64]	100% [0.00]	-11,072.30	-10,994.67	-10,994.67	-10,994.67
100% [0.00]	100% [0.00]	-11,115.08	-11,115.08	-11,115.08	-11,115.08
100% [0.00]	100% [0.00]	-11,112.90	-11,112.90	-11,112.90	-11,112.90
100% [0.00]	100% [0.00]	-10,868.41	-10,868.41	-10,868.41	-10,868.41
100% [0.00]	100% [0.00]	-11,149.35	-11,149.35	-11,149.35	-11,149.35
99% [21.44]	100% [0.00]	-11,074.63	-11,053.20	-11,053.20	-11,053.20
100% [0.00]	100% [0.00]	-11,001.82	-11,001.82	-11,001.82	-11,001.82
100% [0.00]	100% [0.00]	-11,029.00	-11,029.00	-11,029.00	-11,029.00
100% [0.00]	100% [0.00]	-10,867.96	-10,867.96	-10,867.96	-10,867.96
98% [43.03]	100% [0.00]	-10,954.16	-10,911.13	-10,911.13	-10,911.13
100% [0.00]	100% [0.00]	-10,986.14	-10,986.14	-10,986.14	-10,986.14
100% [0.00]	100% [0.00]	-11,085.20	-11,085.20	-11,085.20	-11,085.20
100% [0.00]	100% [0.00]	-10,977.09	-10,977.09	-10,977.09	-10,977.09
100% [0.00]	100% [0.00]	-10,993.85	-10,993.85	-10,993.85	-10,993.85
99% [21.37]	100% [0.00]	-11,039.20	-11,017.84	-11,017.84	-11,017.84
100% [0.00]	100% [0.00]	-11,189.65	-11,189.65	-11,189.65	-11,189.65
100% [0.00]	100% [0.00]	-10,864.81	-10,864.81	-10,864.81	-10,864.81
100% [0.00]	100% [0.00]	-10,984.53	-10,984.53	-10,984.53	-10,984.53
100% [0.00]	100% [0.00]	-11,013.86	-11,013.86	-11,013.86	-11,013.86
100% [0.00]	100% [0.00]	-11,204.30	-11,204.30	-11,204.30	-11,204.30
99% [21.79]	100% [0.00]	-10,890.71	-10,868.91	-10,868.91	-10,868.91

Table 15: Percentage (*Perc.*) of global maximum with mean distance from it (*Dist*), *Mean* and *Median* of maximized log-likelihood values, using EM and M-T-EM algorithms under simulated **scenario B** presented in Table 17 of the paper for the HM model with categorical response variables when the latent structure is correctly specified. Each row corresponds to a specific sample, values in bold highlight the best results

Perc. [Dist.] (Glob. Max)		Mean		Median	
EM	M-T-EM	EM	M-T-EM	EM	M-T-EM
98% [85.18]	100% [0.00]	-21,967.81	-21,882.63	-21,882.63	-21,882.63
100% [0.00]	100% [0.00]	-21,989.62	-21,989.62	-21,989.62	-21,989.62
100% [0.00]	100% [0.00]	-22,062.78	-22,062.78	-22,062.78	-22,062.78
100% [0.00]	100% [0.00]	-22,185.29	-22,185.29	-22,185.29	-22,185.29
100% [0.00]	100% [0.00]	-22,055.26	-22,055.26	-22,055.26	-22,055.26
100% [0.00]	100% [0.00]	-21,944.88	-21,944.88	-21,944.88	-21,944.88
100% [0.00]	100% [0.00]	-21,769.87	-21,769.87	-21,769.87	-21,769.87
100% [0.00]	100% [0.00]	-21,906.88	-21,906.88	-21,906.88	-21,906.88
100% [0.00]	100% [0.00]	-22,141.69	-22,141.69	-22,141.69	-22,141.69
100% [0.00]	100% [0.00]	-22,140.27	-22,140.27	-22,140.27	-22,140.27
100% [0.00]	100% [0.00]	-22,047.66	-22,047.66	-22,047.66	-22,047.66
100% [0.00]	100% [0.00]	-21,884.36	-21,884.36	-21,884.36	-21,884.36
100% [0.00]	100% [0.00]	-22,022.51	-22,022.51	-22,022.51	-22,022.51
100% [0.00]	100% [0.00]	-21,856.61	-21,856.61	-21,856.61	-21,856.61
99% [42.63]	100% [0.00]	-22,123.75	-22,081.11	-22,081.11	-22,081.11
100% [0.00]	100% [0.00]	-22,313.14	-22,313.14	-22,313.14	-22,313.14
100% [0.00]	100% [0.00]	-21,720.37	-21,720.37	-21,720.37	-21,720.37
100% [0.00]	100% [0.00]	-22,113.96	-22,113.96	-22,113.96	-22,113.96
100% [0.00]	100% [0.00]	-21,828.78	-21,828.78	-21,828.78	-21,828.78
100% [0.00]	100% [0.00]	-22,168.40	-22,168.40	-22,168.40	-22,168.40
100% [0.00]	100% [0.00]	-22,150.04	-22,150.04	-22,150.04	-22,150.04
100% [0.00]	100% [0.00]	-21,925.17	-21,925.17	-21,925.17	-21,925.17
99% [43.71]	100% [0.00]	-21,995.45	-21,951.74	-21,951.74	-21,951.74
100% [0.00]	100% [0.00]	-22,084.10	-22,084.10	-22,084.10	-22,084.10
100% [0.00]	100% [0.00]	-21,840.71	-21,840.71	-21,840.71	-21,840.71
99% [44.44]	100% [0.00]	-22,100.72	-22,056.28	-22,056.28	-22,056.28
100% [0.00]	100% [0.00]	-21,910.94	-21,910.94	-21,910.94	-21,910.94
100% [0.00]	100% [0.00]	-22,234.94	-22,234.94	-22,234.94	-22,234.94
100% [0.00]	100% [0.00]	-21,960.75	-21,960.75	-21,960.75	-21,960.75
100% [0.00]	100% [0.00]	-21,955.53	-21,955.53	-21,955.53	-21,955.53
100% [0.00]	100% [0.00]	-21,926.54	-21,926.54	-21,926.54	-21,926.54
99% [43.87]	100% [0.00]	-22,094.98	-22,051.11	-22,051.11	-22,051.11
100% [0.00]	100% [0.00]	-21,969.10	-21,969.10	-21,969.10	-21,969.10
100% [0.00]	100% [0.00]	-21,837.71	-21,837.71	-21,837.71	-21,837.71
100% [0.00]	100% [0.00]	-22,287.32	-22,287.32	-22,287.32	-22,287.32
100% [0.00]	100% [0.00]	-22,155.23	-22,155.23	-22,155.23	-22,155.23
100% [0.00]	100% [0.00]	-22,332.46	-22,332.46	-22,332.46	-22,332.46
100% [0.00]	100% [0.00]	-22,097.50	-22,097.50	-22,097.50	-22,097.50
100% [0.00]	100% [0.00]	-21,981.53	-21,981.53	-21,981.53	-21,981.53
100% [0.00]	100% [0.00]	-22,161.21	-22,161.21	-22,161.21	-22,161.21
100% [0.00]	100% [0.00]	-22,126.49	-22,126.49	-22,126.49	-22,126.49
98% [84.76]	100% [0.00]	-22,247.37	-22,162.61	-22,162.61	-22,162.61
100% [0.00]	100% [0.00]	-21,974.31	-21,974.31	-21,974.31	-21,974.31
100% [0.00]	100% [0.00]	-21,994.83	-21,994.83	-21,994.83	-21,994.83
100% [0.00]	100% [0.00]	-21,883.47	-21,883.47	-21,883.47	-21,883.47
100% [0.00]	100% [0.00]	-22,158.75	-22,158.75	-22,158.75	-22,158.75
100% [0.00]	100% [0.00]	-22,028.27	-22,028.27	-22,028.27	-22,028.27
100% [0.00]	100% [0.00]	-22,120.90	-22,120.89	-22,120.90	-22,120.89
100% [0.00]	100% [0.00]	-21,725.82	-21,725.82	-21,725.82	-21,725.82
99% [43.37]	100% [0.00]	-22,062.64	-22,019.27	-22,019.27	-22,019.27

Table 16: Percentage (*Perc.*) of global maximum with mean distance from it (*Dist*), *Mean* and *Median* of maximized log-likelihood values, using EM and M-T-EM algorithms under simulated **scenario C** presented in Table 17 of the paper for the HM model with categorical response variables when the latent structure is correctly specified. Each row corresponds to a specific sample, values in bold highlight the best results

Perc. [Dist.] (Glob. Max)		Mean		Median			
EM	M-T-EM	EM	M-T-EM	EM	M-T-EM		
95%	[243.55]	100%	[0.00]	-20,892.25	-20,648.70	-20,648.70	-20,648.70
97%	[142.87]	100%	[0.00]	-20,735.46	-20,592.59	-20,592.59	-20,592.59
97%	[167.17]	100%	[0.00]	-20,694.71	-20,527.55	-20,527.55	-20,527.55
95%	[245.69]	100%	[0.00]	-20,550.14	-20,304.45	-20,304.45	-20,304.45
97%	[166.62]	100%	[0.00]	-20,459.38	-20,292.76	-20,292.76	-20,292.76
94%	[316.73]	100%	[0.00]	-20,689.18	-20,372.45	-20,372.45	-20,372.45
95%	[259.51]	100%	[0.00]	-20,915.57	-20,656.06	-20,656.06	-20,656.06
97%	[170.24]	100%	[0.00]	-20,416.98	-20,246.75	-20,246.75	-20,246.75
98%	[98.62]	100%	[0.00]	-20,375.81	-20,277.19	-20,277.19	-20,277.19
98%	[118.40]	100%	[0.00]	-20,391.19	-20,272.79	-20,272.79	-20,272.79
96%	[199.34]	98%	[98.16]	-20,684.47	-20,583.28	-20,485.13	-20,485.13
96%	[239.50]	100%	[0.00]	-20,542.10	-20,302.60	-20,302.60	-20,302.60
96%	[198.79]	100%	[0.00]	-20,576.68	-20,377.89	-20,377.89	-20,377.89
94%	[296.89]	100%	[0.00]	-20,837.16	-20,540.27	-20,540.27	-20,540.27
97%	[148.78]	100%	[0.00]	-20,408.71	-20,259.93	-20,259.93	-20,259.93
94%	[315.43]	100%	[0.00]	-20,796.47	-20,481.04	-20,481.04	-20,481.04
96%	[217.52]	100%	[0.00]	-20,650.77	-20,433.25	-20,433.25	-20,433.25
97%	[145.18]	100%	[0.00]	-20,710.51	-20,565.32	-20,565.32	-20,565.32
98%	[116.31]	100%	[0.00]	-20,456.97	-20,340.66	-20,340.66	-20,340.66
94%	[329.88]	100%	[0.00]	-20,843.96	-20,514.08	-20,514.08	-20,514.08
98%	[97.76]	100%	[0.00]	-20,688.36	-20,590.60	-20,590.60	-20,590.60
96%	[213.28]	100%	[0.00]	-20,846.65	-20,633.37	-20,633.37	-20,633.37
92%	[382.42]	100%	[0.00]	-21,098.38	-20,715.96	-20,715.96	-20,715.96
98%	[95.67]	100%	[0.00]	-20,771.83	-20,676.16	-20,676.16	-20,676.16
97%	[149.18]	100%	[0.00]	-20,596.11	-20,446.93	-20,446.93	-20,446.93
97%	[165.78]	100%	[0.00]	-20,777.25	-20,611.47	-20,611.47	-20,611.47
97%	[151.47]	99%	[49.59]	-20,301.72	-20,199.84	-20,150.25	-20,150.25
96%	[192.25]	100%	[0.00]	-20,654.80	-20,462.55	-20,462.55	-20,462.55
96%	[199.03]	100%	[0.00]	-20,634.77	-20,435.75	-20,435.75	-20,435.75
96%	[198.98]	100%	[0.00]	-20,567.98	-20,369.00	-20,369.00	-20,369.00
96%	[196.45]	100%	[0.00]	-20,860.51	-20,664.06	-20,664.06	-20,664.06
96%	[197.32]	100%	[0.00]	-20,679.20	-20,481.88	-20,481.88	-20,481.88
98%	[101.89]	100%	[0.00]	-20,391.75	-20,289.85	-20,289.85	-20,289.85
96%	[220.42]	100%	[0.00]	-20,257.93	-20,037.51	-20,037.51	-20,037.51
96%	[216.71]	100%	[0.00]	-20,639.85	-20,423.14	-20,423.14	-20,423.14
97%	[153.25]	100%	[0.00]	-20,407.87	-20,254.62	-20,254.62	-20,254.62
97%	[152.03]	100%	[0.00]	-20,417.11	-20,265.08	-20,265.08	-20,265.08
95%	[264.62]	100%	[0.00]	-20,813.17	-20,548.56	-20,548.56	-20,548.56
95%	[251.71]	99%	[50.31]	-20,731.92	-20,530.52	-20,480.20	-20,480.20
97%	[184.79]	100%	[0.00]	-20,505.78	-20,320.99	-20,320.99	-20,320.99
93%	[373.72]	100%	[0.00]	-20,564.31	-20,190.59	-20,190.59	-20,190.59
96%	[203.43]	100%	[0.00]	-20,368.74	-20,165.31	-20,165.31	-20,165.31
95%	[268.25]	100%	[0.00]	-20,696.23	-20,427.98	-20,427.98	-20,427.98
97%	[174.84]	100%	[0.00]	-20,570.77	-20,395.93	-20,395.93	-20,395.93
96%	[216.69]	100%	[0.00]	-20,708.10	-20,491.41	-20,491.41	-20,491.41
95%	[291.45]	100%	[0.00]	-20,536.26	-20,244.81	-20,244.81	-20,244.81
97%	[143.53]	100%	[0.00]	-20,666.87	-20,523.33	-20,523.33	-20,523.33
96%	[237.64]	100%	[0.00]	-20,504.64	-20,267.00	-20,267.00	-20,267.00
95%	[296.67]	99%	[47.29]	-20,653.61	-20,404.22	-20,356.93	-20,356.93
95%	[249.64]	100%	[0.00]	-20,642.20	-20,392.56	-20,392.56	-20,392.56

Table 17: Percentage (*Perc.*) of global maximum with mean distance from it (*Dist*), *Mean* and *Median* of maximized log-likelihood values, using EM and M-T-EM algorithms under simulated **scenario D** presented in Table 17 of the paper for the HM model with categorical response variables when the latent structure is correctly specified. Each row corresponds to a specific sample, values in bold highlight the best results

Perc. [Dist.] (Glob. Max)		Mean		Median	
EM	M-T-EM	EM	M-T-EM	EM	M-T-EM
92% [166.94]	99% [0.01]	-17,310.52	-17,143.59	-17,143.59	-17,143.58
94% [235.93]	100% [0.00]	-17,074.91	-16,838.98	-16,838.98	-16,838.98
94% [225.22]	98% [64.87]	-17,289.40	-17,129.06	-17,064.19	-17,064.19
96% [153.70]	100% [0.00]	-17,143.94	-16,990.25	-16,990.25	-16,990.25
51% [188.19]	98% [0.01]	-17,478.64	-17,290.46	-17,290.47	-17,290.46
98% [98.62]	100% [0.00]	-17,314.26	-17,215.65	-17,215.65	-17,215.65
77% [203.28]	98% [0.01]	-17,195.23	-16,991.96	-16,991.97	-16,991.96
79% [144.94]	100% [0.00]	-17,102.21	-16,957.27	-16,957.27	-16,957.27
75% [151.47]	97% [0.01]	-17,486.39	-17,334.93	-17,334.93	-17,334.93
96% [150.78]	100% [0.00]	-17,268.91	-17,118.13	-17,118.13	-17,118.13
72% [171.36]	100% [0.01]	-17,425.97	-17,254.62	-17,254.62	-17,254.62
94% [221.09]	100% [0.00]	-17,375.79	-17,154.70	-17,154.70	-17,154.70
82% [197.85]	100% [0.00]	-17,230.48	-17,032.63	-17,032.63	-17,032.63
97% [104.89]	100% [0.00]	-17,146.52	-17,041.63	-17,041.63	-17,041.63
73% [148.78]	80% [0.01]	-16,934.15	-16,785.38	-16,785.38	-16,785.37
47% [80.75]	46% [0.01]	-17,437.77	-17,357.04	-17,357.04	-17,357.04
76% [68.40]	100% [0.01]	-17,297.52	-17,229.12	-17,229.13	-17,229.13
95% [169.90]	99% [33.47]	-17,290.52	-17,154.10	-17,120.62	-17,120.62
95% [172.88]	100% [0.00]	-17,169.67	-16,996.79	-16,996.79	-16,996.79
95% [135.61]	100% [0.00]	-17,285.69	-17,150.08	-17,150.08	-17,150.08
30% [167.38]	68% [0.02]	-17,109.62	-16,942.25	-16,942.26	-16,942.25
25% [132.21]	29% [0.02]	-17,116.41	-16,984.22	-16,984.23	-16,984.22
90% [272.59]	100% [0.01]	-17,339.68	-17,067.10	-17,067.10	-17,067.10
28% [167.72]	28% [0.02]	-17,153.03	-16,985.33	-16,985.34	-16,985.33
27% [337.54]	84% [0.01]	-17,521.88	-17,184.35	-17,184.36	-17,184.35
63% [288.63]	93% [169.83]	-17,273.97	-17,155.17	-16,985.36	-16,985.36
87% [130.23]	100% [0.00]	-17,352.75	-17,222.52	-17,222.52	-17,222.52
72% [66.47]	100% [0.00]	-17,227.95	-17,161.48	-17,161.48	-17,161.48
89% [104.49]	99% [34.73]	-17,193.64	-17,123.88	-17,089.16	-17,089.16
97% [83.37]	100% [0.00]	-17,084.43	-17,001.05	-17,001.06	-17,001.05
87% [306.26]	100% [0.00]	-17,278.16	-16,971.89	-16,971.89	-16,971.89
96% [132.22]	100% [0.00]	-17,313.17	-17,180.95	-17,180.95	-17,180.95
86% [183.40]	100% [0.00]	-17,464.89	-17,281.49	-17,281.49	-17,281.49
90% [154.18]	98% [61.68]	-17,266.33	-17,173.83	-17,112.16	-17,112.16
87% [151.65]	100% [0.00]	-17,248.57	-17,096.92	-17,096.92	-17,096.92
88% [137.31]	100% [0.00]	-16,979.76	-16,842.45	-16,842.45	-16,842.45
37% [235.13]	54% [0.01]	-17,359.71	-17,124.59	-17,124.60	-17,124.60
95% [174.13]	100% [0.00]	-17,236.10	-17,061.97	-17,061.97	-17,061.97
94% [192.67]	100% [0.00]	-17,235.11	-17,042.44	-17,042.44	-17,042.44
73% [120.02]	100% [0.01]	-16,935.93	-16,815.91	-16,815.92	-16,815.91
93% [238.17]	100% [0.00]	-17,263.74	-17,025.58	-17,025.59	-17,025.58
95% [168.06]	100% [0.00]	-16,966.64	-16,798.57	-16,798.57	-16,798.57
96% [136.91]	100% [0.00]	-17,008.58	-16,871.66	-16,871.67	-16,871.66
97% [106.44]	100% [0.00]	-17,174.55	-17,068.11	-17,068.11	-17,068.11
97% [105.00]	100% [0.00]	-17,181.66	-17,076.65	-17,076.66	-17,076.65
96% [129.01]	100% [0.00]	-17,262.40	-17,133.39	-17,133.39	-17,133.39
97% [103.80]	100% [0.00]	-17,020.45	-16,916.65	-16,916.65	-16,916.65
38% [102.42]	60% [0.03]	-17,156.11	-17,053.71	-17,053.71	-17,053.70
87% [171.19]	100% [0.00]	-17,139.21	-16,968.02	-16,968.03	-16,968.02
73% [203.23]	100% [0.00]	-17,064.58	-16,861.34	-16,861.35	-16,861.34

Table 18: Percentage (*Perc.*) of global maximum with mean distance from it (*Dist*), *Mean* and *Median* of maximized log-likelihood values, using EM and M-T-EM algorithms under simulated **scenario E** presented in Table 17 of the paper for the HM model with categorical response variables when the latent structure is correctly specified. Each row corresponds to a specific sample, values in bold highlight the best results

Perc. [Dist.] (Glob. Max)		Mean		Median	
EM	M-T-EM	EM	M-T-EM	EM	M-T-EM
100% [0.00]	100% [0.00]	-21,887.52	-21,887.52	-21,887.52	-21,887.52
100% [0.00]	100% [0.00]	-21,778.90	-21,778.90	-21,778.90	-21,778.90
99% [41.05]	100% [0.00]	-22,123.81	-22,082.76	-22,082.76	-22,082.76
100% [0.00]	100% [0.00]	-21,908.72	-21,908.72	-21,908.72	-21,908.72
100% [0.00]	100% [0.00]	-21,833.68	-21,833.68	-21,833.68	-21,833.68
100% [0.00]	100% [0.00]	-21,761.05	-21,761.05	-21,761.05	-21,761.05
100% [0.00]	100% [0.00]	-21,749.58	-21,749.58	-21,749.58	-21,749.58
100% [0.00]	100% [0.00]	-21,670.63	-21,670.63	-21,670.63	-21,670.63
100% [0.00]	100% [0.00]	-21,881.77	-21,881.77	-21,881.77	-21,881.77
100% [0.00]	100% [0.00]	-21,738.87	-21,738.87	-21,738.87	-21,738.87
100% [0.00]	100% [0.00]	-22,043.02	-22,043.02	-22,043.02	-22,043.02
100% [0.00]	100% [0.00]	-22,087.66	-22,087.66	-22,087.66	-22,087.66
99% [43.82]	100% [0.00]	-21,920.45	-21,876.64	-21,876.64	-21,876.64
100% [0.00]	100% [0.00]	-21,702.97	-21,702.97	-21,702.97	-21,702.97
100% [0.00]	100% [0.00]	-21,894.90	-21,894.90	-21,894.90	-21,894.90
100% [0.00]	100% [0.00]	-22,125.61	-22,125.61	-22,125.61	-22,125.61
100% [0.00]	100% [0.00]	-21,800.61	-21,800.61	-21,800.61	-21,800.61
100% [0.00]	100% [0.00]	-21,955.43	-21,955.43	-21,955.43	-21,955.43
100% [0.00]	100% [0.00]	-21,759.79	-21,759.79	-21,759.79	-21,759.79
100% [0.00]	100% [0.00]	-22,084.66	-22,084.66	-22,084.66	-22,084.66
99% [44.59]	100% [0.00]	-21,933.55	-21,888.96	-21,888.96	-21,888.96
100% [0.00]	100% [0.00]	-21,841.84	-21,841.84	-21,841.84	-21,841.84
100% [0.00]	100% [0.00]	-22,133.20	-22,133.20	-22,133.20	-22,133.20
100% [0.00]	100% [0.00]	-21,722.99	-21,722.99	-21,722.99	-21,722.99
100% [0.00]	100% [0.00]	-21,633.65	-21,633.65	-21,633.65	-21,633.65
100% [0.00]	100% [0.00]	-21,895.13	-21,895.13	-21,895.13	-21,895.13
100% [0.00]	100% [0.00]	-21,855.86	-21,855.86	-21,855.86	-21,855.86
100% [0.00]	100% [0.00]	-21,810.70	-21,810.70	-21,810.70	-21,810.70
100% [0.00]	100% [0.00]	-22,023.71	-22,023.71	-22,023.71	-22,023.71
100% [0.00]	100% [0.00]	-21,768.94	-21,768.94	-21,768.94	-21,768.94
100% [0.00]	100% [0.00]	-21,910.40	-21,910.40	-21,910.40	-21,910.40
100% [0.00]	100% [0.00]	-21,853.59	-21,853.59	-21,853.59	-21,853.59
100% [0.00]	100% [0.00]	-21,628.57	-21,628.57	-21,628.57	-21,628.57
100% [0.00]	100% [0.00]	-21,652.07	-21,652.07	-21,652.07	-21,652.07
100% [0.00]	100% [0.00]	-21,780.10	-21,780.10	-21,780.10	-21,780.10
100% [0.00]	100% [0.00]	-22,117.09	-22,117.09	-22,117.09	-22,117.09
99% [41.27]	100% [0.00]	-21,804.98	-21,763.71	-21,763.71	-21,763.71
100% [0.00]	100% [0.00]	-21,996.97	-21,996.97	-21,996.97	-21,996.97
100% [0.00]	100% [0.00]	-21,602.85	-21,602.85	-21,602.85	-21,602.85
100% [0.00]	100% [0.00]	-21,829.75	-21,829.75	-21,829.75	-21,829.75
100% [0.00]	100% [0.00]	-21,823.74	-21,823.74	-21,823.74	-21,823.74
100% [0.00]	100% [0.00]	-21,898.49	-21,898.49	-21,898.49	-21,898.49
100% [0.00]	100% [0.00]	-22,153.83	-22,153.83	-22,153.83	-22,153.83
100% [0.00]	100% [0.00]	-21,870.05	-21,870.05	-21,870.05	-21,870.05
100% [0.00]	100% [0.00]	-21,664.08	-21,664.08	-21,664.08	-21,664.08
100% [0.00]	100% [0.00]	-21,961.06	-21,961.06	-21,961.06	-21,961.06
99% [43.36]	100% [0.00]	-22,044.40	-22,001.04	-22,001.04	-22,001.04
100% [0.00]	100% [0.00]	-21,907.11	-21,907.11	-21,907.11	-21,907.11
100% [0.00]	100% [0.00]	-22,065.51	-22,065.51	-22,065.51	-22,065.51
99% [44.44]	100% [0.00]	-21,672.31	-21,627.87	-21,627.87	-21,627.87

Table 19: Percentage (*Perc.*) of global maximum with mean distance from it (*Dist*), *Mean* and *Median* of maximized log-likelihood values, using EM and M-T-EM algorithms under simulated **scenario F** presented in Table 17 of the paper for the HM model with categorical response variables when the latent structure is correctly specified. Each row corresponds to a specific sample, values in bold highlight the best results

Perc. [Dist.] (Glob. Max)		Mean		Median			
EM	M-T-EM	EM	M-T-EM	EM	M-T-EM		
76%	[2.35]	100%	[0.20]	-11,721.44	-11,719.29	-11,719.51	-11,719.28
51%	[5.96]	98%	[0.34]	-11,843.64	-11,838.02	-11,837.96	-11,837.83
44%	[5.32]	86%	[1.60]	-11,625.76	-11,622.04	-11,625.92	-11,620.97
43%	[2.78]	71%	[1.18]	-11,841.10	-11,839.50	-11,839.64	-11,839.05
34%	[3.41]	69%	[1.18]	-12,032.97	-12,030.74	-12,032.56	-12,029.62
22%	[5.56]	44%	[3.65]	-11,743.29	-11,741.39	-11,743.80	-11,743.47
10%	[7.19]	12%	[4.24]	-11,688.99	-11,686.04	-11,687.67	-11,685.76
12%	[3.44]	14%	[2.93]	-11,908.39	-11,907.88	-11,907.97	-11,907.43
27%	[6.37]	40%	[3.91]	-12,005.90	-12,003.44	-12,007.45	-12,005.71
40%	[2.96]	90%	[1.16]	-12,041.64	-12,039.84	-12,040.39	-12,039.69
16%	[6.59]	19%	[5.75]	-11,677.32	-11,676.47	-11,676.65	-11,676.34
52%	[3.44]	99%	[0.27]	-11,804.05	-11,800.89	-11,801.77	-11,800.83
4%	[6.91]	4%	[6.39]	-11,968.49	-11,967.97	-11,968.85	-11,968.71
24%	[4.48]	28%	[3.87]	-11,986.65	-11,986.04	-11,987.20	-11,987.06
5%	[4.47]	7%	[3.52]	-11,941.76	-11,940.81	-11,940.97	-11,940.21
24%	[5.90]	36%	[4.71]	-11,781.60	-11,780.42	-11,782.78	-11,782.59
19%	[3.73]	40%	[2.24]	-11,617.73	-11,616.25	-11,617.33	-11,616.00
30%	[3.42]	33%	[2.33]	-12,016.09	-12,014.99	-12,014.68	-12,014.28
21%	[4.77]	19%	[4.17]	-11,798.28	-11,797.69	-11,797.86	-11,797.84
33%	[3.45]	89%	[0.72]	-12,083.70	-12,080.96	-12,082.74	-12,080.54
30%	[2.47]	37%	[1.36]	-11,840.53	-11,839.42	-11,840.01	-11,839.42
46%	[3.18]	98%	[0.56]	-11,921.64	-11,919.02	-11,919.97	-11,919.05
8%	[3.58]	12%	[2.66]	-12,004.52	-12,003.61	-12,003.50	-12,003.04
12%	[5.55]	15%	[4.91]	-11,759.66	-11,759.02	-11,759.73	-11,759.66
11%	[4.77]	12%	[4.12]	-11,583.00	-11,582.36	-11,581.78	-11,581.78
17%	[5.45]	36%	[2.81]	-12,153.17	-12,150.54	-12,153.17	-12,149.11
51%	[3.40]	82%	[0.99]	-11,727.56	-11,725.15	-11,725.33	-11,725.24
18%	[3.98]	18%	[3.67]	-11,342.90	-11,342.59	-11,341.78	-11,340.99
36%	[2.96]	55%	[1.87]	-11,586.28	-11,585.19	-11,585.88	-11,583.96
30%	[2.98]	34%	[2.01]	-11,691.42	-11,690.44	-11,691.29	-11,691.18
6%	[6.09]	6%	[4.35]	-11,933.34	-11,931.59	-11,931.68	-11,931.14
20%	[5.65]	40%	[3.30]	-11,350.75	-11,348.39	-11,350.42	-11,349.13
25%	[3.36]	47%	[1.51]	-11,829.62	-11,827.77	-11,828.04	-11,827.49
29%	[3.71]	96%	[0.38]	-11,870.02	-11,866.69	-11,869.04	-11,866.49
32%	[4.24]	98%	[0.30]	-11,971.40	-11,967.46	-11,970.12	-11,967.39
26%	[3.98]	83%	[0.71]	-11,555.04	-11,551.77	-11,554.95	-11,551.23
43%	[5.13]	73%	[2.07]	-11,893.35	-11,890.29	-11,891.30	-11,888.54
3%	[8.28]	9%	[7.10]	-11,776.83	-11,775.65	-11,776.79	-11,776.65
32%	[3.74]	86%	[1.24]	-11,732.34	-11,729.84	-11,730.71	-11,729.74
4%	[5.80]	4%	[4.08]	-11,982.87	-11,981.16	-11,981.30	-11,980.91
25%	[4.64]	26%	[4.05]	-11,845.42	-11,844.83	-11,845.29	-11,845.25
6%	[5.27]	6%	[4.83]	-11,867.08	-11,866.64	-11,866.66	-11,866.01
41%	[3.24]	95%	[0.27]	-12,116.26	-12,113.28	-12,116.05	-12,113.09
16%	[5.01]	79%	[1.04]	-11,847.20	-11,843.24	-11,847.97	-11,842.20
43%	[4.40]	98%	[0.25]	-12,211.09	-12,206.95	-12,208.93	-12,206.87
35%	[4.23]	41%	[2.01]	-12,103.90	-12,101.68	-12,103.59	-12,100.98
51%	[2.74]	94%	[1.09]	-11,806.83	-11,805.17	-11,805.19	-11,805.13
36%	[4.57]	87%	[1.36]	-11,817.86	-11,814.64	-11,818.15	-11,814.34
43%	[3.84]	62%	[1.39]	-11,593.19	-11,590.74	-11,593.25	-11,589.58
75%	[4.10]	80%	[2.98]	-11,570.01	-11,568.90	-11,566.02	-11,566.01

Table 20: Percentage (*Perc.*) of global maximum with mean distance from it (*Dist*), *Mean* and *Median* of maximized log-likelihood values, using EM and M-T-EM algorithms under simulated **scenario A** presented in Table 17 of the paper for the HM model with categorical response variables when the latent structure is not correctly specified. Each row corresponds to a specific sample, values in bold highlight the best results

Perc. [Dist.] (Glob. Max)		Mean		Median	
EM	M-T-EM	EM	M-T-EM	EM	M-T-EM
24% [4.08]	27% [3.48]	-10,894.26	-10,893.67	-10,893.30	-10,893.17
7% [5.99]	12% [5.40]	-10,802.79	-10,802.20	-10,802.73	-10,801.09
25% [7.76]	33% [7.07]	-10,907.05	-10,906.36	-10,909.31	-10,909.30
27% [2.87]	36% [2.48]	-10,725.06	-10,724.67	-10,724.97	-10,724.93
39% [3.29]	42% [3.07]	-10,912.74	-10,912.52	-10,912.19	-10,912.34
0% [8.13]	1% [6.79]	-11,133.97	-11,132.64	-11,133.30	-11,131.98
54% [2.80]	58% [2.19]	-11,033.55	-11,032.94	-11,032.50	-11,032.40
29% [3.16]	72% [1.16]	-10,973.26	-10,971.27	-10,973.83	-10,970.22
60% [2.31]	96% [0.32]	-11,170.07	-11,168.09	-11,168.87	-11,167.78
23% [7.41]	25% [7.19]	-10,867.19	-10,866.98	-10,866.06	-10,866.05
26% [6.04]	33% [5.49]	-10,931.33	-10,930.78	-10,932.51	-10,932.44
31% [4.36]	75% [2.47]	-10,999.14	-10,997.24	-10,999.62	-10,996.01
41% [3.07]	70% [1.26]	-10,909.22	-10,907.41	-10,908.95	-10,906.26
26% [4.42]	59% [3.91]	-10,975.62	-10,975.11	-10,973.89	-10,973.24
14% [3.79]	17% [3.21]	-10,915.51	-10,914.93	-10,914.96	-10,914.46
36% [3.26]	39% [3.08]	-11,139.47	-11,139.29	-11,139.46	-11,138.98
35% [4.79]	53% [3.29]	-10,817.43	-10,815.94	-10,815.36	-10,814.74
12% [6.73]	17% [5.39]	-11,111.75	-11,110.41	-11,112.43	-11,111.03
31% [3.48]	30% [3.43]	-10,937.56	-10,937.51	-10,937.21	-10,937.77
21% [4.98]	20% [4.95]	-10,921.97	-10,921.94	-10,921.70	-10,920.45
46% [2.85]	62% [2.03]	-10,839.64	-10,838.81	-10,839.24	-10,837.90
36% [4.03]	61% [3.48]	-11,073.51	-11,072.96	-11,072.89	-11,070.55
29% [4.74]	33% [4.29]	-11,016.74	-11,016.29	-11,018.23	-11,017.50
18% [4.99]	26% [4.35]	-11,090.78	-11,090.15	-11,091.73	-11,090.40
39% [4.22]	38% [3.72]	-10,958.28	-10,957.79	-10,958.86	-10,956.28
45% [3.42]	67% [2.65]	-11,061.36	-11,060.60	-11,060.52	-11,059.75
38% [2.96]	75% [1.56]	-10,857.18	-10,855.78	-10,857.39	-10,854.62
18% [6.52]	20% [5.21]	-11,176.93	-11,175.63	-11,175.02	-11,174.88
52% [2.78]	75% [1.20]	-11,033.36	-11,031.78	-11,032.61	-11,030.63
9% [6.40]	11% [5.90]	-11,034.36	-11,033.87	-11,034.36	-11,033.19
6% [4.33]	18% [3.37]	-11,010.50	-11,009.54	-11,009.77	-11,008.85
54% [3.09]	54% [2.91]	-10,979.83	-10,979.65	-10,978.17	-10,978.16
34% [5.07]	36% [4.70]	-10,907.87	-10,907.50	-10,908.04	-10,908.04
19% [4.66]	20% [3.50]	-11,110.06	-11,108.90	-11,108.66	-11,108.35
20% [6.12]	29% [5.20]	-10,956.44	-10,955.52	-10,957.05	-10,956.44
16% [5.34]	30% [4.51]	-11,134.50	-11,133.67	-11,135.39	-11,133.60
43% [3.11]	59% [1.65]	-10,744.24	-10,742.79	-10,743.40	-10,741.31
15% [7.57]	22% [5.23]	-11,045.34	-11,043.00	-11,045.95	-11,043.67
30% [6.21]	70% [2.80]	-11,024.81	-11,021.39	-11,026.11	-11,018.69
52% [3.34]	66% [2.68]	-10,957.57	-10,956.91	-10,955.85	-10,954.56
26% [4.24]	55% [2.21]	-10,784.57	-10,782.53	-10,784.06	-10,780.66
40% [3.67]	73% [2.44]	-10,976.89	-10,975.65	-10,977.59	-10,974.46
38% [4.60]	81% [1.85]	-11,123.12	-11,120.37	-11,121.32	-11,119.57
39% [2.85]	61% [1.83]	-11,069.89	-11,068.86	-11,069.60	-11,067.51
25% [4.48]	60% [2.79]	-11,075.11	-11,073.42	-11,075.24	-11,072.05
26% [4.36]	68% [2.17]	-11,036.43	-11,034.24	-11,036.85	-11,032.22
39% [2.62]	65% [1.88]	-11,050.78	-11,050.05	-11,050.96	-11,049.46
15% [3.82]	23% [2.72]	-11,116.05	-11,114.95	-11,116.06	-11,115.47
45% [3.38]	50% [2.97]	-10,842.00	-10,841.59	-10,842.98	-10,841.75
78% [1.65]	88% [1.24]	-11,061.79	-11,061.37	-11,061.68	-11,061.17

Table 21: Percentage (*Perc.*) of global maximum with mean distance from it (*Dist*), *Mean* and *Median* of maximized log-likelihood values, using EM and M-T-EM algorithms under simulated **scenario B** presented in Table 17 of the paper for the HM model with categorical response variables when the latent structure is not correctly specified. Each row corresponds to a specific sample, values in bold highlight the best results

Perc. [Dist.] (Glob. Max)		Mean		Median	
EM	M-T-EM	EM	M-T-EM	EM	M-T-EM
37% [5.55]	66% [3.27]	-21,869.24	-21,866.97	-21,869.89	-21,863.88
59% [3.74]	64% [3.26]	-22,103.25	-22,102.76	-22,103.37	-22,101.77
77% [3.11]	81% [2.65]	-21,560.45	-21,559.98	-21,560.53	-21,560.45
57% [3.84]	76% [2.59]	-22,159.43	-22,158.18	-22,158.82	-22,155.88
40% [4.40]	43% [4.27]	-22,137.35	-22,137.22	-22,138.01	-22,138.09
27% [6.20]	36% [5.10]	-21,874.17	-21,873.08	-21,874.13	-21,872.85
47% [4.96]	70% [3.99]	-22,263.60	-22,262.63	-22,263.55	-22,261.85
31% [6.47]	55% [5.04]	-21,983.97	-21,982.54	-21,985.14	-21,981.77
50% [4.94]	54% [4.70]	-21,975.06	-21,974.82	-21,974.51	-21,974.31
60% [4.35]	82% [3.17]	-22,152.60	-22,151.42	-22,152.30	-22,150.47
49% [4.64]	51% [4.46]	-22,167.40	-22,167.23	-22,167.45	-22,166.98
16% [6.64]	23% [5.61]	-21,756.09	-21,755.06	-21,756.26	-21,755.53
32% [7.02]	34% [6.60]	-21,891.29	-21,890.87	-21,892.88	-21,892.30
60% [3.90]	76% [3.52]	-22,238.38	-22,238.01	-22,237.60	-22,236.85
25% [6.69]	29% [6.50]	-22,158.92	-22,158.73	-22,159.94	-22,159.87
50% [5.69]	83% [3.40]	-22,238.62	-22,236.33	-22,237.72	-22,234.71
45% [6.24]	55% [5.50]	-22,141.06	-22,140.31	-22,139.98	-22,138.18
49% [4.32]	51% [4.06]	-21,999.93	-21,999.67	-22,000.09	-21,999.97
33% [5.24]	35% [4.62]	-22,009.78	-22,009.16	-22,010.30	-22,009.77
37% [8.01]	67% [5.49]	-22,034.70	-22,032.18	-22,036.12	-22,029.24
78% [2.93]	79% [2.88]	-21,882.46	-21,882.40	-21,882.59	-21,882.51
60% [4.03]	62% [3.54]	-22,171.32	-22,170.84	-22,170.66	-22,169.02
27% [5.92]	26% [5.86]	-22,167.43	-22,167.37	-22,167.64	-22,167.71
45% [4.36]	51% [3.99]	-22,071.82	-22,071.46	-22,072.19	-22,071.72
38% [7.36]	70% [6.24]	-22,452.28	-22,451.16	-22,453.54	-22,448.97
47% [6.98]	76% [4.23]	-22,360.79	-22,358.05	-22,362.29	-22,354.73
66% [3.67]	65% [3.68]	-21,930.11	-21,930.12	-21,930.28	-21,930.29
31% [4.92]	33% [4.43]	-22,168.15	-22,167.66	-22,168.77	-22,167.77
62% [3.51]	79% [2.58]	-21,818.15	-21,817.23	-21,818.35	-21,814.86
70% [3.71]	93% [3.03]	-22,267.56	-22,266.88	-22,266.55	-22,266.36
13% [8.04]	37% [6.44]	-21,981.47	-21,979.87	-21,981.23	-21,978.83
20% [6.14]	27% [5.26]	-21,970.81	-21,969.92	-21,970.38	-21,970.25
30% [4.66]	56% [3.05]	-21,976.92	-21,975.32	-21,977.67	-21,975.92
82% [2.54]	89% [2.24]	-21,723.69	-21,723.38	-21,723.32	-21,723.32
10% [9.72]	22% [9.35]	-22,129.88	-22,129.52	-22,131.64	-22,130.58
25% [7.38]	23% [7.15]	-22,278.84	-22,278.62	-22,279.54	-22,279.62
74% [3.66]	92% [3.07]	-22,296.07	-22,295.48	-22,295.80	-22,295.59
31% [4.96]	56% [4.05]	-22,055.01	-22,054.09	-22,056.07	-22,053.46
64% [3.35]	82% [2.65]	-21,903.87	-21,903.17	-21,903.75	-21,902.58
58% [4.86]	64% [4.66]	-21,997.71	-21,997.51	-21,996.24	-21,995.91
79% [3.07]	88% [2.33]	-22,055.13	-22,054.38	-22,054.65	-22,053.81
54% [4.23]	70% [4.24]	-21,828.63	-21,828.65	-21,828.50	-21,828.12
73% [3.09]	83% [2.97]	-21,976.09	-21,975.98	-21,975.58	-21,974.92
68% [4.00]	83% [2.93]	-21,974.21	-21,973.14	-21,972.76	-21,971.94
17% [6.45]	29% [5.50]	-22,238.47	-22,237.53	-22,238.45	-22,238.13
41% [5.84]	69% [3.67]	-22,021.66	-22,019.49	-22,023.84	-22,015.91
25% [5.00]	30% [4.50]	-22,049.44	-22,048.93	-22,050.16	-22,049.99
65% [3.83]	88% [2.46]	-22,186.45	-22,185.08	-22,185.64	-22,184.91
44% [4.73]	44% [4.52]	-22,024.88	-22,024.67	-22,025.58	-22,025.11
77% [3.06]	81% [2.18]	-22,093.76	-22,092.87	-22,092.54	-22,091.12

Table 22: Percentage (*Perc.*) of global maximum with mean distance from it (*Dist*), *Mean* and *Median* of maximized log-likelihood values, using EM and M-T-EM algorithms under simulated **scenario C** presented in Table 17 of the paper for the HM model with categorical response variables when the latent structure is not correctly specified. Each row corresponds to a specific sample, values in bold highlight the best results

Perc. [Dist.] (Glob. Max)		Mean		Median	
EM	M-T-EM	EM	M-T-EM	EM	M-T-EM
23% [7.68]	44% [5.56]	-20,459.76	-20,457.64	-20,460.46	-20,457.05
11% [7.73]	22% [6.98]	-20,396.50	-20,395.74	-20,396.89	-20,397.29
21% [7.88]	42% [5.98]	-20,373.14	-20,371.24	-20,373.13	-20,371.34
38% [4.78]	72% [2.50]	-20,336.91	-20,334.63	-20,336.83	-20,333.62
49% [5.27]	52% [4.40]	-20,406.23	-20,405.36	-20,405.12	-20,404.95
34% [5.99]	51% [4.88]	-19,931.81	-19,930.69	-19,932.22	-19,928.18
52% [4.37]	72% [2.72]	-20,739.02	-20,737.37	-20,738.66	-20,736.62
4% [9.89]	19% [6.51]	-20,222.49	-20,219.11	-20,220.67	-20,219.63
46% [5.08]	78% [2.84]	-20,361.91	-20,359.66	-20,361.45	-20,358.23
16% [8.17]	25% [7.50]	-20,222.55	-20,221.88	-20,223.46	-20,223.44
15% [9.13]	20% [6.98]	-20,421.21	-20,419.05	-20,421.66	-20,418.64
32% [5.55]	71% [3.50]	-20,225.60	-20,223.55	-20,225.37	-20,222.87
19% [9.37]	39% [7.58]	-20,273.51	-20,271.71	-20,273.61	-20,273.19
25% [6.97]	33% [5.41]	-20,398.55	-20,397.00	-20,398.55	-20,398.11
39% [7.02]	75% [3.81]	-20,463.38	-20,460.17	-20,464.16	-20,457.12
31% [6.89]	59% [3.91]	-20,079.52	-20,076.54	-20,078.92	-20,074.38
36% [6.32]	61% [5.02]	-20,370.12	-20,368.81	-20,370.70	-20,366.69
31% [5.79]	36% [4.97]	-20,274.11	-20,273.29	-20,274.11	-20,273.70
29% [5.79]	34% [4.48]	-20,426.04	-20,424.72	-20,425.86	-20,425.48
22% [7.48]	32% [6.10]	-20,681.12	-20,679.74	-20,681.73	-20,681.14
49% [4.48]	82% [2.17]	-20,269.96	-20,267.65	-20,269.65	-20,266.49
22% [5.82]	22% [5.54]	-20,468.16	-20,467.87	-20,468.06	-20,467.88
20% [9.94]	46% [7.06]	-20,413.32	-20,410.44	-20,414.37	-20,408.30
22% [8.86]	35% [5.12]	-20,555.64	-20,551.90	-20,557.53	-20,553.09
69% [3.39]	86% [2.67]	-20,384.85	-20,384.13	-20,384.82	-20,384.29
42% [6.29]	78% [1.66]	-20,215.71	-20,211.08	-20,215.21	-20,210.02
21% [9.92]	48% [6.01]	-20,173.21	-20,169.30	-20,176.13	-20,170.06
27% [7.99]	33% [6.27]	-20,399.53	-20,397.81	-20,400.54	-20,396.21
6% [9.73]	15% [8.00]	-20,520.45	-20,518.71	-20,518.42	-20,518.18
5% [10.36]	4% [9.03]	-20,625.05	-20,623.72	-20,625.54	-20,624.20
23% [8.19]	44% [6.30]	-20,617.47	-20,615.58	-20,618.41	-20,614.68
29% [6.55]	50% [4.82]	-20,474.17	-20,472.43	-20,474.23	-20,471.70
11% [11.00]	12% [10.25]	-20,391.82	-20,391.08	-20,392.73	-20,392.63
46% [6.67]	69% [5.51]	-20,362.82	-20,361.65	-20,362.48	-20,357.93
7% [8.67]	20% [5.99]	-20,223.91	-20,221.23	-20,224.36	-20,221.85
28% [7.10]	41% [5.60]	-20,433.88	-20,432.39	-20,434.21	-20,434.50
28% [6.80]	65% [3.87]	-20,494.27	-20,491.34	-20,494.70	-20,489.73
15% [7.04]	11% [6.42]	-20,715.62	-20,715.00	-20,715.57	-20,715.15
27% [5.97]	54% [2.59]	-20,064.05	-20,060.67	-20,064.20	-20,058.80
66% [50.74]	76% [2.76]	-20,546.61	-20,498.62	-20,499.44	-20,499.28
52% [3.98]	86% [2.28]	-20,519.72	-20,518.03	-20,519.74	-20,516.84
34% [5.49]	52% [4.04]	-20,445.64	-20,444.19	-20,444.85	-20,443.73
19% [6.66]	32% [5.48]	-20,392.00	-20,390.82	-20,392.38	-20,390.51
17% [7.51]	26% [6.26]	-20,330.33	-20,329.08	-20,330.84	-20,330.53
17% [8.62]	25% [6.86]	-20,291.37	-20,289.61	-20,291.29	-20,289.90
61% [4.06]	97% [2.06]	-20,166.63	-20,164.62	-20,165.72	-20,164.35
12% [7.68]	16% [5.91]	-20,504.09	-20,502.32	-20,503.49	-20,503.06
37% [6.45]	55% [4.29]	-20,471.16	-20,469.00	-20,471.80	-20,465.65
28% [5.51]	38% [4.92]	-20,393.35	-20,392.76	-20,392.75	-20,392.38
39% [6.40]	51% [5.73]	-20,513.70	-20,513.03	-20,513.89	-20,511.07

Table 23: Percentage (*Perc.*) of global maximum with mean distance from it (*Dist*), *Mean* and *Median* of maximized log-likelihood values, using EM and M-T-EM algorithms under simulated **scenario D** presented in Table 17 of the paper for the HM model with categorical response variables when the latent structure is not correctly specified. Each row corresponds to a specific sample, values in bold highlight the best results

Perc. [Dist.] (Glob. Max)		Mean		Median	
EM	M-T-EM	EM	M-T-EM	EM	M-T-EM
29% [8.82]	54% [6.27]	-17,042.96	-17,040.41	-17,044.04	-17,034.30
29% [6.86]	42% [4.97]	-17,114.14	-17,112.26	-17,112.82	-17,110.81
11% [7.48]	21% [5.62]	-16,992.65	-16,990.79	-16,991.91	-16,989.89
39% [5.15]	55% [3.87]	-17,037.62	-17,036.33	-17,037.85	-17,033.08
19% [6.71]	27% [5.26]	-17,133.26	-17,131.81	-17,133.03	-17,132.33
39% [4.54]	78% [3.12]	-16,839.21	-16,837.79	-16,838.83	-16,837.06
33% [8.78]	40% [8.15]	-17,055.21	-17,054.59	-17,056.77	-17,055.93
20% [6.60]	29% [5.52]	-17,019.33	-17,018.25	-17,019.28	-17,018.99
29% [5.20]	50% [4.09]	-17,219.05	-17,217.95	-17,219.23	-17,217.73
12% [8.94]	26% [7.02]	-17,330.62	-17,328.70	-17,330.38	-17,329.37
27% [5.53]	69% [2.93]	-17,100.22	-17,097.62	-17,100.19	-17,096.45
13% [7.15]	18% [5.41]	-17,014.90	-17,013.16	-17,014.74	-17,013.37
22% [6.61]	46% [4.34]	-16,966.41	-16,964.13	-16,967.05	-16,963.95
19% [8.14]	40% [6.72]	-16,976.32	-16,974.89	-16,977.29	-16,975.79
28% [4.76]	52% [2.96]	-17,007.18	-17,005.38	-17,007.58	-17,004.40
27% [5.43]	52% [3.07]	-17,095.43	-17,093.08	-17,094.88	-17,090.10
9% [9.94]	12% [8.33]	-16,946.40	-16,944.79	-16,946.41	-16,945.78
25% [9.40]	31% [7.14]	-17,177.78	-17,175.52	-17,179.06	-17,177.01
35% [8.33]	66% [4.40]	-17,114.30	-17,110.36	-17,116.74	-17,106.81
39% [5.21]	50% [4.10]	-17,224.33	-17,223.22	-17,223.47	-17,222.54
1% [10.29]	1% [8.33]	-16,866.22	-16,864.26	-16,866.21	-16,865.01
21% [6.67]	59% [3.93]	-17,112.65	-17,109.92	-17,113.58	-17,106.19
25% [5.14]	53% [3.00]	-16,985.79	-16,983.66	-16,985.62	-16,983.63
15% [6.53]	45% [3.64]	-16,979.92	-16,977.04	-16,979.24	-16,976.84
33% [5.38]	36% [3.88]	-17,220.43	-17,218.93	-17,219.35	-17,218.60
20% [5.87]	26% [3.81]	-17,079.76	-17,077.70	-17,078.24	-17,077.88
33% [5.08]	44% [3.21]	-17,181.84	-17,179.96	-17,182.26	-17,181.39
43% [3.96]	44% [3.45]	-16,918.65	-16,918.14	-16,918.46	-16,918.33
19% [41.92]	29% [7.15]	-17,031.28	-16,996.50	-16,999.86	-16,995.42
15% [6.26]	48% [3.80]	-16,923.94	-16,921.48	-16,923.90	-16,921.17
18% [6.87]	25% [5.69]	-17,073.47	-17,072.29	-17,074.46	-17,072.53
32% [5.85]	46% [4.49]	-17,068.97	-17,067.61	-17,067.61	-17,066.61
14% [37.62]	9% [5.69]	-17,168.89	-17,136.96	-17,136.98	-17,136.30
30% [5.92]	41% [4.97]	-16,974.19	-16,973.24	-16,974.74	-16,972.71
33% [5.52]	66% [2.69]	-17,014.85	-17,012.01	-17,014.45	-17,010.01
24% [5.62]	38% [3.52]	-17,030.81	-17,028.71	-17,030.61	-17,029.22
28% [5.67]	90% [2.34]	-17,025.54	-17,022.20	-17,024.88	-17,022.07
40% [5.93]	73% [3.09]	-17,097.61	-17,094.77	-17,098.32	-17,092.96
28% [5.95]	30% [4.56]	-17,184.43	-17,183.05	-17,184.47	-17,182.59
8% [9.91]	26% [7.85]	-17,068.38	-17,066.31	-17,068.10	-17,066.64
44% [4.31]	53% [3.92]	-17,078.73	-17,078.35	-17,078.82	-17,077.28
46% [3.92]	64% [2.51]	-16,987.85	-16,986.44	-16,987.39	-16,986.79
21% [10.26]	56% [5.82]	-16,774.00	-16,769.56	-16,774.94	-16,763.74
12% [8.02]	22% [6.64]	-17,040.63	-17,039.25	-17,038.82	-17,036.49
31% [6.17]	44% [4.69]	-17,199.98	-17,198.50	-17,200.33	-17,198.99
27% [6.64]	48% [3.93]	-17,120.42	-17,117.72	-17,119.83	-17,118.83
51% [4.48]	72% [3.31]	-16,777.21	-16,776.04	-16,776.01	-16,775.96
49% [4.58]	50% [4.28]	-17,019.22	-17,018.93	-17,018.15	-17,017.98
22% [5.46]	32% [4.08]	-17,126.58	-17,125.19	-17,126.87	-17,125.29
31% [4.53]	61% [3.38]	-16,906.61	-16,905.46	-16,906.49	-16,903.82

Table 24: Percentage (*Perc.*) of global maximum with mean distance from it (*Dist*), *Mean* and *Median* of maximized log-likelihood values, using EM and M-T-EM algorithms under simulated **scenario E** presented in Table 17 of the paper for the HM model with categorical response variables when the latent structure is not correctly specified. Each row corresponds to a specific sample, values in bold highlight the best results

Perc. [Dist.] (Glob. Max)		Mean		Median	
EM	M-T-EM	EM	M-T-EM	EM	M-T-EM
32% [5.86]	36% [5.16]	-21,859.77	-21,859.07	-21,860.23	-21,859.75
66% [3.48]	79% [2.99]	-21,749.81	-21,749.31	-21,749.79	-21,748.82
59% [5.30]	75% [4.43]	-21,935.71	-21,934.84	-21,934.27	-21,933.73
71% [3.11]	84% [2.46]	-21,945.47	-21,944.82	-21,945.06	-21,943.40
59% [4.54]	69% [3.92]	-21,973.78	-21,973.16	-21,973.16	-21,972.88
31% [5.47]	32% [5.04]	-21,877.43	-21,877.00	-21,878.62	-21,878.48
43% [5.43]	71% [3.46]	-21,976.27	-21,974.31	-21,976.48	-21,972.15
64% [3.63]	68% [3.26]	-21,847.18	-21,846.81	-21,846.10	-21,845.23
47% [4.57]	65% [4.28]	-21,911.23	-21,910.95	-21,911.35	-21,910.35
46% [4.81]	60% [4.04]	-21,621.00	-21,620.23	-21,621.01	-21,620.05
30% [8.00]	72% [4.07]	-21,891.10	-21,887.18	-21,893.72	-21,883.53
9% [8.07]	8% [7.08]	-21,858.11	-21,857.12	-21,857.49	-21,856.31
60% [4.21]	59% [3.98]	-21,809.26	-21,809.03	-21,808.50	-21,808.49
34% [7.81]	68% [5.14]	-21,841.48	-21,838.81	-21,842.35	-21,835.69
37% [6.23]	54% [4.78]	-21,866.34	-21,864.89	-21,867.28	-21,861.38
52% [4.79]	76% [2.87]	-21,990.71	-21,988.79	-21,990.26	-21,986.83
21% [6.47]	25% [6.26]	-21,736.25	-21,736.04	-21,737.08	-21,737.09
39% [5.82]	65% [3.96]	-21,990.70	-21,988.84	-21,992.61	-21,986.75
28% [4.90]	32% [4.59]	-21,779.06	-21,778.75	-21,779.38	-21,778.92
0% [68.48]	32% [4.59]	-21,842.64	-21,778.75	-21,842.02	-21,778.92
69% [3.21]	84% [2.61]	-21,919.06	-21,918.45	-21,918.51	-21,917.81
10% [7.38]	10% [6.31]	-21,940.69	-21,939.63	-21,940.04	-21,939.83
66% [3.96]	68% [3.66]	-22,030.33	-22,030.03	-22,030.43	-22,030.18
34% [5.52]	32% [5.27]	-21,864.42	-21,864.17	-21,865.07	-21,865.13
15% [6.23]	18% [6.03]	-21,909.29	-21,909.09	-21,909.45	-21,909.43
94% [2.01]	99% [1.50]	-21,697.28	-21,696.76	-21,696.95	-21,696.33
78% [3.11]	96% [2.32]	-22,046.47	-22,045.68	-22,046.27	-22,045.78
22% [6.62]	35% [5.89]	-21,764.61	-21,763.88	-21,765.01	-21,764.86
56% [4.45]	53% [4.33]	-21,856.79	-21,856.66	-21,856.20	-21,856.54
45% [5.59]	50% [5.26]	-21,799.19	-21,798.87	-21,799.05	-21,798.18
22% [6.71]	62% [3.94]	-21,889.63	-21,886.86	-21,891.33	-21,883.32
52% [5.05]	63% [4.28]	-21,995.74	-21,994.97	-21,994.08	-21,992.89
8% [11.03]	16% [10.24]	-21,825.15	-21,824.36	-21,825.21	-21,824.75
75% [3.26]	81% [2.84]	-22,146.56	-22,146.13	-22,145.90	-22,145.59
34% [4.59]	55% [3.83]	-21,879.22	-21,878.47	-21,879.32	-21,878.43
38% [5.57]	35% [4.86]	-21,867.64	-21,866.93	-21,868.30	-21,868.07
29% [6.21]	32% [6.08]	-21,869.46	-21,869.33	-21,869.98	-21,869.80
34% [5.48]	41% [4.92]	-21,756.73	-21,756.17	-21,756.55	-21,756.27
37% [5.16]	61% [4.34]	-21,745.06	-21,744.24	-21,744.53	-21,743.96
42% [5.80]	49% [5.46]	-21,781.67	-21,781.33	-21,782.36	-21,780.30
58% [4.82]	73% [4.37]	-21,997.17	-21,996.72	-21,996.59	-21,996.18
68% [3.45]	70% [3.33]	-21,582.52	-21,582.40	-21,582.09	-21,581.95
76% [2.78]	94% [1.87]	-22,075.38	-22,074.48	-22,074.22	-22,073.87
37% [6.09]	49% [5.51]	-21,875.40	-21,874.83	-21,874.78	-21,873.91
47% [4.96]	77% [3.80]	-21,669.88	-21,668.72	-21,671.07	-21,666.59
10% [7.99]	19% [7.35]	-21,755.32	-21,754.68	-21,756.34	-21,755.77
53% [4.53]	64% [4.00]	-21,948.05	-21,947.53	-21,947.40	-21,946.82
57% [4.38]	69% [4.15]	-21,876.84	-21,876.61	-21,876.48	-21,876.28
45% [6.05]	64% [4.61]	-21,878.71	-21,877.27	-21,880.20	-21,875.30
75% [3.18]	87% [3.00]	-21,872.12	-21,871.95	-21,872.27	-21,871.44

Table 25: Percentage (*Perc.*) of global maximum with mean distance from it (*Dist*), *Mean* and *Median* of maximized log-likelihood values, using EM and M-T-EM algorithms under simulated **scenario F** presented in Table 17 of the paper for the HM model with categorical response variables when the latent structure is not correctly specified. Each row corresponds to a specific sample, values in bold highlight the best results

Perc. [Dist.] (Glob. Max)		Mean		Median	
EM	M-T-EM	EM	M-T-EM	EM	M-T-EM
4% [10.03]	11% [7.65]	-11,589.61	-11,587.23	-11,588.61	-11,585.68
7% [9.38]	8% [8.42]	-11,580.56	-11,579.60	-11,580.19	-11,578.51
1% [9.10]	2% [7.43]	-11,693.97	-11,692.30	-11,692.88	-11,691.92
6% [7.81]	26% [4.22]	-11,441.67	-11,438.08	-11,441.50	-11,437.18
29% [8.04]	54% [5.62]	-11,425.56	-11,423.14	-11,425.42	-11,418.74
7% [10.14]	9% [8.98]	-11,954.41	-11,953.24	-11,953.65	-11,952.73
2% [9.83]	5% [9.02]	-11,925.46	-11,924.65	-11,925.58	-11,924.43
4% [8.71]	17% [5.89]	-11,872.64	-11,869.81	-11,872.24	-11,868.70
12% [6.27]	20% [4.83]	-11,814.86	-11,813.43	-11,814.64	-11,813.23
8% [6.13]	14% [5.59]	-11,872.48	-11,871.94	-11,871.89	-11,870.41
17% [6.30]	25% [4.80]	-11,827.55	-11,826.05	-11,826.66	-11,824.51
14% [8.02]	16% [4.53]	-11,826.16	-11,822.67	-11,826.13	-11,822.75
4% [10.42]	0% [7.63]	-12,073.03	-12,070.24	-12,072.20	-12,069.42
18% [12.76]	31% [9.61]	-11,969.10	-11,965.94	-11,970.23	-11,966.11
6% [14.46]	10% [13.62]	-12,139.83	-12,138.99	-12,140.41	-12,140.39
24% [8.42]	22% [7.55]	-11,738.81	-11,737.94	-11,739.39	-11,738.62
10% [9.18]	13% [5.90]	-11,920.91	-11,917.63	-11,920.85	-11,917.10
35% [4.89]	44% [4.16]	-11,599.33	-11,598.60	-11,598.53	-11,597.56
3% [9.35]	2% [7.91]	-11,838.90	-11,837.46	-11,838.52	-11,836.96
6% [8.02]	8% [7.38]	-11,951.60	-11,950.95	-11,950.11	-11,950.09
4% [10.48]	2% [8.36]	-11,918.99	-11,916.87	-11,918.92	-11,915.85
5% [9.23]	4% [5.88]	-11,921.78	-11,918.42	-11,920.76	-11,917.15
8% [8.06]	19% [6.94]	-11,604.08	-11,602.96	-11,604.18	-11,602.46
34% [7.66]	74% [3.00]	-11,913.66	-11,909.00	-11,913.01	-11,907.41
2% [10.58]	25% [8.27]	-11,539.44	-11,537.13	-11,539.56	-11,539.18
8% [9.66]	66% [2.97]	-11,866.37	-11,859.68	-11,866.27	-11,856.83
11% [8.32]	18% [6.64]	-11,980.02	-11,978.34	-11,979.90	-11,978.34
6% [8.84]	7% [7.80]	-11,732.99	-11,731.96	-11,732.58	-11,731.20
21% [5.55]	65% [2.74]	-11,846.18	-11,843.38	-11,845.67	-11,841.19
17% [6.11]	28% [4.93]	-11,767.72	-11,766.54	-11,767.48	-11,767.32
10% [8.62]	19% [7.61]	-12,081.13	-12,080.12	-12,080.96	-12,080.71
4% [9.95]	8% [7.60]	-12,161.38	-12,159.04	-12,161.06	-12,158.91
19% [5.30]	29% [3.44]	-11,594.55	-11,592.68	-11,593.50	-11,591.86
3% [7.82]	8% [6.99]	-11,607.63	-11,606.80	-11,607.58	-11,607.13
12% [7.94]	21% [5.13]	-11,684.49	-11,681.68	-11,683.32	-11,680.83
19% [7.88]	49% [3.37]	-11,464.06	-11,459.56	-11,463.06	-11,458.99
12% [6.82]	17% [6.18]	-12,002.19	-12,001.55	-12,001.95	-11,999.46
8% [9.54]	53% [4.02]	-12,076.53	-12,071.01	-12,076.85	-12,067.90
12% [9.34]	37% [6.71]	-12,029.09	-12,026.45	-12,029.59	-12,027.30
11% [6.75]	25% [5.20]	-12,162.04	-12,160.49	-12,161.16	-12,160.18
3% [11.97]	21% [8.35]	-11,420.45	-11,416.83	-11,420.24	-11,417.47
16% [8.45]	17% [4.51]	-12,141.83	-12,137.89	-12,140.09	-12,136.51
8% [6.91]	10% [4.46]	-11,801.04	-11,798.59	-11,801.09	-11,797.01
1% [8.54]	2% [4.90]	-11,715.03	-11,711.38	-11,713.93	-11,710.65
1% [11.80]	3% [9.30]	-11,834.73	-11,832.23	-11,833.85	-11,830.41
8% [5.76]	6% [5.34]	-12,151.33	-12,150.91	-12,150.83	-12,150.01
10% [8.16]	7% [7.84]	-11,911.48	-11,911.16	-11,910.72	-11,910.24
24% [6.07]	30% [5.10]	-11,910.18	-11,909.20	-11,909.91	-11,906.94
5% [9.79]	6% [8.58]	-11,741.91	-11,740.71	-11,741.54	-11,740.39
12% [8.69]	29% [6.10]	-11,837.06	-11,834.47	-11,835.57	-11,835.17

Table 26: Percentage (*Perc.*) of global maximum with mean distance from it (*Dist*), *Mean* and *Median* of maximized log-likelihood values, using EM and M-T-EM algorithms under simulated **scenario A** presented in Table 18 of the paper for the HM model with continuous response variables when the latent structure is correctly specified. Each row corresponds to a specific sample, values in bold highlight the best results

Perc. [Dist.] (Glob. Max)		Mean		Median	
EM	M-T-EM	EM	M-T-EM	EM	M-T-EM
77% [262.20]	84% [172.87]	-23,224.05	-23,134.72	-22,961.85	-22,961.85
100% [0.00]	100% [0.00]	-22,929.81	-22,929.81	-22,929.81	-22,929.81
96% [49.34]	100% [0.00]	-23,100.73	-23,051.38	-23,051.38	-23,051.38
88% [154.56]	96% [57.56]	-23,108.81	-23,011.81	-22,954.25	-22,954.25
98% [20.31]	99% [10.17]	-23,295.23	-23,285.10	-23,274.92	-23,274.92
74% [303.34]	80% [228.16]	-23,227.03	-23,151.85	-22,923.69	-22,923.69
96% [45.18]	98% [22.58]	-23,068.25	-23,045.65	-23,023.07	-23,023.07
94% [67.76]	98% [22.58]	-23,140.87	-23,095.70	-23,073.12	-23,073.12
89% [118.82]	95% [59.75]	-23,105.88	-23,046.81	-22,987.07	-22,987.07
78% [248.13]	90% [107.63]	-23,500.00	-23,359.49	-23,251.86	-23,251.86
94% [64.98]	100% [0.00]	-23,207.29	-23,142.31	-23,142.31	-23,142.31
80% [235.67]	98% [28.98]	-23,410.05	-23,203.35	-23,174.38	-23,174.38
96% [56.38]	99% [17.04]	-22,955.03	-22,915.69	-22,898.65	-22,898.65
91% [100.30]	94% [66.87]	-23,114.31	-23,080.87	-23,014.01	-23,014.01
93% [83.09]	100% [0.00]	-23,166.44	-23,083.35	-23,083.35	-23,083.35
95% [57.29]	99% [10.41]	-23,060.69	-23,013.81	-23,003.40	-23,003.40
94% [66.52]	100% [0.00]	-22,949.27	-22,882.75	-22,882.75	-22,882.75
69% [343.76]	80% [225.73]	-23,409.96	-23,291.93	-23,066.20	-23,066.20
96% [48.48]	99% [12.12]	-22,963.92	-22,927.56	-22,915.45	-22,915.45
90% [106.98]	91% [102.97]	-23,026.25	-23,022.25	-22,919.27	-22,919.27
95% [55.13]	97% [33.09]	-22,966.12	-22,944.07	-22,910.98	-22,910.98
95% [55.85]	100% [0.00]	-23,124.31	-23,068.46	-23,068.46	-23,068.46
93% [86.65]	97% [34.61]	-23,224.38	-23,172.34	-23,137.73	-23,137.73
90% [118.83]	100% [0.00]	-22,990.26	-22,871.43	-22,871.43	-22,871.43
91% [100.49]	98% [21.00]	-23,208.30	-23,128.81	-23,107.82	-23,107.82
95% [76.08]	98% [35.40]	-23,131.93	-23,091.26	-23,055.85	-23,055.85
91% [102.62]	98% [21.37]	-23,136.76	-23,055.50	-23,034.14	-23,034.14
88% [152.40]	92% [130.25]	-23,171.40	-23,149.24	-23,019.00	-23,019.00
97% [39.93]	100% [0.00]	-22,987.70	-22,947.77	-22,947.77	-22,947.77
94% [65.19]	100% [0.00]	-23,196.94	-23,131.75	-23,131.75	-23,131.75
93% [76.28]	100% [0.00]	-23,232.49	-23,156.21	-23,156.21	-23,156.21
96% [49.75]	100% [0.00]	-23,022.42	-22,972.67	-22,972.67	-22,972.67
100% [0.00]	100% [0.00]	-23,023.85	-23,023.85	-23,023.85	-23,023.85
86% [171.97]	99% [17.10]	-23,267.45	-23,112.58	-23,095.48	-23,095.48
95% [54.68]	100% [0.00]	-23,050.67	-22,996.00	-22,996.00	-22,996.00
87% [141.32]	93% [76.09]	-23,297.42	-23,232.19	-23,156.10	-23,156.10
81% [199.94]	91% [94.65]	-23,231.74	-23,126.45	-23,031.80	-23,031.80
98% [22.65]	100% [0.00]	-23,051.77	-23,029.12	-23,029.12	-23,029.12
91% [102.79]	99% [11.41]	-23,132.78	-23,041.40	-23,029.99	-23,029.99
75% [265.59]	90% [106.23]	-23,385.45	-23,226.10	-23,119.86	-23,119.86
81% [219.45]	87% [150.04]	-23,127.86	-23,058.45	-22,908.41	-22,908.41
98% [21.13]	100% [0.00]	-22,968.88	-22,947.75	-22,947.75	-22,947.75
85% [174.78]	100% [0.00]	-23,308.15	-23,133.37	-23,133.37	-23,133.37
93% [85.61]	100% [0.00]	-23,057.63	-22,972.02	-22,972.02	-22,972.02
86% [172.43]	95% [67.34]	-23,198.89	-23,093.80	-23,026.46	-23,026.46
90% [113.33]	100% [0.00]	-23,180.10	-23,066.77	-23,066.77	-23,066.77
93% [74.23]	99% [10.61]	-23,113.88	-23,050.26	-23,039.66	-23,039.66
97% [34.16]	100% [0.00]	-23,030.66	-22,996.50	-22,996.50	-22,996.50
72% [290.45]	85% [155.48]	-23,402.12	-23,267.15	-23,111.67	-23,111.67
91% [105.47]	100% [0.00]	-23,017.32	-22,911.85	-22,911.85	-22,911.85

Table 27: Percentage (*Perc.*) of global maximum with mean distance from it (*Dist*), *Mean* and *Median* of maximized log-likelihood values, using EM and M-T-EM algorithms under simulated **scenario B** presented in Table 18 of the paper for the HM model with continuous response variables when the latent structure is correctly specified. Each row corresponds to a specific sample, values in bold highlight the best results

Perc. [Dist.] (Glob. Max)		Mean		Median	
EM	M-T-EM	EM	M-T-EM	EM	M-T-EM
94% [147.27]	97% [79.39]	-46,056.40	-45,988.52	-45,909.13	-45,909.13
98% [45.43]	100% [0.00]	-46,110.36	-46,064.93	-46,064.93	-46,064.93
97% [69.57]	100% [0.00]	-46,081.54	-46,011.96	-46,011.96	-46,011.96
95% [124.57]	100% [0.00]	-46,316.63	-46,192.06	-46,192.06	-46,192.06
81% [409.46]	85% [323.26]	-46,580.64	-46,494.44	-46,171.19	-46,171.19
93% [159.03]	98% [45.32]	-46,068.28	-45,954.56	-45,909.25	-45,909.25
88% [270.70]	100% [0.00]	-46,190.06	-45,919.36	-45,919.36	-45,919.36
93% [156.05]	100% [0.00]	-46,024.30	-45,868.25	-45,868.25	-45,868.25
95% [119.75]	98% [67.81]	-46,265.33	-46,213.39	-46,145.58	-46,145.58
97% [69.59]	100% [0.00]	-45,890.25	-45,820.66	-45,820.66	-45,820.66
94% [158.38]	99% [22.19]	-46,158.56	-46,022.37	-46,000.17	-46,000.17
98% [43.44]	100% [0.00]	-46,000.91	-45,957.47	-45,957.47	-45,957.47
95% [109.84]	98% [43.86]	-46,186.50	-46,120.53	-46,076.67	-46,076.67
96% [109.54]	100% [0.00]	-46,156.84	-46,047.31	-46,047.31	-46,047.31
98% [56.28]	100% [0.00]	-46,006.76	-45,950.48	-45,950.48	-45,950.48
95% [124.74]	100% [0.00]	-46,216.33	-46,091.59	-46,091.59	-46,091.59
92% [173.39]	98% [66.30]	-46,317.42	-46,210.33	-46,144.03	-46,144.03
95% [129.47]	99% [35.47]	-46,045.50	-45,951.49	-45,916.02	-45,916.02
93% [171.39]	99% [22.61]	-46,185.73	-46,036.96	-46,014.35	-46,014.35
92% [175.22]	100% [0.00]	-46,238.31	-46,063.09	-46,063.09	-46,063.09
96% [89.48]	100% [0.00]	-46,045.38	-45,955.90	-45,955.90	-45,955.90
85% [343.58]	95% [122.98]	-46,257.02	-46,036.42	-45,913.44	-45,913.44
96% [85.06]	100% [0.00]	-46,250.86	-46,165.79	-46,165.79	-46,165.79
88% [262.15]	92% [187.04]	-46,388.40	-46,313.29	-46,126.25	-46,126.25
85% [330.36]	93% [166.78]	-46,533.49	-46,369.91	-46,203.13	-46,203.13
85% [328.25]	87% [284.56]	-46,491.88	-46,448.19	-46,163.63	-46,163.63
87% [307.90]	98% [67.59]	-46,522.62	-46,282.31	-46,214.72	-46,214.72
97% [78.62]	100% [0.00]	-46,150.94	-46,072.32	-46,072.32	-46,072.32
94% [145.59]	98% [69.13]	-46,207.90	-46,131.44	-46,062.31	-46,062.31
97% [67.32]	100% [0.00]	-46,193.10	-46,125.79	-46,125.79	-46,125.79
87% [286.29]	100% [0.00]	-46,256.67	-45,970.39	-45,970.39	-45,970.39
89% [290.32]	92% [249.61]	-46,402.18	-46,361.46	-46,111.86	-46,111.86
93% [171.44]	100% [0.00]	-46,151.85	-45,980.41	-45,980.41	-45,980.41
76% [548.81]	91% [213.88]	-46,732.73	-46,397.80	-46,183.92	-46,183.92
96% [88.80]	100% [0.00]	-46,196.36	-46,107.56	-46,107.56	-46,107.56
89% [252.72]	95% [109.82]	-46,335.09	-46,192.20	-46,082.38	-46,082.38
88% [269.25]	94% [171.65]	-46,155.34	-46,057.73	-45,886.09	-45,886.08
94% [132.46]	96% [88.15]	-46,087.47	-46,043.16	-45,955.00	-45,955.00
93% [166.70]	100% [0.00]	-46,037.61	-45,870.91	-45,870.91	-45,870.91
88% [264.69]	91% [190.12]	-46,628.51	-46,553.94	-46,363.82	-46,363.82
96% [89.77]	100% [0.00]	-46,258.34	-46,168.58	-46,168.58	-46,168.58
97% [79.65]	100% [0.00]	-46,217.50	-46,137.85	-46,137.85	-46,137.85
78% [493.18]	94% [134.46]	-46,445.24	-46,086.52	-45,952.06	-45,952.06
92% [213.39]	96% [112.41]	-46,465.05	-46,364.07	-46,251.66	-46,251.66
87% [302.27]	95% [170.29]	-46,197.64	-46,065.67	-45,895.37	-45,895.37
96% [90.70]	100% [0.00]	-46,149.86	-46,059.16	-46,059.16	-46,059.16
91% [221.98]	94% [155.67]	-46,281.48	-46,215.18	-46,059.50	-46,059.50
90% [234.45]	97% [89.87]	-46,553.97	-46,409.39	-46,319.53	-46,319.53
95% [111.71]	98% [44.58]	-46,152.45	-46,085.31	-46,040.73	-46,040.73
88% [306.94]	95% [112.48]	-46,303.64	-46,109.18	-45,996.71	-45,996.71

Table 28: Percentage (*Perc.*) of global maximum with mean distance from it (*Dist*), *Mean* and *Median* of maximized log-likelihood values, using EM and M-T-EM algorithms under simulated **scenario C** presented in Table 18 of the paper for the HM model with continuous response variables when the latent structure is correctly specified. Each row corresponds to a specific sample, values in bold highlight the best results

Perc. [Dist.] (Glob. Max)		Mean		Median			
EM	M-T-EM	EM	M-T-EM	EM	M-T-EM		
86%	[260.23]	99%	[18.47]	-44,551.58	-44,309.82	-44,291.35	-44,291.35
86%	[293.06]	94%	[116.61]	-44,302.81	-44,126.35	-44,009.74	-44,009.74
87%	[246.63]	96%	[71.82]	-44,577.67	-44,402.86	-44,331.04	-44,331.04
86%	[268.86]	95%	[110.60]	-44,768.01	-44,609.75	-44,499.15	-44,499.15
76%	[434.84]	88%	[217.46]	-44,870.16	-44,652.78	-44,435.32	-44,435.32
87%	[241.96]	98%	[37.28]	-44,305.46	-44,100.79	-44,063.51	-44,063.51
85%	[289.13]	100%	[0.00]	-44,707.07	-44,417.94	-44,417.94	-44,417.94
89%	[206.57]	100%	[0.00]	-44,521.30	-44,314.73	-44,314.73	-44,314.73
91%	[184.60]	100%	[0.00]	-44,218.53	-44,033.93	-44,033.93	-44,033.93
82%	[349.97]	93%	[142.24]	-44,713.16	-44,505.44	-44,363.19	-44,363.19
75%	[488.05]	98%	[37.61]	-44,709.21	-44,258.77	-44,221.16	-44,221.16
74%	[531.70]	91%	[208.08]	-44,944.19	-44,620.57	-44,412.49	-44,412.49
86%	[245.12]	96%	[70.73]	-44,630.71	-44,456.32	-44,385.59	-44,385.59
88%	[227.04]	99%	[18.98]	-44,321.78	-44,113.72	-44,094.74	-44,094.74
88%	[239.64]	99%	[18.50]	-44,675.85	-44,454.71	-44,436.21	-44,436.21
91%	[168.54]	100%	[0.00]	-44,167.02	-43,998.47	-43,998.47	-43,998.47
81%	[349.52]	97%	[68.25]	-44,879.47	-44,598.19	-44,529.95	-44,529.95
92%	[145.68]	100%	[0.00]	-44,409.84	-44,264.15	-44,264.15	-44,264.15
75%	[462.29]	99%	[24.65]	-44,813.15	-44,375.51	-44,350.86	-44,350.86
87%	[239.32]	100%	[0.00]	-44,672.39	-44,433.07	-44,433.07	-44,433.07
81%	[369.05]	100%	[0.00]	-44,744.31	-44,375.26	-44,375.26	-44,375.26
81%	[372.46]	95%	[100.64]	-44,696.90	-44,425.08	-44,324.45	-44,324.45
81%	[363.49]	98%	[37.29]	-44,610.09	-44,283.89	-44,246.60	-44,246.60
84%	[311.08]	100%	[0.00]	-44,551.97	-44,240.89	-44,240.89	-44,240.89
77%	[454.54]	98%	[37.34]	-44,745.71	-44,328.51	-44,291.17	-44,291.17
86%	[262.03]	100%	[0.00]	-44,526.51	-44,264.49	-44,264.49	-44,264.49
89%	[214.48]	98%	[37.05]	-44,472.12	-44,294.69	-44,257.64	-44,257.64
86%	[256.33]	100%	[0.00]	-44,585.81	-44,329.48	-44,329.48	-44,329.48
85%	[282.05]	99%	[25.17]	-44,620.83	-44,363.94	-44,338.77	-44,338.77
89%	[218.17]	98%	[50.67]	-44,671.12	-44,503.62	-44,452.95	-44,452.95
84%	[303.24]	95%	[92.68]	-44,549.76	-44,339.20	-44,246.52	-44,246.52
89%	[200.23]	98%	[36.32]	-44,467.52	-44,303.61	-44,267.29	-44,267.29
83%	[330.45]	96%	[75.78]	-44,370.14	-44,115.47	-44,039.69	-44,039.69
81%	[362.75]	100%	[0.00]	-44,495.48	-44,132.73	-44,132.73	-44,132.73
83%	[323.96]	100%	[0.00]	-44,797.15	-44,473.19	-44,473.19	-44,473.19
87%	[249.70]	100%	[0.00]	-44,719.07	-44,469.37	-44,469.37	-44,469.37
72%	[554.62]	96%	[88.27]	-44,825.58	-44,359.24	-44,270.97	-44,270.97
86%	[266.89]	96%	[85.10]	-44,750.42	-44,568.64	-44,483.54	-44,483.54
85%	[300.19]	96%	[92.00]	-44,578.21	-44,370.02	-44,278.02	-44,278.02
77%	[413.43]	91%	[181.64]	-44,779.34	-44,547.55	-44,365.92	-44,365.92
86%	[268.36]	100%	[0.00]	-44,505.89	-44,237.53	-44,237.53	-44,237.53
83%	[333.08]	96%	[94.44]	-44,503.50	-44,264.85	-44,170.41	-44,170.41
84%	[319.62]	100%	[0.00]	-44,712.67	-44,393.05	-44,393.05	-44,393.05
83%	[341.56]	100%	[0.00]	-44,542.50	-44,200.94	-44,200.94	-44,200.94
83%	[313.61]	100%	[0.00]	-44,627.45	-44,313.84	-44,313.84	-44,313.84
86%	[266.07]	98%	[38.07]	-44,657.80	-44,429.80	-44,391.73	-44,391.73
80%	[381.00]	95%	[91.79]	-44,733.72	-44,444.52	-44,352.73	-44,352.73
79%	[415.06]	92%	[168.04]	-44,921.36	-44,674.34	-44,506.30	-44,506.30
86%	[256.37]	100%	[0.00]	-44,500.81	-44,244.43	-44,244.43	-44,244.43
85%	[282.86]	100%	[0.00]	-44,752.42	-44,469.56	-44,469.56	-44,469.56

Table 29: Percentage (*Perc.*) of global maximum with mean distance from it (*Dist*), *Mean* and *Median* of maximized log-likelihood values, using EM and M-T-EM algorithms under simulated **scenario D** presented in Table 18 of the paper for the HM model with continuous response variables when the latent structure is correctly specified. Each row corresponds to a specific sample, values in bold highlight the best results

Perc. [Dist.] (Glob. Max)		Mean		Median	
EM	M-T-EM	EM	M-T-EM	EM	M-T-EM
98% [48.12]	100% [0.00]	-45,875.76	-45,827.64	-45,827.64	-45,827.64
96% [95.78]	100% [0.00]	-45,799.76	-45,703.98	-45,703.98	-45,703.98
85% [346.11]	95% [115.36]	-46,357.84	-46,127.09	-46,011.73	-46,011.73
95% [118.84]	100% [0.00]	-45,961.37	-45,842.53	-45,842.53	-45,842.53
93% [171.71]	100% [0.00]	-45,827.35	-45,655.64	-45,655.64	-45,655.64
96% [91.18]	100% [0.00]	-45,927.61	-45,836.42	-45,836.42	-45,836.42
83% [386.06]	95% [113.50]	-46,126.65	-45,854.09	-45,740.59	-45,740.59
92% [213.85]	0% [136.47]	-45,966.30	-45,888.92	-45,752.45	-45,818.74
94% [164.01]	98% [70.28]	-45,985.81	-45,892.08	-45,821.80	-45,821.80
92% [201.17]	100% [0.00]	-45,929.93	-45,728.77	-45,728.77	-45,728.77
91% [217.06]	99% [24.12]	-45,920.20	-45,727.26	-45,703.14	-45,703.14
95% [126.10]	100% [0.00]	-45,875.98	-45,749.88	-45,749.88	-45,749.88
90% [251.77]	99% [23.92]	-46,120.35	-45,892.50	-45,868.58	-45,868.58
92% [205.26]	100% [0.00]	-45,913.77	-45,708.50	-45,708.50	-45,708.50
98% [59.84]	100% [0.00]	-45,968.23	-45,908.39	-45,908.39	-45,908.39
89% [268.14]	98% [70.32]	-46,167.52	-45,969.70	-45,899.38	-45,899.38
95% [116.35]	99% [23.29]	-46,003.54	-45,910.49	-45,887.20	-45,887.20
97% [71.82]	100% [0.00]	-45,892.21	-45,820.38	-45,820.38	-45,820.38
95% [114.52]	98% [45.58]	-45,966.52	-45,897.57	-45,852.00	-45,852.00
98% [46.41]	100% [0.00]	-46,029.41	-45,983.00	-45,983.00	-45,983.00
94% [142.71]	100% [0.00]	-45,857.51	-45,714.80	-45,714.80	-45,714.80
97% [70.16]	100% [0.00]	-45,864.50	-45,794.34	-45,794.34	-45,794.34
94% [143.41]	100% [0.00]	-45,863.39	-45,719.98	-45,719.98	-45,719.98
96% [105.22]	100% [0.00]	-45,886.26	-45,781.04	-45,781.04	-45,781.04
95% [129.16]	100% [0.00]	-45,899.90	-45,770.74	-45,770.74	-45,770.74
96% [95.31]	100% [0.00]	-45,891.48	-45,796.17	-45,796.17	-45,796.17
97% [72.41]	100% [0.00]	-45,659.17	-45,586.76	-45,586.76	-45,586.76
92% [202.52]	98% [47.74]	-45,891.07	-45,736.29	-45,688.55	-45,688.55
93% [181.92]	100% [0.00]	-45,821.73	-45,639.81	-45,639.81	-45,639.81
98% [47.93]	100% [0.00]	-45,812.92	-45,764.99	-45,764.99	-45,764.99
93% [194.06]	97% [79.99]	-46,099.80	-45,985.73	-45,905.74	-45,905.74
96% [95.35]	100% [0.00]	-46,186.69	-46,091.34	-46,091.34	-46,091.34
93% [197.03]	100% [0.00]	-46,087.96	-45,890.94	-45,890.94	-45,890.94
97% [71.12]	100% [0.00]	-45,893.99	-45,822.86	-45,822.86	-45,822.86
92% [220.43]	96% [115.86]	-46,058.31	-45,953.75	-45,837.88	-45,837.88
95% [116.14]	100% [0.00]	-45,873.56	-45,757.42	-45,757.42	-45,757.42
92% [187.93]	100% [0.00]	-46,131.27	-45,943.33	-45,943.33	-45,943.33
83% [403.43]	96% [117.69]	-46,129.51	-45,843.76	-45,726.07	-45,726.07
94% [137.41]	100% [0.00]	-46,321.11	-46,183.70	-46,183.70	-46,183.70
96% [94.27]	99% [23.55]	-45,797.48	-45,726.76	-45,703.20	-45,703.20
80% [462.64]	86% [323.89]	-46,131.01	-45,992.26	-45,668.38	-45,668.38
98% [46.61]	100% [0.00]	-45,655.72	-45,609.11	-45,609.11	-45,609.11
93% [166.55]	100% [0.00]	-45,822.30	-45,655.75	-45,655.75	-45,655.75
98% [47.66]	100% [0.00]	-45,676.24	-45,628.58	-45,628.58	-45,628.58
95% [125.95]	98% [67.56]	-45,931.53	-45,873.14	-45,805.58	-45,805.58
94% [152.45]	98% [46.35]	-46,060.48	-45,954.37	-45,908.03	-45,908.03
92% [184.73]	100% [0.00]	-45,943.23	-45,758.49	-45,758.49	-45,758.49
91% [223.95]	96% [119.00]	-46,019.50	-45,914.56	-45,795.56	-45,795.56
96% [92.36]	100% [0.00]	-45,934.90	-45,842.54	-45,842.54	-45,842.54
97% [69.92]	100% [0.00]	-45,990.53	-45,920.62	-45,920.62	-45,920.62

Table 30: Percentage (*Perc.*) of global maximum with mean distance from it (*Dist*), *Mean* and *Median* of maximized log-likelihood values, using EM and M-T-EM algorithms under simulated **scenario E** presented in Table 18 of the paper for the HM model with continuous response variables when the latent structure is correctly specified. Each row corresponds to a specific sample, values in bold highlight the best results

Perc. [Dist.] (Glob. Max)		Mean		Median			
EM	M-T-EM	EM	M-T-EM	EM	M-T-EM		
42%	[515.96]	50%	[454.07]	-24,246.62	-24,184.73	-24,595.72	-24,161.10
49%	[444.18]	64%	[285.93]	-24,130.52	-23,972.27	-24,525.09	-23,686.33
35%	[608.90]	52%	[452.36]	-24,216.12	-24,059.58	-24,482.05	-23,607.23
43%	[543.13]	51%	[457.23]	-24,222.03	-24,136.13	-24,543.24	-23,678.91
56%	[348.20]	69%	[242.50]	-24,210.50	-24,104.80	-23,862.30	-23,862.30
43%	[490.27]	51%	[385.36]	-23,988.61	-23,883.70	-24,367.96	-23,498.34
44%	[441.95]	59%	[332.87]	-24,039.42	-23,930.34	-24,384.56	-23,597.47
56%	[383.78]	68%	[290.89]	-24,263.06	-24,170.17	-23,879.28	-23,879.28
38%	[576.30]	48%	[470.40]	-24,184.02	-24,078.12	-24,498.35	-24,126.95
42%	[520.86]	56%	[390.78]	-24,269.48	-24,139.40	-24,604.76	-23,748.70
58%	[364.67]	63%	[286.90]	-23,986.86	-23,909.09	-23,622.19	-23,622.19
46%	[472.06]	47%	[462.97]	-24,148.94	-24,139.85	-24,502.18	-24,501.93
43%	[526.60]	46%	[494.16]	-24,159.34	-24,126.90	-24,506.61	-24,507.39
52%	[419.55]	64%	[318.60]	-24,112.13	-24,011.18	-23,692.58	-23,692.58
40%	[522.82]	46%	[469.28]	-24,276.98	-24,223.44	-24,615.26	-24,609.28
55%	[378.92]	68%	[275.79]	-24,135.19	-24,032.05	-23,756.26	-23,756.26
60%	[284.04]	74%	[209.67]	-23,985.60	-23,911.23	-23,701.56	-23,701.56
40%	[540.03]	55%	[404.82]	-24,339.22	-24,204.02	-24,673.18	-23,799.20
49%	[426.30]	65%	[296.09]	-24,212.36	-24,082.15	-24,274.78	-23,786.05
50%	[460.71]	55%	[419.95]	-24,126.25	-24,085.49	-23,715.99	-23,665.54
43%	[505.81]	54%	[386.75]	-24,086.50	-23,967.44	-24,460.58	-23,580.71
47%	[471.91]	56%	[392.73]	-24,056.24	-23,977.07	-24,455.63	-23,584.34
44%	[507.71]	64%	[319.66]	-24,388.42	-24,200.36	-24,736.68	-23,880.71
45%	[478.41]	59%	[356.17]	-24,213.49	-24,091.25	-24,589.73	-23,735.54
44%	[503.09]	54%	[411.87]	-24,187.28	-24,096.06	-24,555.29	-23,684.19
42%	[484.31]	58%	[358.17]	-24,214.49	-24,088.34	-24,577.97	-23,730.17
49%	[445.44]	55%	[384.55]	-24,179.86	-24,118.97	-24,248.98	-23,734.42
52%	[391.28]	63%	[311.69]	-24,235.62	-24,156.04	-23,844.34	-23,844.34
39%	[500.98]	45%	[465.41]	-24,107.84	-24,072.26	-24,427.23	-24,427.16
56%	[341.69]	65%	[274.43]	-24,094.42	-24,027.17	-23,752.81	-23,752.74
53%	[412.90]	70%	[255.94]	-23,964.37	-23,807.41	-23,551.48	-23,551.48
56%	[393.50]	62%	[338.68]	-24,126.35	-24,071.54	-23,732.86	-23,732.86
42%	[527.35]	52%	[449.18]	-23,978.85	-23,900.69	-24,361.60	-23,451.51
53%	[362.97]	61%	[309.97]	-24,132.41	-24,079.41	-23,769.46	-23,769.45
49%	[427.15]	53%	[388.97]	-24,126.41	-24,088.23	-24,495.67	-23,699.28
47%	[497.07]	50%	[442.63]	-24,076.81	-24,022.36	-24,471.70	-23,634.16
50%	[452.05]	56%	[405.07]	-24,222.25	-24,175.27	-23,881.85	-23,770.21
47%	[409.01]	50%	[369.27]	-24,076.61	-24,036.87	-23,797.93	-23,725.44
46%	[391.45]	53%	[372.61]	-24,111.64	-24,092.80	-23,870.36	-23,720.19
55%	[368.22]	65%	[297.34]	-24,039.22	-23,968.34	-23,671.00	-23,671.00
39%	[527.18]	57%	[363.42]	-24,303.97	-24,140.21	-24,596.14	-23,776.79
36%	[515.22]	47%	[368.96]	-24,151.93	-24,005.67	-24,407.92	-23,723.69
52%	[441.30]	60%	[367.36]	-23,998.66	-23,924.72	-23,558.26	-23,557.36
42%	[489.04]	55%	[378.82]	-24,041.63	-23,931.41	-24,352.76	-23,552.58
44%	[498.19]	56%	[391.29]	-24,247.21	-24,140.31	-24,608.52	-23,749.02
39%	[501.70]	57%	[359.30]	-24,135.56	-23,993.16	-24,494.95	-23,633.86
43%	[455.77]	47%	[421.28]	-24,020.40	-23,985.91	-24,384.65	-23,738.38
55%	[375.38]	70%	[259.72]	-24,106.87	-23,991.21	-23,731.50	-23,731.50
49%	[455.85]	57%	[387.28]	-24,143.30	-24,074.73	-24,199.58	-23,687.91
58%	[297.39]	67%	[238.39]	-24,131.56	-24,072.55	-23,834.17	-23,834.17

Table 31: Percentage (*Perc.*) of global maximum with mean distance from it (*Dist*), *Mean* and *Median* of maximized log-likelihood values, using EM and M-T-EM algorithms under simulated **scenario A** presented in Table 18 of the paper for the HM model with continuous response variables when the latent structure is not correctly specified. Each row corresponds to a specific sample, values in bold highlight the best results

Perc. [Dist.] (Glob. Max)		Mean		Median	
EM	M-T-EM	EM	M-T-EM	EM	M-T-EM
21% [26.80]	34% [4.62]	-23,075.92	-23,053.74	-23,053.83	-23,053.11
24% [4.03]	39% [3.08]	-23,055.14	-23,054.19	-23,055.39	-23,055.29
68% [1.94]	73% [1.82]	-22,989.81	-22,989.68	-22,989.12	-22,988.98
44% [3.10]	70% [1.95]	-23,012.17	-23,011.02	-23,011.44	-23,010.83
61% [2.74]	65% [2.67]	-22,786.40	-22,786.33	-22,785.56	-22,785.45
24% [17.87]	24% [5.86]	-22,885.72	-22,873.71	-22,874.14	-22,874.04
41% [3.30]	52% [2.85]	-23,083.45	-23,083.00	-23,083.27	-23,082.42
74% [2.00]	88% [1.70]	-22,904.75	-22,904.45	-22,904.09	-22,904.05
17% [4.31]	26% [3.66]	-23,077.10	-23,076.45	-23,077.70	-23,075.69
39% [15.59]	45% [4.05]	-23,082.46	-23,070.92	-23,073.10	-23,071.65
15% [3.22]	23% [2.88]	-23,077.30	-23,076.96	-23,077.26	-23,077.11
49% [14.25]	60% [2.68]	-23,112.79	-23,101.22	-23,101.02	-23,100.35
23% [4.03]	37% [3.23]	-22,788.23	-22,787.42	-22,788.80	-22,787.01
18% [15.70]	18% [4.47]	-22,991.07	-22,979.84	-22,980.08	-22,979.83
6% [28.29]	14% [3.83]	-22,943.15	-22,918.70	-22,919.51	-22,918.30
47% [3.00]	63% [2.24]	-23,006.18	-23,005.42	-23,006.38	-23,004.63
17% [15.58]	21% [4.34]	-22,914.49	-22,903.25	-22,903.76	-22,903.42
18% [14.86]	18% [3.77]	-23,011.55	-23,000.46	-22,999.83	-22,999.83
22% [3.56]	31% [3.17]	-22,932.39	-22,932.00	-22,932.66	-22,932.03
77% [2.60]	80% [2.56]	-23,003.65	-23,003.62	-23,003.12	-23,003.12
1% [5.11]	4% [4.25]	-23,071.09	-23,070.22	-23,070.81	-23,069.39
55% [2.37]	66% [2.02]	-22,942.04	-22,941.69	-22,941.82	-22,941.31
66% [14.01]	82% [2.08]	-23,032.30	-23,020.37	-23,020.24	-23,020.15
53% [3.03]	57% [2.72]	-22,958.45	-22,958.14	-22,956.32	-22,955.94
68% [2.89]	74% [2.35]	-22,977.27	-22,976.73	-22,975.03	-22,974.97
80% [12.87]	83% [1.70]	-23,128.96	-23,117.79	-23,117.07	-23,116.88
47% [2.82]	54% [2.60]	-22,955.74	-22,955.51	-22,955.23	-22,955.18
45% [44.94]	58% [23.53]	-23,060.04	-23,038.63	-23,017.87	-23,017.16
39% [3.02]	54% [2.36]	-23,141.88	-23,141.23	-23,141.25	-23,140.95
26% [25.82]	29% [4.00]	-22,969.74	-22,947.92	-22,948.01	-22,947.75
73% [1.76]	86% [1.35]	-23,000.79	-23,000.38	-23,000.60	-23,000.53
48% [3.14]	61% [2.52]	-23,036.25	-23,035.63	-23,036.16	-23,034.38
45% [4.09]	62% [2.97]	-22,962.27	-22,961.15	-22,960.91	-22,959.21
62% [1.90]	92% [1.02]	-23,197.29	-23,196.41	-23,196.97	-23,196.32
57% [32.03]	61% [25.67]	-23,093.11	-23,086.75	-23,062.20	-23,062.17
67% [2.51]	83% [1.75]	-22,921.41	-22,920.65	-22,920.02	-22,919.86
34% [15.18]	50% [2.95]	-23,032.04	-23,019.80	-23,020.76	-23,019.07
27% [5.36]	38% [4.46]	-23,087.27	-23,086.37	-23,088.62	-23,085.33
37% [26.12]	43% [3.34]	-22,917.31	-22,894.53	-22,895.20	-22,894.49
41% [4.17]	40% [4.06]	-23,116.19	-23,116.07	-23,116.52	-23,116.50
34% [14.64]	55% [2.13]	-22,973.87	-22,961.36	-22,962.81	-22,960.65
43% [2.48]	50% [2.20]	-23,151.38	-23,151.10	-23,152.22	-23,151.22
15% [16.26]	23% [5.05]	-23,069.94	-23,058.73	-23,058.71	-23,058.84
40% [3.24]	42% [3.14]	-23,026.23	-23,026.13	-23,026.06	-23,026.07
5% [5.32]	8% [5.05]	-22,977.14	-22,976.87	-22,977.65	-22,977.46
27% [14.33]	33% [3.08]	-23,070.54	-23,059.29	-23,059.26	-23,059.26
26% [6.52]	34% [6.08]	-22,955.16	-22,954.72	-22,956.70	-22,956.63
11% [6.91]	15% [6.73]	-22,937.15	-22,936.97	-22,937.00	-22,936.89
29% [17.17]	34% [5.79]	-23,115.09	-23,103.71	-23,105.75	-23,104.52
20% [35.73]	24% [3.58]	-23,051.38	-23,019.23	-23,020.08	-23,020.06

Table 32: Percentage (*Perc.*) of global maximum with mean distance from it (*Dist*), *Mean* and *Median* of maximized log-likelihood values, using EM and M-T-EM algorithms under simulated **scenario B** presented in Table 18 of the paper for the HM model with continuous response variables when the latent structure is not correctly specified. Each row corresponds to a specific sample, values in bold highlight the best results

Perc. [Dist.] (Glob. Max)		Mean		Median	
EM	M-T-EM	EM	M-T-EM	EM	M-T-EM
37% [4.69]	42% [4.19]	-45,998.06	-45,997.56	-45,998.65	-45,998.52
55% [4.88]	61% [4.43]	-46,006.95	-46,006.50	-46,005.87	-46,005.78
38% [5.86]	50% [5.08]	-45,932.83	-45,932.05	-45,933.23	-45,931.51
34% [28.14]	45% [5.05]	-45,990.03	-45,966.94	-45,967.94	-45,967.06
72% [24.74]	80% [3.00]	-46,241.85	-46,220.12	-46,219.75	-46,218.52
40% [26.96]	52% [4.84]	-46,080.21	-46,058.09	-46,059.37	-46,057.08
20% [7.58]	21% [7.54]	-46,051.70	-46,051.66	-46,051.88	-46,051.74
54% [27.54]	58% [4.06]	-45,926.94	-45,903.46	-45,903.48	-45,903.32
77% [2.70]	83% [2.47]	-46,072.20	-46,071.97	-46,070.98	-46,070.98
13% [28.31]	13% [6.18]	-46,118.44	-46,096.30	-46,096.47	-46,096.06
67% [25.49]	80% [2.58]	-45,996.96	-45,974.05	-45,973.47	-45,973.33
79% [2.87]	87% [2.21]	-46,071.35	-46,070.68	-46,070.58	-46,070.26
37% [30.24]	48% [6.07]	-45,928.81	-45,904.65	-45,908.57	-45,903.53
22% [7.23]	27% [6.06]	-46,085.67	-46,084.50	-46,084.74	-46,084.49
84% [2.91]	95% [2.53]	-46,088.24	-46,087.85	-46,087.61	-46,087.39
36% [5.41]	45% [4.50]	-46,129.06	-46,128.15	-46,129.26	-46,128.60
21% [27.06]	29% [5.65]	-46,154.07	-46,132.65	-46,132.51	-46,132.25
17% [5.99]	27% [5.34]	-46,142.34	-46,141.68	-46,142.45	-46,142.38
41% [27.06]	47% [4.82]	-46,174.78	-46,152.54	-46,152.69	-46,152.54
27% [5.90]	34% [5.65]	-46,258.06	-46,257.80	-46,258.61	-46,258.36
32% [5.49]	36% [5.48]	-46,147.19	-46,147.18	-46,147.19	-46,146.64
44% [4.64]	54% [4.14]	-45,960.24	-45,959.73	-45,960.47	-45,960.06
28% [50.27]	49% [4.50]	-46,039.22	-45,993.45	-45,994.47	-45,993.58
62% [4.01]	66% [3.88]	-45,952.98	-45,952.85	-45,953.13	-45,952.99
22% [5.95]	27% [5.71]	-46,009.34	-46,009.10	-46,009.10	-46,008.97
82% [3.09]	84% [2.68]	-45,955.21	-45,954.81	-45,955.31	-45,955.30
49% [4.12]	63% [3.50]	-45,913.62	-45,913.01	-45,914.27	-45,912.12
23% [29.34]	24% [6.09]	-45,830.84	-45,807.59	-45,807.81	-45,807.65
61% [3.43]	73% [2.69]	-45,988.59	-45,987.85	-45,987.84	-45,987.33
32% [5.61]	34% [5.60]	-46,280.13	-46,280.12	-46,280.76	-46,280.57
76% [2.75]	79% [2.24]	-45,987.26	-45,986.74	-45,986.65	-45,985.84
54% [4.99]	61% [4.70]	-46,165.36	-46,165.06	-46,164.87	-46,164.59
68% [4.30]	95% [3.19]	-46,319.74	-46,318.63	-46,319.67	-46,319.22
89% [2.67]	100% [1.96]	-46,063.26	-46,062.55	-46,062.91	-46,062.83
72% [3.28]	82% [2.49]	-45,917.62	-45,916.83	-45,917.60	-45,916.32
80% [3.12]	89% [2.62]	-46,076.63	-46,076.12	-46,076.35	-46,076.03
12% [29.69]	12% [7.36]	-45,886.88	-45,864.55	-45,864.71	-45,864.75
91% [2.24]	95% [1.67]	-46,026.76	-46,026.19	-46,025.80	-46,025.53
74% [3.39]	75% [3.29]	-45,957.13	-45,957.03	-45,957.35	-45,957.34
61% [4.10]	76% [3.05]	-45,859.69	-45,858.64	-45,858.83	-45,858.19
13% [8.28]	17% [7.82]	-46,025.10	-46,024.63	-46,025.60	-46,025.35
35% [5.34]	42% [4.92]	-46,297.92	-46,297.50	-46,298.84	-46,298.26
25% [50.89]	38% [5.26]	-46,068.38	-46,022.75	-46,024.28	-46,023.09
12% [31.36]	28% [7.59]	-46,313.57	-46,289.80	-46,291.47	-46,290.37
28% [27.49]	48% [3.70]	-46,048.83	-46,025.04	-46,026.36	-46,026.13
62% [25.78]	69% [3.61]	-46,083.22	-46,061.05	-46,060.22	-46,060.14
46% [5.92]	61% [4.73]	-46,102.81	-46,101.62	-46,102.86	-46,100.18
37% [29.01]	38% [28.94]	-46,106.14	-46,106.06	-46,084.93	-46,083.51
48% [27.47]	53% [4.74]	-46,281.51	-46,258.78	-46,259.21	-46,257.84
49% [5.28]	65% [4.58]	-46,178.80	-46,178.10	-46,178.21	-46,177.65

Table 33: Percentage (*Perc.*) of global maximum with mean distance from it (*Dist*), *Mean* and *Median* of maximized log-likelihood values, using EM and M-T-EM algorithms under simulated **scenario C** presented in Table 18 of the paper for the HM model with continuous response variables when the latent structure is not correctly specified. Each row corresponds to a specific sample, values in bold highlight the best results

Perc. [Dist.] (Glob. Max)		Mean		Median			
EM	M-T-EM	EM	M-T-EM	EM	M-T-EM		
85%	[38.02]	91%	[1.87]	-44,372.27	-44,336.12	-44,335.84	-44,335.59
28%	[62.46]	47%	[6.25]	-44,389.16	-44,332.94	-44,334.32	-44,331.48
61%	[23.17]	78%	[3.00]	-44,542.48	-44,522.30	-44,522.88	-44,521.50
42%	[40.67]	45%	[4.52]	-44,397.28	-44,361.13	-44,361.81	-44,361.63
8%	[80.56]	17%	[5.90]	-44,440.75	-44,366.10	-44,366.21	-44,365.77
24%	[10.11]	33%	[8.98]	-44,247.37	-44,246.24	-44,248.59	-44,248.38
71%	[3.74]	80%	[3.23]	-44,506.72	-44,506.21	-44,506.79	-44,506.64
75%	[21.93]	83%	[3.04]	-44,441.71	-44,422.83	-44,422.76	-44,422.60
0%	[8.96]	14%	[7.72]	-44,353.56	-44,352.32	-44,353.49	-44,352.58
25%	[62.33]	26%	[6.71]	-44,356.76	-44,301.14	-44,301.62	-44,301.53
10%	[44.59]	20%	[6.28]	-44,334.91	-44,296.60	-44,298.01	-44,297.64
33%	[93.82]	50%	[4.31]	-44,386.99	-44,297.47	-44,298.46	-44,297.21
47%	[23.49]	61%	[4.94]	-44,506.85	-44,488.30	-44,488.94	-44,486.00
54%	[59.24]	72%	[3.76]	-44,481.58	-44,426.10	-44,426.27	-44,426.00
73%	[22.03]	94%	[1.71]	-44,361.45	-44,341.13	-44,341.51	-44,341.40
27%	[42.81]	39%	[4.59]	-44,380.17	-44,341.95	-44,343.77	-44,343.21
40%	[60.83]	45%	[5.17]	-44,066.96	-44,011.30	-44,012.60	-44,012.50
20%	[101.88]	33%	[4.66]	-44,484.53	-44,387.31	-44,388.18	-44,387.73
31%	[24.54]	44%	[5.15]	-44,081.96	-44,062.58	-44,063.84	-44,062.87
34%	[24.60]	48%	[5.38]	-44,252.68	-44,233.46	-44,233.62	-44,233.36
46%	[59.15]	57%	[5.68]	-44,494.96	-44,441.50	-44,442.09	-44,439.90
24%	[24.33]	28%	[5.25]	-44,493.73	-44,474.64	-44,475.46	-44,475.33
61%	[58.97]	78%	[3.04]	-44,440.04	-44,384.12	-44,383.98	-44,382.80
76%	[76.43]	78%	[2.36]	-44,201.14	-44,127.07	-44,128.09	-44,126.47
68%	[3.43]	76%	[3.19]	-44,188.57	-44,188.33	-44,188.37	-44,188.12
15%	[62.56]	17%	[6.80]	-44,243.50	-44,187.73	-44,188.54	-44,188.40
33%	[43.63]	41%	[5.35]	-44,379.53	-44,341.25	-44,342.67	-44,342.04
69%	[58.77]	90%	[3.24]	-44,415.76	-44,360.23	-44,360.51	-44,360.37
21%	[61.96]	27%	[5.91]	-44,444.35	-44,388.29	-44,389.53	-44,389.50
32%	[24.40]	44%	[4.28]	-44,415.14	-44,395.01	-44,397.59	-44,396.72
52%	[4.65]	60%	[4.12]	-44,218.37	-44,217.84	-44,218.11	-44,217.52
34%	[41.41]	45%	[4.75]	-44,327.63	-44,290.96	-44,292.50	-44,291.39
48%	[60.07]	57%	[4.84]	-44,225.64	-44,170.41	-44,170.96	-44,169.28
29%	[24.76]	39%	[4.78]	-44,432.81	-44,412.82	-44,413.66	-44,412.71
29%	[43.66]	41%	[5.89]	-44,296.31	-44,258.54	-44,259.12	-44,258.63
23%	[62.27]	40%	[4.68]	-44,374.28	-44,316.69	-44,318.96	-44,317.82
67%	[23.08]	77%	[3.39]	-44,276.76	-44,257.07	-44,257.55	-44,256.89
78%	[21.22]	82%	[2.92]	-44,364.66	-44,346.37	-44,345.69	-44,345.54
47%	[98.43]	63%	[3.45]	-44,227.02	-44,132.04	-44,133.59	-44,132.22
64%	[22.45]	79%	[2.88]	-44,382.86	-44,363.29	-44,362.40	-44,362.22
27%	[44.57]	48%	[5.41]	-44,263.35	-44,224.18	-44,228.01	-44,225.72
21%	[42.94]	37%	[5.78]	-44,284.41	-44,247.25	-44,247.87	-44,247.85
55%	[42.07]	73%	[2.96]	-44,080.94	-44,041.82	-44,042.58	-44,041.17
65%	[56.43]	83%	[2.87]	-44,273.58	-44,220.02	-44,220.91	-44,220.74
19%	[26.52]	27%	[7.22]	-44,289.14	-44,269.85	-44,270.77	-44,270.40
79%	[2.80]	81%	[2.38]	-44,508.00	-44,507.58	-44,507.36	-44,506.70
21%	[43.90]	26%	[6.62]	-44,225.38	-44,188.10	-44,188.55	-44,188.41
58%	[4.14]	77%	[3.47]	-44,308.22	-44,307.55	-44,308.29	-44,306.61
42%	[23.90]	69%	[3.77]	-44,449.34	-44,429.21	-44,430.71	-44,427.69
55%	[23.09]	58%	[3.44]	-44,263.43	-44,243.78	-44,244.28	-44,243.72

Table 34: Percentage (*Perc.*) of global maximum with mean distance from it (*Dist*), *Mean* and *Median* of maximized log-likelihood values, using EM and M-T-EM algorithms under simulated **scenario D** presented in Table 18 of the paper for the HM model with continuous response variables when the latent structure is not correctly specified. Each row corresponds to a specific sample, values in bold highlight the best results

Perc. [Dist.] (Glob. Max)		Mean		Median	
EM	M-T-EM	EM	M-T-EM	EM	M-T-EM
84% [2.95]	90% [2.61]	-45,778.91	-45,778.56	-45,778.66	-45,777.65
48% [4.27]	64% [3.75]	-45,693.85	-45,693.33	-45,694.25	-45,693.55
73% [3.53]	80% [3.41]	-45,775.71	-45,775.59	-45,775.74	-45,775.37
29% [6.64]	27% [6.57]	-45,823.52	-45,823.46	-45,824.92	-45,824.85
49% [5.75]	61% [4.77]	-45,765.99	-45,765.01	-45,765.79	-45,764.01
67% [3.82]	80% [3.19]	-45,895.43	-45,894.80	-45,895.61	-45,895.37
44% [5.59]	49% [5.17]	-45,860.00	-45,859.57	-45,859.49	-45,859.04
22% [7.90]	35% [6.49]	-45,726.63	-45,725.22	-45,727.17	-45,724.91
35% [4.82]	41% [4.46]	-45,539.47	-45,539.12	-45,540.26	-45,539.92
34% [6.24]	44% [5.53]	-45,926.83	-45,926.12	-45,927.92	-45,927.35
11% [7.92]	21% [6.86]	-45,736.80	-45,735.74	-45,736.70	-45,736.46
34% [5.84]	40% [5.66]	-45,944.89	-45,944.70	-45,944.66	-45,944.30
37% [5.69]	55% [5.19]	-45,828.70	-45,828.20	-45,828.43	-45,827.18
8% [9.62]	7% [9.30]	-45,628.56	-45,628.24	-45,628.90	-45,627.76
42% [4.94]	62% [4.35]	-45,975.57	-45,974.98	-45,975.55	-45,974.78
68% [3.29]	80% [2.23]	-45,754.91	-45,753.85	-45,755.23	-45,752.13
76% [2.59]	80% [2.06]	-45,955.33	-45,954.80	-45,954.75	-45,953.65
73% [3.68]	84% [3.34]	-46,020.97	-46,020.64	-46,021.23	-46,020.90
9% [7.86]	14% [7.15]	-45,718.54	-45,717.83	-45,718.51	-45,717.61
48% [6.11]	59% [5.22]	-45,732.43	-45,731.55	-45,732.21	-45,730.46
13% [7.01]	13% [6.28]	-45,831.31	-45,830.58	-45,830.55	-45,829.69
87% [3.24]	99% [2.62]	-45,875.59	-45,874.97	-45,875.76	-45,875.18
6% [9.39]	6% [9.49]	-45,949.38	-45,949.49	-45,950.09	-45,950.45
84% [3.38]	93% [3.29]	-46,026.41	-46,026.32	-46,026.67	-46,026.67
37% [4.99]	42% [4.90]	-45,951.55	-45,951.46	-45,951.67	-45,951.60
36% [6.14]	41% [6.11]	-45,793.43	-45,793.40	-45,794.27	-45,793.47
47% [6.00]	51% [5.66]	-45,896.32	-45,895.97	-45,895.88	-45,894.75
57% [3.76]	66% [3.13]	-45,871.19	-45,870.57	-45,871.46	-45,870.81
72% [3.55]	80% [3.02]	-45,857.59	-45,857.05	-45,857.10	-45,856.81
26% [28.82]	42% [5.10]	-45,776.01	-45,752.29	-45,753.43	-45,752.29
29% [5.46]	32% [5.27]	-45,787.97	-45,787.78	-45,788.07	-45,788.27
78% [2.69]	89% [2.07]	-45,804.43	-45,803.81	-45,803.37	-45,803.23
41% [5.50]	39% [4.88]	-45,763.51	-45,762.89	-45,763.78	-45,763.07
82% [3.25]	86% [3.15]	-45,676.15	-45,676.05	-45,676.64	-45,676.55
55% [4.41]	62% [4.26]	-45,822.66	-45,822.51	-45,822.68	-45,822.28
80% [3.23]	87% [3.03]	-45,882.84	-45,882.64	-45,882.16	-45,882.14
5% [29.80]	4% [7.23]	-45,607.87	-45,585.30	-45,584.93	-45,585.15
81% [2.72]	93% [1.85]	-45,704.38	-45,703.50	-45,704.87	-45,702.29
10% [31.23]	8% [8.64]	-45,902.93	-45,880.33	-45,879.73	-45,880.12
52% [4.86]	61% [4.35]	-45,633.00	-45,632.49	-45,632.66	-45,632.25
44% [4.66]	51% [3.89]	-45,761.58	-45,760.82	-45,762.18	-45,761.33
19% [7.86]	22% [7.64]	-45,837.08	-45,836.86	-45,837.69	-45,837.04
30% [5.66]	34% [5.38]	-45,849.53	-45,849.26	-45,850.33	-45,850.33
59% [27.72]	63% [3.44]	-46,169.14	-46,144.86	-46,144.09	-46,143.52
47% [5.42]	72% [4.44]	-45,842.93	-45,841.95	-45,843.57	-45,841.51
84% [2.53]	87% [2.40]	-45,682.71	-45,682.58	-45,682.44	-45,682.63
64% [53.27]	82% [2.84]	-45,766.79	-45,716.37	-45,716.51	-45,715.92
72% [3.76]	81% [3.44]	-45,783.08	-45,782.76	-45,782.74	-45,782.36
16% [6.67]	22% [6.17]	-45,861.35	-45,860.86	-45,861.48	-45,861.39
23% [7.87]	29% [7.42]	-45,707.93	-45,707.47	-45,708.74	-45,708.76

Table 35: Percentage (*Perc.*) of global maximum with mean distance from it (*Dist*), *Mean* and *Median* of maximized log-likelihood values, using EM and M-T-EM algorithms under simulated **scenario E** presented in Table 18 of the paper for the HM model with continuous response variables when the latent structure is not correctly specified. Each row corresponds to a specific sample, values in bold highlight the best results

Perc. [Dist.] (Glob. Max)		Mean		Median	
EM	M-T-EM	EM	M-T-EM	EM	M-T-EM
21% [168.44]	31% [142.56]	-23,883.90	-23,858.02	-23,720.72	-23,720.34
15% [128.21]	29% [100.25]	-23,878.88	-23,850.91	-23,762.50	-23,760.46
20% [177.64]	30% [127.94]	-23,609.24	-23,559.53	-23,435.09	-23,434.44
12% [242.12]	21% [145.16]	-23,830.88	-23,733.92	-23,595.65	-23,594.97
11% [130.13]	18% [120.17]	-23,838.68	-23,828.72	-23,718.74	-23,717.09
6% [206.48]	22% [100.26]	-23,980.02	-23,873.80	-23,781.09	-23,780.99
9% [218.74]	11% [180.13]	-23,854.80	-23,816.18	-23,651.19	-23,649.05
16% [176.55]	16% [95.26]	-23,959.02	-23,877.73	-23,789.10	-23,787.39
8% [275.72]	12% [240.13]	-24,012.94	-23,977.35	-23,751.01	-23,750.92
5% [149.88]	7% [124.41]	-23,866.31	-23,840.84	-23,723.51	-23,723.78
8% [185.98]	16% [168.01]	-23,813.81	-23,795.85	-23,633.25	-23,632.70
29% [128.44]	46% [118.66]	-23,818.55	-23,808.78	-23,696.53	-23,693.14
6% [330.09]	11% [194.48]	-24,016.49	-23,880.88	-23,696.13	-23,694.14
9% [269.31]	13% [222.44]	-23,835.27	-23,788.40	-23,572.44	-23,571.86
2% [75.66]	4% [67.08]	-23,657.77	-23,649.19	-23,591.36	-23,590.31
19% [197.57]	29% [133.10]	-23,799.95	-23,735.47	-23,608.35	-23,608.05
33% [157.43]	46% [139.41]	-23,787.37	-23,769.36	-23,636.14	-23,634.72
24% [261.01]	27% [206.67]	-23,919.52	-23,865.18	-23,664.52	-23,663.18
12% [140.48]	21% [55.96]	-23,760.63	-23,676.11	-23,626.59	-23,625.12
14% [227.80]	30% [175.82]	-23,936.75	-23,884.77	-23,715.89	-23,714.79
10% [186.56]	22% [168.02]	-23,691.33	-23,672.79	-23,511.53	-23,510.84
14% [183.76]	18% [136.09]	-23,901.40	-23,853.72	-23,724.79	-23,722.52
31% [148.66]	45% [94.01]	-23,727.94	-23,673.28	-23,582.72	-23,582.11
9% [199.35]	11% [154.20]	-23,713.86	-23,668.72	-23,525.85	-23,523.44
15% [160.04]	17% [155.93]	-23,815.13	-23,811.02	-23,660.72	-23,660.02
41% [166.34]	58% [118.71]	-23,803.91	-23,756.28	-23,641.66	-23,639.53
7% [186.54]	8% [99.58]	-23,809.96	-23,723.01	-23,633.80	-23,632.88
21% [141.55]	42% [110.44]	-23,701.34	-23,670.23	-23,568.08	-23,565.76
9% [108.65]	18% [88.44]	-23,778.01	-23,757.80	-23,675.35	-23,674.85
31% [253.63]	46% [130.49]	-23,803.22	-23,680.08	-23,554.85	-23,552.37
13% [222.57]	24% [114.94]	-23,804.45	-23,696.83	-23,587.29	-23,585.49
20% [91.03]	22% [49.40]	-23,636.47	-23,594.84	-23,550.11	-23,549.05
11% [195.56]	20% [110.97]	-23,849.63	-23,765.05	-23,665.39	-23,663.94
4% [150.97]	6% [70.84]	-23,671.73	-23,591.60	-23,532.98	-23,531.91
8% [214.93]	10% [110.51]	-23,746.68	-23,642.26	-23,540.77	-23,538.86
17% [187.41]	31% [144.55]	-23,746.71	-23,703.85	-23,564.10	-23,563.04
5% [198.60]	16% [102.84]	-23,691.80	-23,596.05	-23,501.03	-23,500.55
27% [107.53]	30% [30.09]	-23,635.44	-23,558.00	-23,532.24	-23,531.69
19% [176.49]	25% [126.43]	-23,654.79	-23,604.73	-23,485.23	-23,485.12
43% [131.43]	43% [66.46]	-23,939.28	-23,874.31	-23,811.71	-23,811.66
3% [200.14]	5% [126.63]	-23,733.68	-23,660.17	-23,542.90	-23,541.94
16% [168.73]	18% [143.45]	-23,950.76	-23,925.48	-23,790.04	-23,789.94
5% [220.60]	14% [163.95]	-23,800.91	-23,744.26	-23,588.68	-23,588.26
9% [237.70]	13% [197.54]	-23,957.29	-23,917.13	-23,732.64	-23,732.07
12% [177.68]	17% [57.39]	-23,911.41	-23,791.12	-23,743.33	-23,740.80
13% [116.57]	18% [62.10]	-23,699.11	-23,644.65	-23,592.41	-23,590.87
28% [205.66]	30% [168.18]	-23,792.13	-23,754.65	-23,591.75	-23,592.52
18% [254.04]	22% [213.85]	-23,996.56	-23,956.37	-23,748.69	-23,748.59
22% [163.68]	22% [134.87]	-23,733.28	-23,704.47	-23,575.70	-23,575.22
29% [133.55]	41% [111.40]	-23,895.07	-23,872.93	-23,766.24	-23,765.18