SUPPLEMENTARY MATERIALS FOR "BRIDGING RANDOMIZED CONTROLLED TRIALS AND SINGLE-ARM TRIALS USING COMMENSURATE PRIORS IN ARM-BASED NETWORK META-ANALYSIS"

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APPENDIX A: COMPLETE MOTIVATING DATASET

Xu et al. (2018) selected not only the 31 RCTs but also found 36 single-arm studies to use as a validation group in their original analysis. We excluded 9 single-arm studies because they did not provide information about treatment-related adverse events. Only 1 RCT investigated tremelimumab, which did not show a statistically significant survival advantage over standard chemotherapy in first-line treatment of patients with metastatic melanoma (Ribas et al., 2013). Moreover, tremelimumab did not have any available information from single-arm studies. Therefore, our analysis excluded tremelimumab. We also excluded 2 RCTs (Motzer et al., 2015a; Bang et al., 2017) and transformed 1 RCT (Hersh et al., 2010) into a single-arm study (by dropping one treatment arm) because the doses of ICIs investigated in these RCTs, such as nivolumab 0.3mg/kg every 3 weeks, nivolumab 2mg/kg every 3 weeks, and nivolumab 10mg/kg every 3 weeks in the RCT by Motzer et al. (2015a), did not match doses in the other RCTs. Table A1 presents the complete dataset.

Table A1: The dataset of safety of ICIs on cancer. It includes study index, author and year of each study, treatment details, number of treatment-related grade 3–5 adverse events (r), number of patients assigned in each treatment arm (n). ICI=immune checkpoint inhibitor; NIV=nivolumab; IPI=ipilimumab; PEM=pembrolizumab; ATE=atezolizumab; ICC=investigator's choice chemotherapy.

Study	Author (year)	Treatment	r	n
Phase II or III RCT:				
1	Weber et al. (2017)	NIV: 3mg/kg every 2 weeks	65	452
1		IPI: 10mg/kg every 3 weeks	210	453
2	Larkin et al. (2015) &	NIV: 3mg/kg every 2 weeks	68	313
2	Wolchok et al. (2017)	2ICIs: NIV+IPI	186	311
2		IPI: 3mg/kg every 3 weeks	87	313
3	Robert et al. (2015a) &	PEM: 10mg/kg every 2 weeks	48	278
3	Schachter et al. (2017)	PEM: 10mg/kg every 3 weeks	46	277
3		IPI: 3mg/kg every 3 weeks	50	256
4	Rittmeyer et al. (2017)	ATE: 1200mg every 3 weeks	90	609
4		ICC	248	578
5	Weber et al. (2015) &	NIV: 3mg/kg every 2 weeks	37	268
5	Larkin et al. (2018)	ICC	35	102
6	Robert et al. (2011) &	ICI+ICC	103	247
6	Maio et al. (2015)	ICC	15	251
7	Ferris et al. (2016)	NIV: 3mg/kg every 2 weeks	32	236
7		ICC	40	111

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Table A1 – *Continued from previous page*

Study	Author (year)	Treatment	r	n
8	Govindan et al. (2017)	ICI+ICC	205	388
8		ICC	129	361
9	Motzer et al. (2015b)	NIV: 3mg/kg every 2 weeks	76	406
9		ICC	147	397
10	Carbone et al. (2017)	NIV: 3mg/kg every 3 weeks	49	267
10		ICC	136	263
11	Bellmunt et al. (2017)	PEM: 200mg every 3 weeks	40	266
11		ICC	126	255
12	Ascierto et al. (2017)	IPI: 10mg/kg every 3 weeks	128	364
12		IPI: 3mg/kg every 3 weeks	68	362
13	Reck et al. (2016a)	PEM: 200mg every 3 weeks	41	154
13		ICC	80	150
14	Reck et al. (2016b)	ICI+ICC	231	478
14		ICC	214	476
15	Langer et al. (2016)	ICI+ICC	23	59
15		ICC	16	62
16	Postow et al. (2015) &	2ICIs: NIV+IPI	54	94
16	Hodi et al. (2016)	IPI: 3mg/kg every 3 weeks	9	46
17	Herbst et al. (2016)	PEM: 2 mg/kg every 3 weeks	43	339
17		PEM: 10 mg/kg every 3 weeks	55	343
17		ICC	114	309
18	Fehrenbacher et al. (2016)	ATE: 1200mg every 3 weeks	17	142
18		ICC	55	135
19	Robert et al. (2015b)	NIV: 3mg/kg every 2 weeks	24	206
19		ICC	36	205
20	Ribas et al. (2015)	ICC	45	171
20		PEM: 2 mg/kg every 3 weeks	19	178
20		PEM: 10 mg/kg every 3 weeks	25	179
21	Brahmer et al. (2015)	NIV: 3mg/kg every 2 weeks	9	131
21		ICC	75	129
22	Borghaei et al. (2015)	NIV: 3mg/kg every 2 weeks	31	287
22		ICC	145	268
23	Powles et al. (2018)	ATE: 1200mg every 3 weeks	95	459
23		ICC	198	443
24	Reck et al. (2012)	ICI+ICC	40	84
24		ICC	13	44
25	Lynch et al. (2012)	ICC	25	65
25		ICI+ICC	56	138
26	Hamid et al. (2011)	IPI: 3mg/kg every 3 weeks	7	40
26		IPI: 10mg/kg every 3 weeks	14	42
27	Wolchok et al. (2010)	IPI: 3mg/kg every 3 weeks	6	71
27		IPI: 10mg/kg every 3 weeks	18	71
Single-arm trial:				
1	Giaccone et al. (2018)	PEM: 200mg every 3 weeks	6	40
2	Goldberg et al. (2016)	PEM: 10mg/kg every 2 weeks	5	36
3	Haag et al. (2018)	IPI: 10mg/kg every 3 weeks	9	25
4	Nghiem et al. (2016)	PEM: 2mg/kg every 3 weeks	4	26

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Table A1 – *Continued from previous page*

Study	Author (year)	Treatment	r	n
5	Younes et al. (2016)	NIV: 3mg/kg every 2 weeks	20	80
6	Amin et al. (2016)	ICI+ICC	30	46
7	Giacomo et al. (2012)	ICI+ICC	47	86
8	Hamanishi et al. (2015)	NIV: 3mg/kg every 2 weeks	4	10
9	Hida et al. (2017)	NIV: 3mg/kg every 2 weeks	2	35
10	Kudo et al. (2017)	NIV: 3mg/kg every 2 weeks	11	65
11	Maruyama et al. (2017)	NIV: 3mg/kg every 2 weeks	4	17
12	Nishio et al. (2017)	NIV: 3mg/kg every 2 weeks	17	76
13	Overman et al. (2018)	NIV: 3mg/kg every 2 weeks	15	74
14	Sharma et al. (2017)	NIV: 3mg/kg every 2 weeks	51	270
15	Yamazaki et al. (2015a)	IPI: 3mg/kg every 3 weeks	3	20
16	Yamazaki et al. (2017)	NIV: 3mg/kg every 2 weeks	3	23
17	Yamazaki et al. (2015b)	ICI+ICC	11	15
18	Zimmer et al. (2015a)	IPI: 3mg/kg every 3 weeks	20	53
19	Zimmer et al. (2015b)	IPI: 3mg/kg every 3 weeks	20	103
20	Balar et al. (2017)	ATE: 1200mg every 3 weeks	20	119
21	Bauml et al. (2017)	PEM: 200mg every 3 weeks	26	171
22	O'Day et al. (2010)	IPI: 10mg/kg every 3 weeks	39	155
23	Peters et al. (2017)	ATE: 1200mg every 3 weeks	82	659
24	Rizvi et al. (2015)	NIV: 3mg/kg every 2 weeks	22	117
25	Rosenberg et al. (2016)	ATE: 1200mg every 3 weeks	50	310
26	Kang et al. (2017)	NIV: 3mg/kg every 2 weeks	39	330
27	Kwon et al. (2014)	IPI: 10mg/kg every 3 weeks	145	393
28	Hersh et al. (2010)	ICI+ICC	9	35

APPENDIX B: ADDITIONAL DETAILS OF THE PROPOSED METHODS

B.1. Likelihood function. The likelihood function for $\boldsymbol{\theta}_k$ based on data $\mathcal{D}_k$ from the k^{th} RCT can be written as:

$$L(\boldsymbol{\theta}_k|\mathcal{D}_k) = \prod_{t\in\mathcal{A}_k} [\text{logit}^{-1}(\theta_{kt})]^{r_{kt}}[1-\text{logit}^{-1}(\theta_{kt})]^{n_{kt}-r_{kt}}.$$

Similarly, the likelihood function for θ^{s}_{jt} based on data $\mathcal{D}^{\text{s}}_j$ from the j^{th} single-arm trial is:

$$L(\theta^{\text{s}}_{jt}|\mathcal{D}^{\text{s}}_j) = \prod_{t\in\mathcal{A}^{\text{s}}_j} [\text{logit}^{-1}(\theta^{\text{s}}_{jt})]^{r^{\text{s}}_{jt}}[1-\text{logit}^{-1}(\theta^{\text{s}}_{jt})]^{n^{\text{s}}_{jt}-r^{\text{s}}_{jt}}.$$

Since $|\mathcal{A}^{\text{s}}_j| = 1$, we can simply denote θ^{s}_{jt} by θ^{s}_j. Without loss of generality, we focus on illustrating the joint posterior distribution under the DCP model. Noting that $\boldsymbol{\Sigma}$ depends on $\boldsymbol{\Delta}$ and ρ, the joint posterior distribution can be written as:

(1)

$$\begin{aligned}
&\pi(\boldsymbol{\mu},\boldsymbol{\Delta},\boldsymbol{\mu}^{\text{s}},\boldsymbol{\sigma}^{\text{s}},\rho,\boldsymbol{\theta}_1,\ldots,\boldsymbol{\theta}_K,\boldsymbol{\theta}^{\text{s}},\boldsymbol{\kappa}^{\text{m}},\boldsymbol{\tau}^{\text{m}},\boldsymbol{\kappa}^{\text{v}},\boldsymbol{\tau}^{\text{v}}|\mathcal{D}_{1:K},\mathcal{D}^{\text{s}}_{1:J})\\
&\propto \prod_{k=1}^{K}\left\{\prod_{t\in\mathcal{A}_k}[\text{logit}^{-1}(\theta_{kt})]^{r_{kt}}[1-\text{logit}^{-1}(\theta_{kt})]^{n_{kt}-r_{kt}}|\boldsymbol{\Sigma}|^{-\frac{1}{2}}e^{-\frac{1}{2}(\boldsymbol{\theta}_k-\boldsymbol{\mu})'\boldsymbol{\Sigma}^{-1}(\boldsymbol{\theta}_k-\boldsymbol{\mu})}\right\}\times\\
&\prod_{j=1}^{J}\left\{\prod_{t\in\mathcal{A}^{\text{s}}_j}[\text{logit}^{-1}(\theta^{\text{s}}_{jt})]^{r^{\text{s}}_{jt}}[1-\text{logit}^{-1}(\theta^{\text{s}}_{jt})]^{(n^{\text{s}}_{jt}-r^{\text{s}}_{jt})}(\sigma^{\text{s}}_t)^{-1}e^{-\frac{1}{2}\left(\frac{\theta^{\text{s}}_{jt}-\mu^{\text{s}}_t}{\sigma^{\text{s}}_t}\right)^2}\right\}\times\\
&\prod_{t=1}^{T}\left\{[(\tau^{\text{m}}_t)^{\frac{1}{2}}e^{-\frac{1}{2}\tau^{\text{m}}_t(\mu_t-\mu^{\text{s}}_t)^2}]^{(1-\kappa^{\text{m}}_t)}[(R^{\text{m}})^{\frac{1}{2}}e^{-\frac{1}{2}R^{\text{m}}(\mu_t-\mu^{\text{s}}_t)^2}]^{\kappa^{\text{m}}_t}\right\}\times\\
&\prod_{t=1}^{T}\left\{\left[(\tau^{\text{v}}_t)^{\frac{1}{2}}\sigma_t^{-1}e^{-\frac{1}{2}\tau^{\text{v}}_t(\log(\sigma_t)-\log(\sigma^{\text{s}}_t))^2}\right]^{1-\kappa^{\text{v}}_t}\left[(R^{\text{v}})^{\frac{1}{2}}\sigma_t^{-1}e^{-\frac{1}{2}R^{\text{v}}(\log(\sigma_t)-\log(\sigma^{\text{s}}_t))^2}\right]^{\kappa^{\text{v}}_t}\right\}\times\\
&\prod_{t=1}^{T}[\pi(\mu^{\text{s}}_t)\pi(\sigma^{\text{s}}_t)\pi(\kappa^{\text{m}}_t)\pi(\tau^{\text{m}}_t)\pi(\kappa^{\text{v}}_t)\pi(\tau^{\text{v}}_t)]\times\pi(\rho),
\end{aligned}$$

where $\mathcal{D}_{1:K} = \{\mathcal{D}_1,\ldots,\mathcal{D}_K\}$, $\mathcal{D}^{\text{s}}_{1:J} = \{\mathcal{D}^{\text{s}}_1,\ldots,\mathcal{D}^{\text{s}}_J\}$, $\boldsymbol{\theta}^{\text{s}} = (\theta^{\text{s}}_1,\ldots,\theta^{\text{s}}_J)'$, $\boldsymbol{\kappa}^{\text{m}} = (\kappa^{\text{m}}_1,\ldots,\kappa^{\text{m}}_T)'$, $\boldsymbol{\tau}^{\text{m}} = (\tau^{\text{m}}_1,\ldots,\tau^{\text{m}}_T)'$, $\boldsymbol{\kappa}^{\text{v}} = (\kappa^{\text{v}}_1,\ldots,\kappa^{\text{v}}_T)'$, and $\boldsymbol{\tau}^{\text{v}} = (\tau^{\text{v}}_1,\ldots,\tau^{\text{v}}_T)'$.

B.2. LPML Derivation. As a measure of the model's predictive ability, the LPML can be written as:

$$\text{LPML} = \sum_{k=1}^{K}\log(\text{CPO}_k);$$

$$\text{CPO}_k = f(\mathcal{D}_k|\mathcal{D}_{-k},\mathcal{D}^{\text{s}}_{1:J}),$$

where CPO_k is the conditional predictive ordinate of the k^{th} RCT based on the remaining $\mathcal{D}_{-k} = \{\mathcal{D}_l : l \neq k\}$ and on the full data from the single-arm trials $\mathcal{D}^{\text{s}}_{1:J}$.

Let $\boldsymbol{\psi}$ represent all unknown parameters $\boldsymbol{\mu}$, $\boldsymbol{\Delta}$, $\boldsymbol{\mu}^{\text{s}}$, $\boldsymbol{\sigma}^{\text{s}}$, ρ, $\boldsymbol{\theta}_1,\ldots,\boldsymbol{\theta}_K$, $\boldsymbol{\theta}^{\text{s}}$, $\boldsymbol{\kappa}^{\text{m}}$, $\boldsymbol{\tau}^{\text{m}}$, $\boldsymbol{\kappa}^{\text{v}}$, and $\boldsymbol{\tau}^{\text{v}}$; also, let $\boldsymbol{\psi}_{-k}$ represent all the unknown parameters except $\boldsymbol{\theta}_k$. Then CPO_k can be written as:

$$
\begin{aligned}
&E\left[\frac{1}{f(\mathcal{D}_k|\boldsymbol{\theta}_k,\boldsymbol{\psi}_{-k})}\right] \\
&= \int \frac{\pi(\boldsymbol{\theta}_k,\boldsymbol{\psi}_{-k}|\mathcal{D}_{1:K},\mathcal{D}^{\mathrm{s}}_{1:J})}{f(\mathcal{D}_k|\boldsymbol{\theta}_k,\boldsymbol{\psi}_{-k})} d\boldsymbol{\theta}_k d\boldsymbol{\psi}_{-k} \\
&= \int \frac{f(\mathcal{D}_{1:K},\mathcal{D}^{\mathrm{s}}_{1:J}|\boldsymbol{\theta}_k,\boldsymbol{\psi}_{-k})\pi(\boldsymbol{\theta}_k)\pi(\boldsymbol{\psi}_{-k})}{f(\mathcal{D}_k|\boldsymbol{\theta}_k,\boldsymbol{\psi}_{-k})f(\mathcal{D}_{1:K},\mathcal{D}^{\mathrm{s}}_{1:J})} d\boldsymbol{\theta}_k d\boldsymbol{\psi}_{-k} \\
&= \int \frac{f(\mathcal{D}_{-k},\mathcal{D}^{\mathrm{s}}_{1:J}|\boldsymbol{\psi}_{-k})f(\mathcal{D}_k|\boldsymbol{\theta}_k,\boldsymbol{\psi}_{-k})\pi(\boldsymbol{\theta}_k)\pi(\boldsymbol{\psi}_{-k})}{f(\mathcal{D}_k|\boldsymbol{\theta}_k,\boldsymbol{\psi}_{-k})f(\mathcal{D}_{1:K},\mathcal{D}^{\mathrm{s}}_{1:J})} d\boldsymbol{\theta}_k d\boldsymbol{\psi}_{-k} \\
&= \int \frac{f(\mathcal{D}_{-k},\mathcal{D}^{\mathrm{s}}_{1:J}|\boldsymbol{\psi}_{-k})\pi(\boldsymbol{\psi}_{-k})}{f(\mathcal{D}_{1:K},\mathcal{D}^{\mathrm{s}}_{1:J})} d\boldsymbol{\psi}_{-k} \\
&= \frac{f(\mathcal{D}_{-k},\mathcal{D}^{\mathrm{s}}_{1:J})}{f(\mathcal{D}_{1:K},\mathcal{D}^{\mathrm{s}}_{1:J})} = \frac{1}{f(\mathcal{D}_k|\mathcal{D}_{-k},\mathcal{D}^{\mathrm{s}}_{1:J})} = \frac{1}{\mathrm{CPO}_k},
\end{aligned}
$$

where $\pi(\boldsymbol{\theta}_k,\boldsymbol{\psi}_{-k}|\mathcal{D}_{1:K},\mathcal{D}^{\mathrm{s}}_{1:J})$ is the joint posterior distribution in Equation (1). Let $\{\boldsymbol{\psi}_c, c = 1,\ldots,C\}$ denote the MCMC samples of $\boldsymbol{\psi}$ from this joint posterior distribution. Then CPO_k can be approximated by

$$
\left(\frac{1}{C}\sum_{c=1}^{C}\frac{1}{f(\mathcal{D}_k|\boldsymbol{\psi}_c)}\right)^{-1}.
$$

APPENDIX C: DETAILS OF SIMULATION RESULTS

C.1. Bias. Tables C1–C8 provide the estimated bias and the Monte Carlo standard error of the posterior median for the five methods (NB, CPV, FBV, CPM, and DCP) using different data-generating mechanisms (EM-EV, UM-EV, EM-UV, and UM-UV) and missingness structures (MCAR and MAR).

TABLE C1

Simulation results comparing data generated under the EM-EV scenario with MCAR missingness of treatment arms. The estimated bias and the Monte Carlo standard error of the posterior median are rounded to 3 decimal places for the five methods (NB, CPV, FBV, CPM, and DCP).

Parameter	Truth	Bias (Monte Carlo standard error)				
		NB	CPV	FBV	CPM	DCP
cLOR_{12}	1.00	0.068 (0.016)	0.051 (0.016)	0.066 (0.016)	0.055 (0.013)	0.059 (0.013)
cLOR_{13}	0.50	0.109 (0.026)	0.099 (0.025)	0.103 (0.025)	0.050 (0.016)	0.065 (0.017)
cLOR_{14}	0.00	0.029 (0.007)	0.026 (0.007)	0.029 (0.007)	0.018 (0.005)	0.016 (0.005)
cLOR_{15}	−0.50	0.000 (0.007)	0.002 (0.007)	0.005 (0.007)	−0.002 (0.005)	−0.003 (0.005)
cLOR_{23}	−0.50	0.026 (0.031)	0.038 (0.031)	0.026 (0.031)	−0.010 (0.022)	0.001 (0.022)
cLOR_{24}	−1.00	−0.042 (0.018)	−0.026 (0.017)	−0.038 (0.017)	−0.038 (0.014)	−0.044 (0.014)
cLOR_{25}	−1.50	−0.076 (0.019)	−0.052 (0.018)	−0.064 (0.018)	−0.060 (0.014)	−0.064 (0.015)
cLOR_{34}	−0.50	−0.079 (0.027)	−0.072 (0.026)	−0.073 (0.026)	−0.032 (0.017)	−0.049 (0.018)
cLOR_{35}	−1.00	−0.111 (0.027)	−0.097 (0.026)	−0.098 (0.026)	−0.054 (0.017)	−0.069 (0.018)
cLOR_{45}	−0.50	−0.031 (0.010)	−0.024 (0.009)	−0.024 (0.009)	−0.021 (0.006)	−0.019 (0.006)
μ_1	−2.00	−0.003 (0.004)	0.005 (0.004)	0.007 (0.004)	−0.005 (0.003)	−0.003 (0.003)
μ_2	−3.00	−0.074 (0.017)	−0.047 (0.016)	−0.061 (0.016)	−0.060 (0.014)	−0.063 (0.014)
μ_3	−2.50	−0.115 (0.026)	−0.096 (0.026)	−0.098 (0.025)	−0.056 (0.016)	−0.070 (0.017)
μ_4	−2.00	−0.033 (0.006)	−0.022 (0.006)	−0.022 (0.006)	−0.023 (0.004)	−0.019 (0.004)
μ_5	−1.50	−0.004 (0.007)	0.002 (0.006)	0.001 (0.006)	−0.003 (0.005)	−0.001 (0.005)
p_1	0.12	0.002 (0.000)	0.000 (0.000)	0.000 (0.000)	0.002 (0.000)	−0.001 (0.000)
p_2	0.07	0.019 (0.001)	0.010 (0.001)	0.013 (0.001)	0.017 (0.001)	0.006 (0.001)
p_3	0.10	0.038 (0.002)	0.020 (0.002)	0.026 (0.002)	0.035 (0.002)	0.011 (0.002)
p_4	0.12	0.005 (0.001)	0.000 (0.001)	0.000 (0.001)	0.004 (0.000)	−0.001 (0.000)
p_5	0.19	0.014 (0.001)	0.004 (0.001)	0.004 (0.001)	0.010 (0.001)	0.002 (0.001)
δ_1	0.40	0.033 (0.004)	−0.051 (0.003)	−0.063 (0.003)	0.030 (0.004)	−0.054 (0.003)
δ_2	1.00	0.337 (0.020)	0.120 (0.016)	0.208 (0.016)	0.283 (0.019)	0.068 (0.015)
δ_3	1.00	0.736 (0.022)	0.229 (0.021)	0.331 (0.021)	0.487 (0.021)	0.088 (0.017)
δ_4	0.30	0.152 (0.007)	−0.051 (0.005)	−0.037 (0.004)	0.102 (0.006)	−0.066 (0.004)
δ_5	0.30	0.263 (0.010)	−0.011 (0.006)	0.007 (0.005)	0.162 (0.008)	−0.039 (0.005)
ρ	0.50	0.005 (0.007)	−0.026 (0.007)	−0.033 (0.007)	0.016 (0.007)	−0.016 (0.007)

TABLE C2

Simulation results comparing data generated under the EM-EV scenario with MAR missingness of treatment arms. The estimated bias and the Monte Carlo standard error of the posterior median are rounded to 3 decimal places for the five methods (NB, CPV, FBV, CPM, and DCP).

Parameter	Truth	Bias (Monte Carlo standard error)				
		NB	CPV	FBV	CPM	DCP
cLOR_{12}	1.00	0.190 (0.019)	0.012 (0.017)	0.073 (0.017)	0.093 (0.015)	0.025 (0.014)
cLOR_{13}	0.50	0.119 (0.025)	0.071 (0.024)	0.081 (0.024)	0.054 (0.016)	0.053 (0.016)
cLOR_{14}	0.00	−0.012 (0.007)	0.034 (0.007)	0.033 (0.007)	0.005 (0.005)	0.024 (0.005)
cLOR_{15}	−0.50	−0.115 (0.009)	0.058 (0.008)	0.048 (0.008)	−0.012 (0.005)	0.049 (0.006)
cLOR_{23}	−0.50	−0.128 (0.030)	0.030 (0.029)	−0.029 (0.029)	−0.057 (0.021)	0.015 (0.021)
cLOR_{24}	−1.00	−0.230 (0.020)	0.021 (0.018)	−0.041 (0.018)	−0.092 (0.015)	−0.001 (0.015)
cLOR_{25}	−1.50	−0.407 (0.023)	0.026 (0.019)	−0.048 (0.019)	−0.127 (0.015)	0.014 (0.015)
cLOR_{34}	−0.50	−0.157 (0.026)	−0.042 (0.025)	−0.052 (0.025)	−0.054 (0.017)	−0.030 (0.017)
cLOR_{35}	−1.00	−0.345 (0.027)	−0.040 (0.025)	−0.062 (0.025)	−0.090 (0.016)	−0.015 (0.017)
cLOR_{45}	−0.50	−0.114 (0.010)	0.022 (0.009)	0.012 (0.009)	−0.019 (0.006)	0.024 (0.007)
μ_1	−2.00	−0.004 (0.004)	0.005 (0.004)	0.007 (0.004)	−0.008 (0.003)	−0.003 (0.003)
μ_2	−3.00	−0.181 (0.019)	0.002 (0.017)	−0.057 (0.018)	−0.096 (0.015)	−0.024 (0.014)
μ_3	−2.50	−0.123 (0.025)	−0.067 (0.025)	−0.075 (0.024)	−0.063 (0.016)	−0.056 (0.016)
μ_4	−2.00	−0.002 (0.006)	−0.033 (0.006)	−0.030 (0.006)	−0.016 (0.004)	−0.029 (0.005)
μ_5	−1.50	0.088 (0.008)	−0.064 (0.007)	−0.052 (0.007)	−0.002 (0.005)	−0.056 (0.005)
p_1	0.12	0.002 (0.000)	0.000 (0.000)	0.000 (0.000)	0.001 (0.000)	−0.001 (0.000)
p_2	0.07	0.015 (0.001)	0.012 (0.001)	0.012 (0.001)	0.015 (0.001)	0.008 (0.001)
p_3	0.10	0.042 (0.002)	0.024 (0.002)	0.029 (0.002)	0.041 (0.002)	0.014 (0.001)
p_4	0.12	0.010 (0.001)	−0.002 (0.001)	−0.001 (0.001)	0.006 (0.001)	−0.002 (0.000)
p_5	0.19	0.030 (0.002)	−0.006 (0.001)	−0.004 (0.001)	0.010 (0.001)	−0.006 (0.001)
δ_1	0.40	0.033 (0.004)	−0.052 (0.003)	−0.064 (0.003)	0.029 (0.004)	−0.055 (0.003)
δ_2	1.00	0.376 (0.020)	0.111 (0.015)	0.197 (0.015)	0.277 (0.017)	0.063 (0.014)
δ_3	1.00	0.906 (0.022)	0.293 (0.021)	0.379 (0.020)	0.624 (0.021)	0.139 (0.017)
δ_4	0.30	0.200 (0.009)	−0.058 (0.005)	−0.042 (0.004)	0.125 (0.007)	−0.077 (0.004)
δ_5	0.30	0.319 (0.010)	−0.012 (0.005)	0.010 (0.005)	0.161 (0.007)	−0.043 (0.005)
ρ	0.50	0.082 (0.006)	−0.061 (0.006)	−0.051 (0.006)	0.033 (0.006)	−0.051 (0.006)

TABLE C3

Simulation results comparing data generated under the UM-EV scenario with MCAR missingness of treatment arms. The estimated bias and the Monte Carlo standard error of the posterior median are rounded to 3 decimal places for the five methods (NB, CPV, FBV, CPM, and DCP).

Parameter	Truth	Bias (Monte Carlo standard error)				
		NB	CPV	FBV	CPM	DCP
cLOR_{12}	1.00	0.068 (0.016)	0.048 (0.016)	0.066 (0.016)	−0.087 (0.013)	−0.058 (0.013)
cLOR_{13}	0.50	0.108 (0.026)	0.100 (0.025)	0.107 (0.025)	−0.209 (0.016)	−0.127 (0.017)
cLOR_{14}	0.00	0.029 (0.007)	0.029 (0.007)	0.035 (0.007)	0.171 (0.007)	0.129 (0.007)
cLOR_{15}	−0.50	0.000 (0.007)	0.004 (0.007)	0.009 (0.007)	0.151 (0.007)	0.107 (0.007)
cLOR_{23}	−0.50	0.026 (0.031)	0.042 (0.030)	0.031 (0.030)	−0.123 (0.021)	−0.076 (0.021)
cLOR_{24}	−1.00	−0.042 (0.018)	−0.020 (0.017)	−0.032 (0.017)	0.263 (0.014)	0.189 (0.014)
cLOR_{25}	−1.50	−0.076 (0.019)	−0.048 (0.018)	−0.059 (0.018)	0.246 (0.014)	0.168 (0.014)
cLOR_{34}	−0.50	−0.078 (0.027)	−0.070 (0.026)	−0.071 (0.026)	0.386 (0.017)	0.260 (0.018)
cLOR_{35}	−1.00	−0.111 (0.027)	−0.097 (0.026)	−0.097 (0.026)	0.370 (0.017)	0.241 (0.017)
cLOR_{45}	−0.50	−0.031 (0.010)	−0.026 (0.009)	−0.026 (0.009)	−0.019 (0.008)	−0.022 (0.009)
μ_1	−2.00	−0.003 (0.004)	0.007 (0.004)	0.011 (0.004)	0.009 (0.004)	0.017 (0.004)
μ_2	−3.00	−0.073 (0.017)	−0.043 (0.016)	−0.057 (0.016)	0.096 (0.013)	0.074 (0.013)
μ_3	−2.50	−0.114 (0.026)	−0.095 (0.026)	−0.098 (0.025)	0.219 (0.016)	0.143 (0.017)
μ_4	−2.00	−0.033 (0.006)	−0.023 (0.006)	−0.024 (0.006)	−0.163 (0.006)	−0.113 (0.006)
μ_5	−1.50	−0.004 (0.007)	0.002 (0.007)	0.001 (0.007)	−0.141 (0.006)	−0.090 (0.006)
p_1	0.12	0.002 (0.000)	0.000 (0.000)	0.000 (0.000)	0.003 (0.000)	0.001 (0.000)
p_2	0.07	0.019 (0.001)	0.009 (0.001)	0.011 (0.001)	0.027 (0.001)	0.013 (0.001)
p_3	0.10	0.038 (0.002)	0.019 (0.002)	0.024 (0.002)	0.062 (0.002)	0.030 (0.002)
p_4	0.12	0.005 (0.001)	0.000 (0.001)	0.000 (0.001)	−0.006 (0.001)	−0.009 (0.001)
p_5	0.19	0.014 (0.001)	0.004 (0.001)	0.005 (0.001)	−0.003 (0.001)	−0.008 (0.001)
δ_1	0.40	0.033 (0.004)	−0.064 (0.004)	−0.093 (0.003)	0.032 (0.004)	−0.065 (0.004)
δ_2	1.00	0.337 (0.020)	0.095 (0.015)	0.172 (0.014)	0.279 (0.019)	0.060 (0.014)
δ_3	1.00	0.737 (0.022)	0.196 (0.020)	0.278 (0.019)	0.521 (0.022)	0.093 (0.016)
δ_4	0.30	0.153 (0.007)	−0.033 (0.005)	−0.014 (0.004)	0.164 (0.007)	−0.016 (0.005)
δ_5	0.30	0.263 (0.010)	0.004 (0.006)	0.026 (0.005)	0.237 (0.008)	0.017 (0.005)
ρ	0.50	0.004 (0.007)	−0.028 (0.007)	−0.040 (0.007)	0.001 (0.007)	−0.031 (0.007)

TABLE C4

Simulation results comparing data generated under the UM-EV scenario with MAR missingness of treatment arms. The estimated bias and the Monte Carlo standard error of the posterior median are rounded to 3 decimal places for the five methods (NB, CPV, FBV, CPM, and DCP).

Parameter	Truth	Bias (Monte Carlo standard error)				
		NB	CPV	FBV	CPM	DCP
cLOR_{12}	1.00	0.190 (0.019)	0.005 (0.016)	0.067 (0.017)	−0.160 (0.013)	−0.185 (0.013)
cLOR_{13}	0.50	0.118 (0.025)	0.071 (0.024)	0.080 (0.024)	−0.209 (0.016)	−0.146 (0.016)
cLOR_{14}	0.00	−0.012 (0.007)	0.033 (0.007)	0.035 (0.007)	0.169 (0.007)	0.148 (0.007)
cLOR_{15}	−0.50	−0.115 (0.009)	0.054 (0.008)	0.046 (0.008)	0.179 (0.007)	0.200 (0.007)
cLOR_{23}	−0.50	−0.129 (0.030)	0.039 (0.029)	−0.019 (0.028)	−0.064 (0.020)	0.024 (0.020)
cLOR_{24}	−1.00	−0.229 (0.020)	0.026 (0.018)	−0.036 (0.018)	0.334 (0.014)	0.336 (0.014)
cLOR_{25}	−1.50	−0.406 (0.023)	0.026 (0.019)	−0.048 (0.019)	0.338 (0.015)	0.385 (0.014)
cLOR_{34}	−0.50	−0.156 (0.026)	−0.042 (0.025)	−0.051 (0.025)	0.380 (0.017)	0.296 (0.017)
cLOR_{35}	−1.00	−0.344 (0.027)	−0.046 (0.025)	−0.067 (0.025)	0.377 (0.017)	0.342 (0.017)
cLOR_{45}	−0.50	−0.114 (0.010)	0.017 (0.009)	0.007 (0.009)	0.005 (0.008)	0.050 (0.008)
μ_1	−2.00	−0.004 (0.004)	0.007 (0.004)	0.011 (0.004)	0.011 (0.004)	0.019 (0.004)
μ_2	−3.00	−0.181 (0.019)	0.010 (0.017)	−0.049 (0.017)	0.181 (0.013)	0.211 (0.013)
μ_3	−2.50	−0.122 (0.025)	−0.065 (0.025)	−0.070 (0.024)	0.221 (0.016)	0.165 (0.016)
μ_4	−2.00	−0.003 (0.006)	−0.032 (0.006)	−0.028 (0.006)	−0.162 (0.006)	−0.131 (0.006)
μ_5	−1.50	0.088 (0.008)	−0.059 (0.007)	−0.044 (0.007)	−0.176 (0.006)	−0.186 (0.006)
p_1	0.12	0.002 (0.000)	0.000 (0.000)	0.000 (0.000)	0.003 (0.000)	0.002 (0.000)
p_2	0.07	0.015 (0.001)	0.012 (0.001)	0.011 (0.001)	0.028 (0.001)	0.020 (0.001)
p_3	0.10	0.043 (0.002)	0.023 (0.002)	0.027 (0.002)	0.065 (0.002)	0.032 (0.002)
p_4	0.12	0.010 (0.001)	−0.001 (0.001)	0.000 (0.001)	−0.006 (0.001)	−0.011 (0.001)
p_5	0.19	0.030 (0.002)	−0.004 (0.001)	−0.002 (0.001)	−0.012 (0.001)	−0.023 (0.001)
δ_1	0.40	0.034 (0.004)	−0.065 (0.004)	−0.093 (0.003)	0.027 (0.004)	−0.067 (0.004)
δ_2	1.00	0.376 (0.020)	0.087 (0.014)	0.162 (0.014)	0.200 (0.017)	0.014 (0.013)
δ_3	1.00	0.905 (0.022)	0.258 (0.020)	0.322 (0.019)	0.577 (0.021)	0.116 (0.016)
δ_4	0.30	0.200 (0.009)	−0.038 (0.005)	−0.016 (0.004)	0.152 (0.007)	−0.033 (0.005)
δ_5	0.30	0.320 (0.010)	0.005 (0.006)	0.032 (0.005)	0.170 (0.008)	−0.021 (0.005)
ρ	0.50	0.081 (0.006)	−0.061 (0.006)	−0.055 (0.006)	−0.154 (0.006)	−0.213 (0.006)

TABLE C5

Simulation results comparing data generated under the EM-UV scenario with MCAR missingness of treatment arms. The estimated bias and the Monte Carlo standard error of the posterior median are rounded to 3 decimal places for the five methods (NB, CPV, FBV, CPM, and DCP).

Parameter	Truth	Bias (Monte Carlo standard error)				
		NB	CPV	FBV	CPM	DCP
cLOR_{12}	1.00	0.068 (0.016)	0.017 (0.015)	−0.021 (0.015)	0.087 (0.012)	0.067 (0.012)
cLOR_{13}	0.50	0.108 (0.026)	0.059 (0.024)	0.015 (0.024)	0.054 (0.011)	0.036 (0.016)
cLOR_{14}	0.00	0.029 (0.007)	0.029 (0.007)	0.008 (0.007)	0.024 (0.006)	0.024 (0.006)
cLOR_{15}	−0.50	0.000 (0.007)	−0.003 (0.007)	−0.029 (0.008)	0.000 (0.007)	−0.006 (0.007)
cLOR_{23}	−0.50	0.026 (0.031)	0.037 (0.029)	0.033 (0.029)	−0.038 (0.016)	−0.034 (0.020)
cLOR_{24}	−1.00	−0.041 (0.018)	0.010 (0.017)	0.027 (0.017)	−0.066 (0.013)	−0.047 (0.014)
cLOR_{25}	−1.50	−0.075 (0.019)	−0.026 (0.017)	−0.012 (0.017)	−0.092 (0.014)	−0.078 (0.014)
cLOR_{34}	−0.50	−0.078 (0.027)	−0.030 (0.025)	−0.008 (0.025)	−0.030 (0.012)	−0.014 (0.017)
cLOR_{35}	−1.00	−0.111 (0.027)	−0.066 (0.025)	−0.046 (0.025)	−0.056 (0.012)	−0.045 (0.017)
cLOR_{45}	−0.50	−0.031 (0.010)	−0.034 (0.009)	−0.038 (0.010)	−0.025 (0.009)	−0.030 (0.009)
μ_1	−2.00	−0.003 (0.004)	−0.005 (0.004)	−0.038 (0.004)	−0.005 (0.004)	−0.007 (0.004)
μ_2	−3.00	−0.073 (0.017)	−0.023 (0.016)	−0.013 (0.016)	−0.093 (0.012)	−0.076 (0.012)
μ_3	−2.50	−0.114 (0.026)	−0.065 (0.025)	−0.048 (0.024)	−0.060 (0.010)	−0.044 (0.016)
μ_4	−2.00	−0.033 (0.006)	−0.035 (0.006)	−0.044 (0.007)	−0.030 (0.006)	−0.032 (0.006)
μ_5	−1.50	−0.004 (0.007)	−0.003 (0.007)	−0.007 (0.007)	−0.006 (0.007)	−0.003 (0.006)
p_1	0.12	0.002 (0.000)	0.002 (0.000)	0.024 (0.001)	0.002 (0.000)	0.002 (0.000)
p_2	0.07	0.019 (0.001)	0.008 (0.001)	0.016 (0.001)	0.014 (0.001)	0.001 (0.001)
p_3	0.10	0.038 (0.002)	0.006 (0.002)	0.008 (0.002)	0.030 (0.001)	−0.003 (0.002)
p_4	0.12	0.005 (0.001)	0.004 (0.001)	0.014 (0.001)	0.005 (0.001)	0.004 (0.001)
p_5	0.19	0.014 (0.001)	0.010 (0.001)	0.022 (0.001)	0.013 (0.001)	0.010 (0.001)
δ_1	0.40	0.033 (0.004)	0.037 (0.004)	0.610 (0.007)	0.033 (0.004)	0.034 (0.004)
δ_2	1.00	0.337 (0.020)	0.020 (0.015)	0.185 (0.017)	0.267 (0.018)	−0.032 (0.014)
δ_3	1.00	0.737 (0.022)	−0.216 (0.019)	−0.186 (0.017)	0.427 (0.021)	−0.297 (0.015)
δ_4	0.30	0.153 (0.007)	0.163 (0.007)	0.427 (0.010)	0.132 (0.007)	0.148 (0.006)
δ_5	0.30	0.264 (0.010)	0.213 (0.008)	0.466 (0.012)	0.212 (0.009)	0.183 (0.007)
ρ	0.50	0.005 (0.007)	−0.013 (0.007)	0.107 (0.007)	0.014 (0.007)	−0.008 (0.007)

TABLE C6

Simulation results comparing data generated under the EM-UV scenario with MAR missingness of treatment arms. The estimated bias and the Monte Carlo standard error of the posterior median are rounded to 3 decimal places for the five methods (NB, CPV, FBV, CPM, and DCP).

Parameter	Truth	Bias (Monte Carlo standard error)				
		NB	CPV	FBV	CPM	DCP
cLOR_{12}	1.00	0.190 (0.019)	−0.043 (0.016)	−0.116 (0.015)	0.127 (0.013)	0.023 (0.013)
cLOR_{13}	0.50	0.118 (0.025)	0.021 (0.024)	−0.024 (0.023)	0.060 (0.011)	0.013 (0.015)
cLOR_{14}	0.00	−0.012 (0.007)	0.005 (0.007)	−0.026 (0.007)	−0.004 (0.006)	0.002 (0.006)
cLOR_{15}	−0.50	−0.115 (0.009)	−0.037 (0.008)	−0.123 (0.009)	−0.050 (0.008)	−0.028 (0.008)
cLOR_{23}	−0.50	−0.128 (0.030)	0.052 (0.028)	0.090 (0.027)	−0.079 (0.016)	−0.013 (0.019)
cLOR_{24}	−1.00	−0.229 (0.020)	0.039 (0.018)	0.093 (0.017)	−0.140 (0.014)	−0.026 (0.014)
cLOR_{25}	−1.50	−0.406 (0.023)	−0.031 (0.019)	−0.013 (0.019)	−0.210 (0.015)	−0.070 (0.015)
cLOR_{34}	−0.50	−0.157 (0.026)	−0.024 (0.025)	−0.002 (0.024)	−0.071 (0.012)	−0.017 (0.017)
cLOR_{35}	−1.00	−0.345 (0.027)	−0.094 (0.025)	−0.108 (0.024)	−0.137 (0.013)	−0.058 (0.017)
cLOR_{45}	−0.50	−0.114 (0.010)	−0.049 (0.009)	−0.098 (0.010)	−0.051 (0.009)	−0.033 (0.009)
μ_1	−2.00	−0.004 (0.004)	−0.005 (0.004)	−0.038 (0.004)	−0.003 (0.004)	−0.008 (0.004)
μ_2	−3.00	−0.181 (0.019)	0.050 (0.017)	0.112 (0.016)	−0.124 (0.012)	−0.025 (0.013)
μ_3	−2.50	−0.122 (0.025)	−0.025 (0.024)	−0.007 (0.023)	−0.065 (0.011)	−0.022 (0.015)
μ_4	−2.00	−0.002 (0.006)	−0.018 (0.006)	−0.020 (0.006)	−0.006 (0.006)	−0.016 (0.006)
μ_5	−1.50	0.088 (0.008)	0.013 (0.008)	0.060 (0.008)	0.035 (0.007)	0.008 (0.007)
p_1	0.12	0.002 (0.000)	0.002 (0.000)	0.024 (0.001)	0.002 (0.000)	0.001 (0.000)
p_2	0.07	0.015 (0.001)	0.012 (0.001)	0.023 (0.001)	0.012 (0.001)	0.005 (0.001)
p_3	0.10	0.042 (0.002)	0.010 (0.002)	0.010 (0.002)	0.036 (0.001)	0.000 (0.001)
p_4	0.12	0.010 (0.001)	0.006 (0.001)	0.018 (0.001)	0.009 (0.001)	0.006 (0.001)
p_5	0.19	0.030 (0.002)	0.014 (0.001)	0.032 (0.002)	0.019 (0.001)	0.012 (0.001)
δ_1	0.40	0.033 (0.004)	0.033 (0.004)	0.607 (0.007)	0.034 (0.004)	0.031 (0.004)
δ_2	1.00	0.375 (0.020)	0.022 (0.015)	0.173 (0.016)	0.274 (0.017)	−0.013 (0.013)
δ_3	1.00	0.905 (0.022)	−0.163 (0.020)	−0.164 (0.016)	0.565 (0.021)	−0.255 (0.015)
δ_4	0.30	0.200 (0.009)	0.182 (0.007)	0.434 (0.010)	0.168 (0.008)	0.167 (0.007)
δ_5	0.30	0.319 (0.010)	0.233 (0.008)	0.475 (0.012)	0.222 (0.008)	0.189 (0.007)
ρ	0.50	0.081 (0.006)	−0.027 (0.006)	0.089 (0.006)	0.059 (0.006)	−0.007 (0.006)

TABLE C7
Simulation results comparing data generated under the UM-UV scenario with MCAR missingness of treatment arms. The estimated bias and the Monte Carlo standard error of the posterior median are rounded to 3 decimal places for the five methods (NB, CPV, FBV, CPM, and DCP).

Parameter	Truth	Bias (Monte Carlo standard error)				
		NB	CPV	FBV	CPM	DCP
cLOR_{12}	1.00	0.068 (0.016)	0.005 (0.015)	−0.041 (0.015)	−0.115 (0.011)	−0.075 (0.012)
cLOR_{13}	0.50	0.108 (0.026)	0.054 (0.024)	0.009 (0.024)	−0.281 (0.010)	−0.126 (0.017)
cLOR_{14}	0.00	0.029 (0.007)	0.029 (0.007)	0.006 (0.007)	0.110 (0.007)	0.110 (0.007)
cLOR_{15}	−0.50	0.000 (0.007)	−0.002 (0.007)	−0.029 (0.008)	0.101 (0.007)	0.093 (0.007)
cLOR_{23}	−0.50	0.026 (0.031)	0.046 (0.029)	0.048 (0.028)	−0.160 (0.015)	−0.056 (0.020)
cLOR_{24}	−1.00	−0.041 (0.018)	0.022 (0.017)	0.046 (0.016)	0.230 (0.012)	0.187 (0.013)
cLOR_{25}	−1.50	−0.075 (0.019)	−0.012 (0.017)	0.008 (0.017)	0.224 (0.013)	0.172 (0.013)
cLOR_{34}	−0.50	−0.078 (0.027)	−0.027 (0.025)	−0.004 (0.025)	0.394 (0.012)	0.241 (0.018)
cLOR_{35}	−1.00	−0.111 (0.027)	−0.060 (0.025)	−0.041 (0.025)	0.387 (0.012)	0.227 (0.017)
cLOR_{45}	−0.50	−0.031 (0.010)	−0.032 (0.009)	−0.036 (0.009)	−0.007 (0.009)	−0.016 (0.009)
μ_1	−2.00	−0.003 (0.004)	−0.005 (0.004)	−0.039 (0.004)	0.031 (0.004)	0.024 (0.004)
μ_2	−3.00	−0.073 (0.017)	−0.011 (0.015)	0.006 (0.015)	0.149 (0.011)	0.100 (0.012)
μ_3	−2.50	−0.114 (0.026)	−0.060 (0.025)	−0.044 (0.024)	0.318 (0.010)	0.152 (0.017)
μ_4	−2.00	−0.033 (0.006)	−0.035 (0.006)	−0.043 (0.006)	−0.076 (0.006)	−0.084 (0.006)
μ_5	−1.50	−0.004 (0.007)	−0.004 (0.007)	−0.008 (0.007)	−0.067 (0.007)	−0.066 (0.007)
p_1	0.12	0.002 (0.000)	0.002 (0.000)	0.026 (0.001)	0.006 (0.000)	0.005 (0.000)
p_2	0.07	0.019 (0.001)	0.005 (0.001)	0.011 (0.001)	0.029 (0.001)	0.008 (0.001)
p_3	0.10	0.038 (0.002)	0.004 (0.002)	0.005 (0.002)	0.066 (0.002)	0.012 (0.002)
p_4	0.12	0.005 (0.001)	0.004 (0.001)	0.014 (0.001)	0.001 (0.001)	−0.001 (0.001)
p_5	0.19	0.014 (0.001)	0.010 (0.001)	0.022 (0.001)	0.006 (0.001)	0.001 (0.001)
δ_1	0.40	0.033 (0.004)	0.033 (0.004)	0.644 (0.006)	0.033 (0.004)	0.031 (0.004)
δ_2	1.00	0.337 (0.020)	−0.049 (0.014)	0.062 (0.015)	0.258 (0.018)	−0.093 (0.013)
δ_3	1.00	0.736 (0.022)	−0.267 (0.018)	−0.264 (0.015)	0.478 (0.022)	−0.318 (0.014)
δ_4	0.30	0.153 (0.007)	0.155 (0.007)	0.413 (0.010)	0.145 (0.007)	0.151 (0.006)
δ_5	0.30	0.263 (0.010)	0.211 (0.009)	0.480 (0.013)	0.235 (0.009)	0.197 (0.008)
ρ	0.50	0.005 (0.007)	−0.017 (0.007)	0.086 (0.007)	0.010 (0.007)	−0.016 (0.007)

TABLE C8

Simulation results comparing data generated under the UM-UV scenario with MAR missingness of treatment arms. The estimated bias and the Monte Carlo standard error of the posterior median are rounded to 3 decimal places for the five methods (NB, CPV, FBV, CPM, and DCP).

Parameter	Truth	Bias (Monte Carlo standard error)				
		NB	CPV	FBV	CPM	DCP
$cLOR_{12}$	1.00	0.190 (0.019)	−0.083 (0.016)	−0.187 (0.015)	−0.159 (0.011)	−0.202 (0.011)
$cLOR_{13}$	0.50	0.119 (0.025)	0.013 (0.023)	−0.037 (0.022)	−0.282 (0.010)	−0.157 (0.016)
$cLOR_{14}$	0.00	−0.012 (0.007)	0.008 (0.007)	−0.018 (0.007)	0.095 (0.007)	0.105 (0.007)
$cLOR_{15}$	−0.50	−0.115 (0.009)	−0.030 (0.008)	−0.105 (0.009)	0.104 (0.008)	0.127 (0.007)
$cLOR_{23}$	−0.50	−0.129 (0.030)	0.086 (0.027)	0.153 (0.026)	−0.125 (0.014)	0.039 (0.018)
$cLOR_{24}$	−1.00	−0.229 (0.020)	0.084 (0.017)	0.176 (0.016)	0.259 (0.012)	0.311 (0.013)
$cLOR_{25}$	−1.50	−0.407 (0.023)	0.018 (0.018)	0.084 (0.018)	0.255 (0.013)	0.328 (0.013)
$cLOR_{34}$	−0.50	−0.157 (0.026)	−0.012 (0.025)	0.020 (0.024)	0.376 (0.011)	0.265 (0.017)
$cLOR_{35}$	−1.00	−0.346 (0.027)	−0.079 (0.025)	−0.073 (0.024)	0.370 (0.012)	0.281 (0.017)
$cLOR_{45}$	−0.50	−0.115 (0.010)	−0.046 (0.010)	−0.087 (0.010)	0.003 (0.009)	0.019 (0.009)
μ_1	−2.00	−0.004 (0.004)	−0.005 (0.004)	−0.039 (0.004)	0.032 (0.004)	0.024 (0.004)
μ_2	−3.00	−0.181 (0.019)	0.090 (0.016)	0.181 (0.015)	0.203 (0.011)	0.236 (0.011)
μ_3	−2.50	−0.122 (0.025)	−0.017 (0.024)	0.006 (0.023)	0.320 (0.010)	0.183 (0.016)
μ_4	−2.00	−0.002 (0.006)	−0.021 (0.006)	−0.029 (0.006)	−0.066 (0.006)	−0.082 (0.006)
μ_5	−1.50	0.089 (0.009)	0.008 (0.008)	0.040 (0.008)	−0.080 (0.007)	−0.110 (0.007)
p_1	0.12	0.002 (0.000)	0.002 (0.000)	0.026 (0.001)	0.006 (0.000)	0.005 (0.000)
p_2	0.07	0.015 (0.001)	0.011 (0.001)	0.021 (0.001)	0.028 (0.001)	0.015 (0.001)
p_3	0.10	0.042 (0.002)	0.008 (0.002)	0.008 (0.002)	0.070 (0.002)	0.015 (0.002)
p_4	0.12	0.010 (0.001)	0.006 (0.001)	0.016 (0.001)	0.002 (0.001)	−0.001 (0.001)
p_5	0.19	0.030 (0.002)	0.013 (0.001)	0.029 (0.002)	0.002 (0.001)	−0.006 (0.001)
δ_1	0.40	0.033 (0.004)	0.030 (0.004)	0.643 (0.006)	0.029 (0.004)	0.030 (0.004)
δ_2	1.00	0.376 (0.020)	−0.046 (0.013)	0.039 (0.014)	0.180 (0.016)	−0.124 (0.012)
δ_3	1.00	0.905 (0.022)	−0.217 (0.019)	−0.250 (0.014)	0.549 (0.022)	−0.305 (0.014)
δ_4	0.30	0.200 (0.009)	0.170 (0.007)	0.414 (0.010)	0.146 (0.007)	0.145 (0.007)
δ_5	0.30	0.320 (0.010)	0.231 (0.009)	0.486 (0.014)	0.197 (0.008)	0.169 (0.007)
ρ	0.50	0.082 (0.006)	−0.044 (0.006)	0.043 (0.006)	−0.092 (0.007)	−0.158 (0.006)

C.2. Mean squared error (MSE). Tables C9–C16 provide the estimated mean squared error and the Monte Carlo standard error of the posterior median for the five methods (NB, CPV, FBV, CPM, and DCP) using different data-generating mechanisms (EM-EV, UM-EV, EM-UV, and UM-UV) and missingness structures (MCAR and MAR).

TABLE C9

Simulation results comparing data generated under the EM-EV scenario with MCAR missingness of treatment arms. The estimated mean squared error and the Monte Carlo standard error of the posterior median are rounded to 3 decimal places for the five methods (NB, CPV, FBV, CPM, and DCP).

Parameter	MSE (Monte Carlo standard error)				
	NB	CPV	FBV	CPM	DCP
cLOR_{12}	0.275 (0.000)	0.252 (0.000)	0.257 (0.000)	0.185 (0.000)	0.184 (0.000)
cLOR_{13}	0.673 (0.001)	0.653 (0.001)	0.638 (0.001)	0.273 (0.000)	0.299 (0.001)
cLOR_{14}	0.047 (0.000)	0.044 (0.000)	0.044 (0.000)	0.022 (0.000)	0.025 (0.000)
cLOR_{15}	0.055 (0.000)	0.050 (0.000)	0.050 (0.000)	0.027 (0.000)	0.029 (0.000)
cLOR_{23}	0.990 (0.002)	0.945 (0.002)	0.931 (0.002)	0.465 (0.001)	0.487 (0.001)
cLOR_{24}	0.324 (0.001)	0.296 (0.000)	0.301 (0.000)	0.198 (0.000)	0.202 (0.000)
cLOR_{25}	0.354 (0.001)	0.315 (0.000)	0.321 (0.000)	0.210 (0.000)	0.215 (0.000)
cLOR_{34}	0.727 (0.001)	0.702 (0.001)	0.684 (0.001)	0.285 (0.001)	0.316 (0.001)
cLOR_{35}	0.738 (0.001)	0.703 (0.001)	0.687 (0.001)	0.283 (0.000)	0.314 (0.001)
cLOR_{45}	0.093 (0.000)	0.080 (0.000)	0.080 (0.000)	0.038 (0.000)	0.043 (0.000)
μ_1	0.016 (0.000)	0.015 (0.000)	0.015 (0.000)	0.007 (0.000)	0.008 (0.000)
μ_2	0.289 (0.000)	0.265 (0.000)	0.270 (0.000)	0.187 (0.000)	0.187 (0.000)
μ_3	0.697 (0.001)	0.675 (0.001)	0.658 (0.001)	0.271 (0.000)	0.299 (0.001)
μ_4	0.042 (0.000)	0.039 (0.000)	0.039 (0.000)	0.017 (0.000)	0.020 (0.000)
μ_5	0.047 (0.000)	0.042 (0.000)	0.042 (0.000)	0.021 (0.000)	0.024 (0.000)
p_1	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
p_2	0.002 (0.000)	0.001 (0.000)	0.001 (0.000)	0.001 (0.000)	0.001 (0.000)
p_3	0.006 (0.000)	0.005 (0.000)	0.006 (0.000)	0.004 (0.000)	0.002 (0.000)
p_4	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
p_5	0.001 (0.000)	0.001 (0.000)	0.001 (0.000)	0.001 (0.000)	0.001 (0.000)
δ_1	0.019 (0.000)	0.015 (0.000)	0.013 (0.000)	0.018 (0.000)	0.015 (0.000)
δ_2	0.513 (0.001)	0.269 (0.001)	0.294 (0.001)	0.426 (0.001)	0.215 (0.000)
δ_3	1.035 (0.001)	0.505 (0.001)	0.536 (0.001)	0.691 (0.001)	0.309 (0.001)
δ_4	0.078 (0.000)	0.023 (0.000)	0.018 (0.000)	0.050 (0.000)	0.022 (0.000)
δ_5	0.165 (0.000)	0.031 (0.000)	0.027 (0.000)	0.085 (0.000)	0.025 (0.000)
ρ	0.044 (0.000)	0.044 (0.000)	0.045 (0.000)	0.046 (0.000)	0.045 (0.000)

TABLE C10

Simulation results comparing data generated under the EM-EV scenario with MAR missingness of treatment arms. The estimated mean squared error and the Monte Carlo standard error of the posterior median are rounded to 3 decimal places for the five methods (NB, CPV, FBV, CPM, and DCP).

Parameter	MSE (Monte Carlo standard error)				
	NB	CPV	FBV	CPM	DCP
$cLOR_{12}$	0.389 (0.001)	0.278 (0.000)	0.301 (0.000)	0.223 (0.000)	0.205 (0.000)
$cLOR_{13}$	0.620 (0.001)	0.595 (0.001)	0.567 (0.001)	0.258 (0.000)	0.272 (0.000)
$cLOR_{14}$	0.046 (0.000)	0.046 (0.000)	0.046 (0.000)	0.022 (0.000)	0.026 (0.000)
$cLOR_{15}$	0.093 (0.000)	0.061 (0.000)	0.060 (0.000)	0.029 (0.000)	0.033 (0.000)
$cLOR_{23}$	0.917 (0.001)	0.824 (0.001)	0.814 (0.001)	0.443 (0.001)	0.448 (0.001)
$cLOR_{24}$	0.468 (0.001)	0.322 (0.000)	0.342 (0.001)	0.234 (0.000)	0.218 (0.000)
$cLOR_{25}$	0.676 (0.001)	0.352 (0.001)	0.375 (0.001)	0.255 (0.000)	0.226 (0.000)
$cLOR_{34}$	0.694 (0.001)	0.648 (0.001)	0.620 (0.001)	0.277 (0.000)	0.294 (0.000)
$cLOR_{35}$	0.823 (0.001)	0.646 (0.001)	0.617 (0.001)	0.277 (0.000)	0.286 (0.000)
$cLOR_{45}$	0.113 (0.000)	0.083 (0.000)	0.083 (0.000)	0.039 (0.000)	0.045 (0.000)
μ_1	0.016 (0.000)	0.015 (0.000)	0.015 (0.000)	0.007 (0.000)	0.008 (0.000)
μ_2	0.403 (0.001)	0.294 (0.000)	0.315 (0.000)	0.225 (0.000)	0.208 (0.000)
μ_3	0.637 (0.001)	0.608 (0.001)	0.580 (0.001)	0.255 (0.000)	0.271 (0.000)
μ_4	0.040 (0.000)	0.040 (0.000)	0.040 (0.000)	0.017 (0.000)	0.022 (0.000)
μ_5	0.080 (0.000)	0.053 (0.000)	0.052 (0.000)	0.022 (0.000)	0.028 (0.000)
p_1	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
p_2	0.001 (0.000)	0.001 (0.000)	0.001 (0.000)	0.001 (0.000)	0.001 (0.000)
p_3	0.006 (0.000)	0.005 (0.000)	0.005 (0.000)	0.005 (0.000)	0.002 (0.000)
p_4	0.001 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
p_5	0.003 (0.000)	0.001 (0.000)	0.001 (0.000)	0.001 (0.000)	0.001 (0.000)
δ_1	0.018 (0.000)	0.015 (0.000)	0.013 (0.000)	0.017 (0.000)	0.015 (0.000)
δ_2	0.528 (0.001)	0.238 (0.000)	0.269 (0.000)	0.375 (0.001)	0.196 (0.000)
δ_3	1.302 (0.002)	0.516 (0.001)	0.542 (0.001)	0.835 (0.001)	0.298 (0.001)
δ_4	0.116 (0.000)	0.024 (0.000)	0.019 (0.000)	0.066 (0.000)	0.023 (0.000)
δ_5	0.207 (0.000)	0.030 (0.000)	0.027 (0.000)	0.080 (0.000)	0.023 (0.000)
ρ	0.041 (0.000)	0.035 (0.000)	0.035 (0.000)	0.041 (0.000)	0.037 (0.000)

TABLE C11

Simulation results comparing data generated under the UM-EV scenario with MCAR missingness of treatment arms. The estimated mean squared error and the Monte Carlo standard error of the posterior median are rounded to 3 decimal places for the five methods (NB, CPV, FBV, CPM, and DCP).

Parameter	MSE (Monte Carlo standard error)				
	NB	CPV	FBV	CPM	DCP
cLOR_{12}	0.274 (0.000)	0.247 (0.000)	0.250 (0.000)	0.176 (0.000)	0.168 (0.000)
cLOR_{13}	0.673 (0.001)	0.644 (0.001)	0.631 (0.001)	0.299 (0.000)	0.293 (0.000)
cLOR_{14}	0.047 (0.000)	0.044 (0.000)	0.044 (0.000)	0.074 (0.000)	0.061 (0.000)
cLOR_{15}	0.055 (0.000)	0.050 (0.000)	0.050 (0.000)	0.069 (0.000)	0.058 (0.000)
cLOR_{23}	0.991 (0.002)	0.928 (0.002)	0.907 (0.001)	0.448 (0.001)	0.458 (0.001)
cLOR_{24}	0.324 (0.001)	0.291 (0.000)	0.293 (0.000)	0.271 (0.000)	0.237 (0.000)
cLOR_{25}	0.353 (0.001)	0.309 (0.000)	0.312 (0.000)	0.267 (0.000)	0.237 (0.000)
cLOR_{34}	0.727 (0.001)	0.692 (0.001)	0.675 (0.001)	0.428 (0.001)	0.379 (0.001)
cLOR_{35}	0.737 (0.001)	0.694 (0.001)	0.679 (0.001)	0.409 (0.001)	0.361 (0.001)
cLOR_{45}	0.093 (0.000)	0.081 (0.000)	0.081 (0.000)	0.071 (0.000)	0.076 (0.000)
μ_1	0.016 (0.000)	0.015 (0.000)	0.015 (0.000)	0.014 (0.000)	0.015 (0.000)
μ_2	0.289 (0.000)	0.260 (0.000)	0.262 (0.000)	0.182 (0.000)	0.174 (0.000)
μ_3	0.697 (0.001)	0.666 (0.001)	0.650 (0.001)	0.298 (0.000)	0.299 (0.000)
μ_4	0.042 (0.000)	0.039 (0.000)	0.039 (0.000)	0.066 (0.000)	0.054 (0.000)
μ_5	0.047 (0.000)	0.042 (0.000)	0.042 (0.000)	0.059 (0.000)	0.048 (0.000)
p_1	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
p_2	0.002 (0.000)	0.001 (0.000)	0.001 (0.000)	0.002 (0.000)	0.001 (0.000)
p_3	0.006 (0.000)	0.005 (0.000)	0.006 (0.000)	0.008 (0.000)	0.004 (0.000)
p_4	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
p_5	0.001 (0.000)	0.001 (0.000)	0.001 (0.000)	0.001 (0.000)	0.001 (0.000)
δ_1	0.019 (0.000)	0.017 (0.000)	0.016 (0.000)	0.019 (0.000)	0.017 (0.000)
δ_2	0.513 (0.001)	0.234 (0.000)	0.240 (0.000)	0.421 (0.001)	0.191 (0.000)
δ_3	1.034 (0.001)	0.441 (0.001)	0.450 (0.001)	0.756 (0.001)	0.278 (0.001)
δ_4	0.078 (0.000)	0.023 (0.000)	0.019 (0.000)	0.077 (0.000)	0.023 (0.000)
δ_5	0.164 (0.000)	0.033 (0.000)	0.030 (0.000)	0.127 (0.000)	0.030 (0.000)
ρ	0.044 (0.000)	0.044 (0.000)	0.045 (0.000)	0.046 (0.000)	0.046 (0.000)

TABLE C12

Simulation results comparing data generated under the UM-EV scenario with MAR missingness of treatment arms. The estimated mean squared error and the Monte Carlo standard error of the posterior median are rounded to 3 decimal places for the five methods (NB, CPV, FBV, CPM, and DCP).

Parameter	MSE (Monte Carlo standard error)				
	NB	CPV	FBV	CPM	DCP
cLOR_{12}	0.388 (0.001)	0.271 (0.000)	0.289 (0.000)	0.200 (0.000)	0.201 (0.000)
cLOR_{13}	0.619 (0.001)	0.592 (0.001)	0.567 (0.001)	0.300 (0.000)	0.288 (0.000)
cLOR_{14}	0.046 (0.000)	0.046 (0.000)	0.046 (0.000)	0.071 (0.000)	0.066 (0.000)
cLOR_{15}	0.093 (0.000)	0.061 (0.000)	0.060 (0.000)	0.079 (0.000)	0.086 (0.000)
cLOR_{23}	0.916 (0.001)	0.815 (0.001)	0.808 (0.001)	0.409 (0.001)	0.414 (0.001)
cLOR_{24}	0.466 (0.001)	0.316 (0.000)	0.333 (0.001)	0.319 (0.000)	0.314 (0.000)
cLOR_{25}	0.674 (0.001)	0.349 (0.001)	0.370 (0.001)	0.336 (0.000)	0.355 (0.000)
cLOR_{34}	0.694 (0.001)	0.645 (0.001)	0.621 (0.001)	0.432 (0.001)	0.390 (0.001)
cLOR_{35}	0.822 (0.001)	0.644 (0.001)	0.619 (0.001)	0.422 (0.001)	0.411 (0.001)
cLOR_{45}	0.114 (0.000)	0.083 (0.000)	0.083 (0.000)	0.065 (0.000)	0.072 (0.000)
μ_1	0.016 (0.000)	0.015 (0.000)	0.015 (0.000)	0.015 (0.000)	0.015 (0.000)
μ_2	0.403 (0.001)	0.287 (0.000)	0.302 (0.000)	0.213 (0.000)	0.218 (0.000)
μ_3	0.636 (0.001)	0.605 (0.001)	0.579 (0.001)	0.300 (0.000)	0.292 (0.000)
μ_4	0.040 (0.000)	0.040 (0.000)	0.040 (0.000)	0.065 (0.000)	0.057 (0.000)
μ_5	0.080 (0.000)	0.053 (0.000)	0.052 (0.000)	0.069 (0.000)	0.073 (0.000)
p_1	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
p_2	0.001 (0.000)	0.001 (0.000)	0.001 (0.000)	0.002 (0.000)	0.001 (0.000)
p_3	0.006 (0.000)	0.005 (0.000)	0.005 (0.000)	0.008 (0.000)	0.004 (0.000)
p_4	0.001 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
p_5	0.003 (0.000)	0.001 (0.000)	0.001 (0.000)	0.001 (0.000)	0.001 (0.000)
δ_1	0.018 (0.000)	0.017 (0.000)	0.016 (0.000)	0.018 (0.000)	0.018 (0.000)
δ_2	0.528 (0.001)	0.211 (0.000)	0.226 (0.000)	0.313 (0.000)	0.164 (0.000)
δ_3	1.301 (0.002)	0.472 (0.001)	0.464 (0.001)	0.782 (0.001)	0.275 (0.001)
δ_4	0.115 (0.000)	0.024 (0.000)	0.020 (0.000)	0.076 (0.000)	0.023 (0.000)
δ_5	0.208 (0.000)	0.032 (0.000)	0.030 (0.000)	0.089 (0.000)	0.027 (0.000)
ρ	0.041 (0.000)	0.035 (0.000)	0.036 (0.000)	0.064 (0.000)	0.076 (0.000)

TABLE C13

Simulation results comparing data generated under the EM-UV scenario with MCAR missingness of treatment arms. The estimated mean squared error and the Monte Carlo standard error of the posterior median are rounded to 3 decimal places for the five methods (NB, CPV, FBV, CPM, and DCP).

Parameter	MSE (Monte Carlo standard error)				
	NB	CPV	FBV	CPM	DCP
$cLOR_{12}$	0.274 (0.000)	0.236 (0.000)	0.229 (0.000)	0.147 (0.000)	0.156 (0.000)
$cLOR_{13}$	0.670 (0.001)	0.599 (0.001)	0.567 (0.001)	0.120 (0.000)	0.265 (0.000)
$cLOR_{14}$	0.047 (0.000)	0.047 (0.000)	0.049 (0.000)	0.042 (0.000)	0.042 (0.000)
$cLOR_{15}$	0.055 (0.000)	0.053 (0.000)	0.058 (0.000)	0.052 (0.000)	0.049 (0.000)
$cLOR_{23}$	0.988 (0.002)	0.868 (0.001)	0.825 (0.001)	0.250 (0.000)	0.405 (0.001)
$cLOR_{24}$	0.323 (0.001)	0.285 (0.000)	0.281 (0.000)	0.172 (0.000)	0.185 (0.000)
$cLOR_{25}$	0.352 (0.001)	0.304 (0.000)	0.295 (0.000)	0.194 (0.000)	0.203 (0.000)
$cLOR_{34}$	0.724 (0.001)	0.649 (0.001)	0.619 (0.001)	0.146 (0.000)	0.289 (0.000)
$cLOR_{35}$	0.736 (0.001)	0.653 (0.001)	0.622 (0.001)	0.150 (0.000)	0.290 (0.001)
$cLOR_{45}$	0.093 (0.000)	0.089 (0.000)	0.095 (0.000)	0.082 (0.000)	0.078 (0.000)
μ_1	0.016 (0.000)	0.016 (0.000)	0.018 (0.000)	0.014 (0.000)	0.014 (0.000)
μ_2	0.289 (0.000)	0.248 (0.000)	0.241 (0.000)	0.146 (0.000)	0.157 (0.000)
μ_3	0.695 (0.001)	0.622 (0.001)	0.590 (0.001)	0.112 (0.000)	0.266 (0.000)
μ_4	0.042 (0.000)	0.042 (0.000)	0.045 (0.000)	0.037 (0.000)	0.037 (0.000)
μ_5	0.047 (0.000)	0.045 (0.000)	0.047 (0.000)	0.043 (0.000)	0.040 (0.000)
p_1	0.000 (0.000)	0.000 (0.000)	0.001 (0.000)	0.000 (0.000)	0.000 (0.000)
p_2	0.002 (0.000)	0.001 (0.000)	0.002 (0.000)	0.001 (0.000)	0.001 (0.000)
p_3	0.006 (0.000)	0.005 (0.000)	0.005 (0.000)	0.003 (0.000)	0.002 (0.000)
p_4	0.000 (0.000)	0.000 (0.000)	0.001 (0.000)	0.000 (0.000)	0.000 (0.000)
p_5	0.001 (0.000)	0.001 (0.000)	0.002 (0.000)	0.001 (0.000)	0.001 (0.000)
δ_1	0.019 (0.000)	0.020 (0.000)	0.417 (0.000)	0.019 (0.000)	0.019 (0.000)
δ_2	0.513 (0.001)	0.240 (0.000)	0.339 (0.001)	0.404 (0.001)	0.205 (0.000)
δ_3	1.034 (0.001)	0.414 (0.001)	0.308 (0.000)	0.633 (0.001)	0.299 (0.000)
δ_4	0.078 (0.000)	0.070 (0.000)	0.278 (0.000)	0.064 (0.000)	0.060 (0.000)
δ_5	0.165 (0.000)	0.110 (0.000)	0.353 (0.000)	0.121 (0.000)	0.087 (0.000)
ρ	0.044 (0.000)	0.046 (0.000)	0.055 (0.000)	0.046 (0.000)	0.047 (0.000)

TABLE C14

Simulation results comparing data generated under the EM-UV scenario with MAR missingness of treatment arms. The estimated mean squared error and the Monte Carlo standard error of the posterior median are rounded to 3 decimal places for the five methods (NB, CPV, FBV, CPM, and DCP).

Parameter	MSE (Monte Carlo standard error)				
	NB	CPV	FBV	CPM	DCP
cLOR_{12}	0.388 (0.001)	0.262 (0.000)	0.250 (0.000)	0.175 (0.000)	0.168 (0.000)
cLOR_{13}	0.619 (0.001)	0.559 (0.001)	0.513 (0.001)	0.125 (0.000)	0.236 (0.000)
cLOR_{14}	0.046 (0.000)	0.046 (0.000)	0.049 (0.000)	0.041 (0.000)	0.041 (0.000)
cLOR_{15}	0.093 (0.000)	0.068 (0.000)	0.095 (0.000)	0.066 (0.000)	0.059 (0.000)
cLOR_{23}	0.913 (0.001)	0.777 (0.001)	0.713 (0.001)	0.271 (0.000)	0.374 (0.001)
cLOR_{24}	0.466 (0.001)	0.314 (0.000)	0.300 (0.000)	0.208 (0.000)	0.200 (0.000)
cLOR_{25}	0.674 (0.001)	0.363 (0.001)	0.349 (0.001)	0.258 (0.000)	0.225 (0.000)
cLOR_{34}	0.694 (0.001)	0.622 (0.001)	0.576 (0.001)	0.157 (0.000)	0.273 (0.000)
cLOR_{35}	0.822 (0.001)	0.646 (0.001)	0.605 (0.001)	0.185 (0.000)	0.282 (0.000)
cLOR_{45}	0.113 (0.000)	0.092 (0.000)	0.109 (0.000)	0.081 (0.000)	0.075 (0.000)
μ_1	0.016 (0.000)	0.016 (0.000)	0.018 (0.000)	0.014 (0.000)	0.014 (0.000)
μ_2	0.402 (0.001)	0.278 (0.000)	0.265 (0.000)	0.171 (0.000)	0.169 (0.000)
μ_3	0.636 (0.001)	0.573 (0.001)	0.526 (0.001)	0.114 (0.000)	0.235 (0.000)
μ_4	0.040 (0.000)	0.040 (0.000)	0.042 (0.000)	0.036 (0.000)	0.035 (0.000)
μ_5	0.080 (0.000)	0.058 (0.000)	0.073 (0.000)	0.055 (0.000)	0.048 (0.000)
p_1	0.000 (0.000)	0.000 (0.000)	0.001 (0.000)	0.000 (0.000)	0.000 (0.000)
p_2	0.001 (0.000)	0.001 (0.000)	0.002 (0.000)	0.001 (0.000)	0.001 (0.000)
p_3	0.006 (0.000)	0.004 (0.000)	0.004 (0.000)	0.003 (0.000)	0.002 (0.000)
p_4	0.001 (0.000)	0.001 (0.000)	0.001 (0.000)	0.001 (0.000)	0.000 (0.000)
p_5	0.003 (0.000)	0.002 (0.000)	0.004 (0.000)	0.002 (0.000)	0.001 (0.000)
δ_1	0.018 (0.000)	0.019 (0.000)	0.413 (0.000)	0.018 (0.000)	0.019 (0.000)
δ_2	0.526 (0.001)	0.212 (0.000)	0.289 (0.000)	0.354 (0.001)	0.180 (0.000)
δ_3	1.300 (0.002)	0.426 (0.001)	0.282 (0.000)	0.781 (0.001)	0.293 (0.000)
δ_4	0.116 (0.000)	0.084 (0.000)	0.295 (0.000)	0.091 (0.000)	0.073 (0.000)
δ_5	0.208 (0.000)	0.120 (0.000)	0.370 (0.000)	0.118 (0.000)	0.086 (0.000)
ρ	0.041 (0.000)	0.034 (0.000)	0.046 (0.000)	0.043 (0.000)	0.036 (0.000)

TABLE C15

Simulation results comparing data generated under the UM-UV scenario with MCAR missingness of treatment arms. The estimated mean squared error and the Monte Carlo standard error of the posterior median are rounded to 3 decimal places for the five methods (NB, CPV, FBV, CPM, and DCP).

Parameter	MSE (Monte Carlo standard error)				
	NB	CPV	FBV	CPM	DCP
cLOR_{12}	0.274 (0.000)	0.227 (0.000)	0.219 (0.000)	0.133 (0.000)	0.140 (0.000)
cLOR_{13}	0.671 (0.001)	0.596 (0.001)	0.564 (0.001)	0.185 (0.000)	0.292 (0.000)
cLOR_{14}	0.047 (0.000)	0.046 (0.000)	0.047 (0.000)	0.057 (0.000)	0.056 (0.000)
cLOR_{15}	0.055 (0.000)	0.053 (0.000)	0.058 (0.000)	0.063 (0.000)	0.059 (0.000)
cLOR_{23}	0.989 (0.002)	0.859 (0.001)	0.812 (0.001)	0.245 (0.000)	0.415 (0.001)
cLOR_{24}	0.324 (0.001)	0.275 (0.000)	0.265 (0.000)	0.203 (0.000)	0.201 (0.000)
cLOR_{25}	0.353 (0.001)	0.293 (0.000)	0.281 (0.000)	0.215 (0.000)	0.208 (0.000)
cLOR_{34}	0.724 (0.001)	0.647 (0.001)	0.614 (0.001)	0.290 (0.000)	0.366 (0.001)
cLOR_{35}	0.736 (0.001)	0.646 (0.001)	0.614 (0.001)	0.285 (0.000)	0.353 (0.001)
cLOR_{45}	0.093 (0.000)	0.088 (0.000)	0.091 (0.000)	0.084 (0.000)	0.078 (0.000)
μ_1	0.016 (0.000)	0.016 (0.000)	0.018 (0.000)	0.016 (0.000)	0.016 (0.000)
μ_2	0.289 (0.000)	0.239 (0.000)	0.228 (0.000)	0.141 (0.000)	0.145 (0.000)
μ_3	0.695 (0.001)	0.618 (0.001)	0.587 (0.001)	0.197 (0.000)	0.303 (0.001)
μ_4	0.042 (0.000)	0.041 (0.000)	0.043 (0.000)	0.045 (0.000)	0.044 (0.000)
μ_5	0.047 (0.000)	0.045 (0.000)	0.047 (0.000)	0.051 (0.000)	0.048 (0.000)
p_1	0.000 (0.000)	0.000 (0.000)	0.001 (0.000)	0.000 (0.000)	0.000 (0.000)
p_2	0.002 (0.000)	0.001 (0.000)	0.001 (0.000)	0.002 (0.000)	0.001 (0.000)
p_3	0.006 (0.000)	0.004 (0.000)	0.004 (0.000)	0.007 (0.000)	0.003 (0.000)
p_4	0.000 (0.000)	0.000 (0.000)	0.001 (0.000)	0.000 (0.000)	0.000 (0.000)
p_5	0.001 (0.000)	0.001 (0.000)	0.002 (0.000)	0.001 (0.000)	0.001 (0.000)
δ_1	0.019 (0.000)	0.019 (0.000)	0.455 (0.000)	0.019 (0.000)	0.019 (0.000)
δ_2	0.512 (0.001)	0.205 (0.000)	0.226 (0.000)	0.401 (0.001)	0.175 (0.000)
δ_3	1.034 (0.001)	0.413 (0.001)	0.296 (0.000)	0.720 (0.001)	0.301 (0.000)
δ_4	0.078 (0.000)	0.068 (0.000)	0.270 (0.000)	0.073 (0.000)	0.064 (0.000)
δ_5	0.164 (0.000)	0.118 (0.000)	0.407 (0.001)	0.137 (0.000)	0.101 (0.000)
ρ	0.044 (0.000)	0.046 (0.000)	0.051 (0.000)	0.047 (0.000)	0.048 (0.000)

TABLE C16

Simulation results comparing data generated under the UM-UV scenario with MAR missingness of treatment arms. The estimated mean squared error and the Monte Carlo standard error of the posterior median are rounded to 3 decimal places for the five methods (NB, CPV, FBV, CPM, and DCP).

Parameter	MSE (Monte Carlo standard error)				
	NB	CPV	FBV	CPM	DCP
cLOR_{12}	0.387 (0.001)	0.248 (0.000)	0.246 (0.000)	0.141 (0.000)	0.165 (0.000)
cLOR_{13}	0.620 (0.001)	0.550 (0.001)	0.506 (0.001)	0.183 (0.000)	0.272 (0.000)
cLOR_{14}	0.046 (0.000)	0.046 (0.000)	0.048 (0.000)	0.053 (0.000)	0.054 (0.000)
cLOR_{15}	0.094 (0.000)	0.069 (0.000)	0.091 (0.000)	0.069 (0.000)	0.071 (0.000)
cLOR_{23}	0.915 (0.001)	0.754 (0.001)	0.698 (0.001)	0.217 (0.000)	0.342 (0.001)
cLOR_{24}	0.466 (0.001)	0.299 (0.000)	0.292 (0.000)	0.215 (0.000)	0.253 (0.000)
cLOR_{25}	0.675 (0.001)	0.338 (0.000)	0.318 (0.000)	0.232 (0.000)	0.276 (0.000)
cLOR_{34}	0.694 (0.001)	0.611 (0.001)	0.567 (0.001)	0.273 (0.000)	0.354 (0.000)
cLOR_{35}	0.824 (0.001)	0.633 (0.001)	0.591 (0.001)	0.280 (0.000)	0.368 (0.000)
cLOR_{45}	0.114 (0.000)	0.093 (0.000)	0.110 (0.000)	0.080 (0.000)	0.077 (0.000)
μ_1	0.016 (0.000)	0.016 (0.000)	0.018 (0.000)	0.016 (0.000)	0.016 (0.000)
μ_2	0.402 (0.001)	0.265 (0.000)	0.259 (0.000)	0.157 (0.000)	0.184 (0.000)
μ_3	0.636 (0.001)	0.563 (0.001)	0.516 (0.001)	0.195 (0.000)	0.281 (0.000)
μ_4	0.040 (0.000)	0.041 (0.000)	0.042 (0.000)	0.043 (0.000)	0.044 (0.000)
μ_5	0.080 (0.000)	0.059 (0.000)	0.071 (0.000)	0.057 (0.000)	0.059 (0.000)
p_1	0.000 (0.000)	0.000 (0.000)	0.001 (0.000)	0.000 (0.000)	0.000 (0.000)
p_2	0.001 (0.000)	0.001 (0.000)	0.002 (0.000)	0.002 (0.000)	0.001 (0.000)
p_3	0.006 (0.000)	0.004 (0.000)	0.004 (0.000)	0.007 (0.000)	0.002 (0.000)
p_4	0.001 (0.000)	0.001 (0.000)	0.001 (0.000)	0.000 (0.000)	0.000 (0.000)
p_5	0.003 (0.000)	0.002 (0.000)	0.003 (0.000)	0.001 (0.000)	0.001 (0.000)
δ_1	0.018 (0.000)	0.019 (0.000)	0.453 (0.000)	0.019 (0.000)	0.020 (0.000)
δ_2	0.528 (0.001)	0.183 (0.000)	0.187 (0.000)	0.292 (0.000)	0.155 (0.000)
δ_3	1.300 (0.002)	0.413 (0.001)	0.264 (0.000)	0.772 (0.001)	0.290 (0.000)
δ_4	0.115 (0.000)	0.081 (0.000)	0.282 (0.000)	0.077 (0.000)	0.064 (0.000)
δ_5	0.208 (0.000)	0.128 (0.000)	0.420 (0.001)	0.106 (0.000)	0.084 (0.000)
ρ	0.041 (0.000)	0.036 (0.000)	0.042 (0.000)	0.051 (0.000)	0.059 (0.000)

C.3. Coverage. Tables C17–C24 provide the estimated coverage of the 95% credible interval and the Monte Carlo standard error for posterior median from the five methods (NB, CPV, FBV, CPM, and DCP) using different data-generating mechanisms (EM-EV, UM-EV, EM-UV, and UM-UV) and missingness structures (MCAR and MAR).

TABLE C17

Simulation results comparing data generated under the EM-EV scenario with MCAR missingness of treatment arms. The 95% CrI's estimated coverage probability (CP) and the Monte Carlo standard error of the posterior median are summarized for the five methods (NB, CPV, FBV, CPM, and DCP).

Parameter	CP (Monte Carlo standard error)				
	NB	CPV	FBV	CPM	DCP
cLOR_{12}	0.981 (0.004)	0.964 (0.006)	0.970 (0.005)	0.970 (0.005)	0.955 (0.007)
cLOR_{13}	1.000 (0.000)	0.988 (0.003)	0.986 (0.004)	0.997 (0.002)	0.983 (0.004)
cLOR_{14}	0.994 (0.002)	0.965 (0.006)	0.962 (0.006)	0.993 (0.003)	0.979 (0.005)
cLOR_{15}	0.999 (0.001)	0.977 (0.005)	0.978 (0.005)	0.999 (0.001)	0.987 (0.004)
cLOR_{23}	0.999 (0.001)	0.990 (0.003)	0.988 (0.003)	0.996 (0.002)	0.983 (0.004)
cLOR_{24}	0.995 (0.002)	0.972 (0.005)	0.977 (0.005)	0.983 (0.004)	0.964 (0.006)
cLOR_{25}	0.999 (0.001)	0.978 (0.005)	0.982 (0.004)	0.986 (0.004)	0.970 (0.005)
cLOR_{34}	1.000 (0.000)	0.980 (0.004)	0.979 (0.005)	0.997 (0.002)	0.982 (0.004)
cLOR_{35}	1.000 (0.000)	0.988 (0.003)	0.986 (0.004)	1.000 (0.000)	0.989 (0.003)
cLOR_{45}	0.999 (0.001)	0.976 (0.005)	0.979 (0.005)	0.998 (0.001)	0.982 (0.004)
μ_1	0.973 (0.005)	0.939 (0.008)	0.928 (0.008)	0.983 (0.004)	0.964 (0.006)
μ_2	0.979 (0.005)	0.957 (0.006)	0.967 (0.006)	0.975 (0.005)	0.964 (0.006)
μ_3	0.999 (0.001)	0.983 (0.004)	0.981 (0.004)	0.996 (0.002)	0.984 (0.004)
μ_4	0.997 (0.002)	0.958 (0.006)	0.961 (0.006)	0.994 (0.002)	0.977 (0.005)
μ_5	0.999 (0.001)	0.972 (0.005)	0.975 (0.005)	0.999 (0.001)	0.983 (0.004)
p_1	0.968 (0.006)	0.929 (0.008)	0.925 (0.008)	0.974 (0.005)	0.958 (0.006)
p_2	0.962 (0.006)	0.957 (0.006)	0.955 (0.007)	0.960 (0.006)	0.953 (0.007)
p_3	0.983 (0.004)	0.968 (0.006)	0.973 (0.005)	0.969 (0.005)	0.975 (0.005)
p_4	0.990 (0.003)	0.958 (0.006)	0.961 (0.006)	0.992 (0.003)	0.981 (0.004)
p_5	0.996 (0.002)	0.974 (0.005)	0.978 (0.005)	0.997 (0.002)	0.977 (0.005)
δ_1	0.939 (0.008)	0.906 (0.009)	0.896 (0.010)	0.943 (0.007)	0.896 (0.010)
δ_2	0.910 (0.009)	0.953 (0.007)	0.932 (0.008)	0.924 (0.008)	0.956 (0.006)
δ_3	0.955 (0.007)	0.973 (0.005)	0.928 (0.008)	0.967 (0.006)	0.977 (0.005)
δ_4	0.956 (0.006)	0.991 (0.003)	0.991 (0.003)	0.962 (0.006)	0.994 (0.002)
δ_5	0.933 (0.008)	0.977 (0.005)	0.976 (0.005)	0.948 (0.007)	0.987 (0.004)
ρ	1.000 (0.000)	0.996 (0.002)	0.996 (0.002)	0.997 (0.002)	0.997 (0.002)

TABLE C18

Simulation results comparing data generated under the EM-EV scenario with MAR missingness of treatment arms. The 95% CrI's estimated coverage probability (CP) and the Monte Carlo standard error of the posterior median are summarized for the five methods (NB, CPV, FBV, CPM, and DCP).

Parameter	CP (Monte Carlo standard error)				
	NB	CPV	FBV	CPM	DCP
cLOR_{12}	0.982 (0.004)	0.965 (0.006)	0.974 (0.005)	0.987 (0.004)	0.973 (0.005)
cLOR_{13}	0.999 (0.001)	0.985 (0.004)	0.978 (0.005)	0.995 (0.002)	0.978 (0.005)
cLOR_{14}	0.996 (0.002)	0.962 (0.006)	0.962 (0.006)	0.996 (0.002)	0.972 (0.005)
cLOR_{15}	0.998 (0.001)	0.988 (0.003)	0.989 (0.003)	1.000 (0.000)	0.993 (0.003)
cLOR_{23}	1.000 (0.000)	0.992 (0.003)	0.992 (0.003)	0.996 (0.002)	0.986 (0.004)
cLOR_{24}	0.994 (0.002)	0.975 (0.005)	0.977 (0.005)	0.993 (0.003)	0.986 (0.004)
cLOR_{25}	0.997 (0.002)	0.982 (0.004)	0.985 (0.004)	0.996 (0.002)	0.990 (0.003)
cLOR_{34}	0.999 (0.001)	0.984 (0.004)	0.985 (0.004)	0.996 (0.002)	0.981 (0.004)
cLOR_{35}	0.999 (0.001)	0.987 (0.004)	0.985 (0.004)	0.998 (0.001)	0.982 (0.004)
cLOR_{45}	1.000 (0.000)	0.989 (0.003)	0.990 (0.003)	1.000 (0.000)	0.987 (0.004)
μ_1	0.975 (0.005)	0.936 (0.008)	0.927 (0.008)	0.982 (0.004)	0.963 (0.006)
μ_2	0.984 (0.004)	0.960 (0.006)	0.972 (0.005)	0.983 (0.004)	0.972 (0.005)
μ_3	0.999 (0.001)	0.983 (0.004)	0.979 (0.005)	0.996 (0.002)	0.979 (0.005)
μ_4	0.995 (0.002)	0.956 (0.006)	0.960 (0.006)	0.996 (0.002)	0.965 (0.006)
μ_5	0.999 (0.001)	0.983 (0.004)	0.986 (0.004)	0.999 (0.001)	0.989 (0.003)
p_1	0.967 (0.006)	0.928 (0.008)	0.924 (0.008)	0.973 (0.005)	0.960 (0.006)
p_2	0.974 (0.005)	0.960 (0.006)	0.969 (0.005)	0.968 (0.006)	0.967 (0.006)
p_3	0.985 (0.004)	0.972 (0.005)	0.975 (0.005)	0.967 (0.006)	0.976 (0.005)
p_4	0.984 (0.004)	0.963 (0.006)	0.965 (0.006)	0.990 (0.003)	0.977 (0.005)
p_5	0.994 (0.002)	0.986 (0.004)	0.986 (0.004)	0.995 (0.002)	0.993 (0.003)
δ_1	0.945 (0.007)	0.902 (0.009)	0.892 (0.010)	0.947 (0.007)	0.899 (0.010)
δ_2	0.921 (0.009)	0.952 (0.007)	0.927 (0.008)	0.933 (0.008)	0.955 (0.007)
δ_3	0.935 (0.008)	0.965 (0.006)	0.920 (0.009)	0.950 (0.007)	0.979 (0.005)
δ_4	0.955 (0.007)	0.996 (0.002)	0.994 (0.002)	0.969 (0.005)	0.996 (0.002)
δ_5	0.931 (0.008)	0.986 (0.004)	0.984 (0.004)	0.958 (0.006)	0.986 (0.004)
ρ	1.000 (0.000)	1.000 (0.000)	1.000 (0.000)	1.000 (0.000)	1.000 (0.000)

TABLE C19

Simulation results comparing data generated under the UM-EV scenario with MCAR missingness of treatment arms. The 95% CrI's estimated coverage probability (CP) and the Monte Carlo standard error of the posterior median are summarized for the five methods (NB, CPV, FBV, CPM, and DCP).

Parameter	CP (Monte Carlo standard error)				
	NB	CPV	FBV	CPM	DCP
cLOR_{12}	0.982 (0.004)	0.960 (0.006)	0.965 (0.006)	0.973 (0.005)	0.967 (0.006)
cLOR_{13}	0.999 (0.001)	0.983 (0.004)	0.982 (0.004)	0.993 (0.003)	0.974 (0.005)
cLOR_{14}	0.995 (0.002)	0.966 (0.006)	0.966 (0.006)	0.972 (0.005)	0.933 (0.008)
cLOR_{15}	0.999 (0.001)	0.976 (0.005)	0.978 (0.005)	0.990 (0.003)	0.955 (0.007)
cLOR_{23}	0.999 (0.001)	0.986 (0.004)	0.985 (0.004)	0.996 (0.002)	0.978 (0.005)
cLOR_{24}	0.995 (0.002)	0.970 (0.005)	0.970 (0.005)	0.964 (0.006)	0.952 (0.007)
cLOR_{25}	0.998 (0.001)	0.977 (0.005)	0.980 (0.004)	0.976 (0.005)	0.956 (0.006)
cLOR_{34}	1.000 (0.000)	0.976 (0.005)	0.976 (0.005)	0.985 (0.004)	0.962 (0.006)
cLOR_{35}	0.999 (0.001)	0.986 (0.004)	0.985 (0.004)	0.989 (0.003)	0.972 (0.005)
cLOR_{45}	0.999 (0.001)	0.979 (0.005)	0.980 (0.004)	1.000 (0.000)	0.988 (0.003)
μ_1	0.975 (0.005)	0.933 (0.008)	0.911 (0.009)	0.969 (0.005)	0.933 (0.008)
μ_2	0.979 (0.005)	0.957 (0.006)	0.962 (0.006)	0.970 (0.005)	0.956 (0.006)
μ_3	0.999 (0.001)	0.978 (0.005)	0.981 (0.004)	0.991 (0.003)	0.968 (0.006)
μ_4	0.998 (0.001)	0.963 (0.006)	0.966 (0.006)	0.958 (0.006)	0.910 (0.009)
μ_5	0.999 (0.001)	0.976 (0.005)	0.983 (0.004)	0.989 (0.003)	0.955 (0.007)
p_1	0.967 (0.006)	0.922 (0.008)	0.908 (0.009)	0.960 (0.006)	0.926 (0.008)
p_2	0.963 (0.006)	0.953 (0.007)	0.956 (0.006)	0.927 (0.008)	0.937 (0.008)
p_3	0.983 (0.004)	0.968 (0.006)	0.970 (0.005)	0.926 (0.008)	0.940 (0.008)
p_4	0.990 (0.003)	0.970 (0.005)	0.972 (0.005)	0.999 (0.001)	0.930 (0.008)
p_5	0.997 (0.002)	0.978 (0.005)	0.980 (0.004)	1.000 (0.000)	0.966 (0.006)
δ_1	0.940 (0.008)	0.883 (0.010)	0.817 (0.012)	0.941 (0.007)	0.884 (0.010)
δ_2	0.913 (0.009)	0.960 (0.006)	0.942 (0.007)	0.929 (0.008)	0.964 (0.006)
δ_3	0.956 (0.006)	0.974 (0.005)	0.930 (0.008)	0.968 (0.006)	0.979 (0.005)
δ_4	0.955 (0.007)	0.989 (0.003)	0.990 (0.003)	0.946 (0.007)	0.984 (0.004)
δ_5	0.930 (0.008)	0.974 (0.005)	0.972 (0.005)	0.931 (0.008)	0.973 (0.005)
ρ	1.000 (0.000)	0.996 (0.002)	0.995 (0.002)	0.998 (0.001)	0.994 (0.002)

TABLE C20

Simulation results comparing data generated under the UM-EV scenario with MAR missingness of treatment arms. The 95% CrI's estimated coverage probability (CP) and the Monte Carlo standard error of the posterior median are summarized for the five methods (NB, CPV, FBV, CPM, and DCP).

Parameter	CP (Monte Carlo standard error)				
	NB	CPV	FBV	CPM	DCP
cLOR_{12}	0.982 (0.004)	0.967 (0.006)	0.973 (0.005)	0.981 (0.004)	0.960 (0.006)
cLOR_{13}	0.999 (0.001)	0.986 (0.004)	0.980 (0.004)	0.992 (0.003)	0.973 (0.005)
cLOR_{14}	0.998 (0.001)	0.964 (0.006)	0.965 (0.006)	0.975 (0.005)	0.934 (0.008)
cLOR_{15}	0.998 (0.001)	0.992 (0.003)	0.991 (0.003)	0.995 (0.002)	0.939 (0.008)
cLOR_{23}	1.000 (0.000)	0.990 (0.003)	0.989 (0.003)	0.996 (0.002)	0.990 (0.003)
cLOR_{24}	0.994 (0.002)	0.974 (0.005)	0.976 (0.005)	0.977 (0.005)	0.948 (0.007)
cLOR_{25}	0.997 (0.002)	0.985 (0.004)	0.987 (0.004)	0.994 (0.002)	0.956 (0.006)
cLOR_{34}	0.999 (0.001)	0.984 (0.004)	0.984 (0.004)	0.986 (0.004)	0.959 (0.006)
cLOR_{35}	0.999 (0.001)	0.994 (0.002)	0.989 (0.003)	0.996 (0.002)	0.966 (0.006)
cLOR_{45}	1.000 (0.000)	0.994 (0.002)	0.995 (0.002)	1.000 (0.000)	0.989 (0.003)
μ_1	0.975 (0.005)	0.930 (0.008)	0.907 (0.009)	0.970 (0.005)	0.929 (0.008)
μ_2	0.983 (0.004)	0.962 (0.006)	0.968 (0.006)	0.977 (0.005)	0.955 (0.007)
μ_3	0.999 (0.001)	0.983 (0.004)	0.979 (0.005)	0.992 (0.003)	0.971 (0.005)
μ_4	0.995 (0.002)	0.961 (0.006)	0.963 (0.006)	0.974 (0.005)	0.900 (0.009)
μ_5	0.999 (0.001)	0.987 (0.004)	0.992 (0.003)	0.997 (0.002)	0.929 (0.008)
p_1	0.966 (0.006)	0.922 (0.008)	0.910 (0.009)	0.956 (0.006)	0.927 (0.008)
p_2	0.974 (0.005)	0.956 (0.006)	0.963 (0.006)	0.934 (0.008)	0.941 (0.007)
p_3	0.984 (0.004)	0.970 (0.005)	0.973 (0.005)	0.931 (0.008)	0.952 (0.007)
p_4	0.984 (0.004)	0.963 (0.006)	0.967 (0.006)	0.998 (0.001)	0.925 (0.008)
p_5	0.994 (0.002)	0.989 (0.003)	0.991 (0.003)	1.000 (0.000)	0.950 (0.007)
δ_1	0.946 (0.007)	0.884 (0.010)	0.814 (0.012)	0.947 (0.007)	0.878 (0.010)
δ_2	0.922 (0.008)	0.951 (0.007)	0.930 (0.008)	0.950 (0.007)	0.959 (0.006)
δ_3	0.934 (0.008)	0.964 (0.006)	0.922 (0.008)	0.960 (0.006)	0.979 (0.005)
δ_4	0.955 (0.007)	0.991 (0.003)	0.987 (0.004)	0.961 (0.006)	0.989 (0.003)
δ_5	0.932 (0.008)	0.982 (0.004)	0.980 (0.004)	0.957 (0.006)	0.986 (0.004)
ρ	1.000 (0.000)	1.000 (0.000)	1.000 (0.000)	1.000 (0.000)	1.000 (0.000)

TABLE C21

Simulation results comparing data generated under the EM-UV scenario with MCAR missingness of treatment arms. The 95% CrI's estimated coverage probability (CP) and the Monte Carlo standard error of the posterior median are summarized for the five methods (NB, CPV, FBV, CPM, and DCP).

Parameter	CP (Monte Carlo standard error)				
	NB	CPV	FBV	CPM	DCP
cLOR_{12}	0.981 (0.004)	0.943 (0.007)	0.962 (0.006)	0.978 (0.005)	0.950 (0.007)
cLOR_{13}	0.999 (0.001)	0.920 (0.009)	0.904 (0.009)	1.000 (0.000)	0.980 (0.004)
cLOR_{14}	0.995 (0.002)	0.992 (0.003)	0.997 (0.002)	0.993 (0.003)	0.989 (0.003)
cLOR_{15}	0.999 (0.001)	0.993 (0.003)	0.997 (0.002)	0.996 (0.002)	0.992 (0.003)
cLOR_{23}	0.999 (0.001)	0.942 (0.007)	0.929 (0.008)	0.997 (0.002)	0.966 (0.006)
cLOR_{24}	0.995 (0.002)	0.978 (0.005)	0.981 (0.004)	0.989 (0.003)	0.973 (0.005)
cLOR_{25}	0.999 (0.001)	0.990 (0.003)	0.990 (0.003)	0.995 (0.002)	0.986 (0.004)
cLOR_{34}	1.000 (0.000)	0.943 (0.007)	0.929 (0.008)	0.999 (0.001)	0.982 (0.004)
cLOR_{35}	1.000 (0.000)	0.970 (0.005)	0.954 (0.007)	1.000 (0.000)	0.988 (0.003)
cLOR_{45}	0.999 (0.001)	0.997 (0.002)	0.998 (0.001)	0.998 (0.001)	0.995 (0.002)
μ_1	0.975 (0.005)	0.973 (0.005)	1.000 (0.000)	0.970 (0.005)	0.969 (0.005)
μ_2	0.979 (0.005)	0.942 (0.007)	0.950 (0.007)	0.981 (0.004)	0.948 (0.007)
μ_3	0.998 (0.001)	0.908 (0.009)	0.884 (0.010)	0.999 (0.001)	0.977 (0.005)
μ_4	0.999 (0.001)	0.992 (0.003)	0.997 (0.002)	0.991 (0.003)	0.989 (0.003)
μ_5	0.999 (0.001)	0.990 (0.003)	0.991 (0.003)	0.998 (0.001)	0.992 (0.003)
p_1	0.968 (0.006)	0.968 (0.006)	0.987 (0.004)	0.956 (0.006)	0.960 (0.006)
p_2	0.964 (0.006)	0.935 (0.008)	0.921 (0.009)	0.967 (0.006)	0.952 (0.007)
p_3	0.982 (0.004)	0.918 (0.009)	0.886 (0.010)	0.983 (0.004)	0.963 (0.006)
p_4	0.991 (0.003)	0.991 (0.003)	0.993 (0.003)	0.991 (0.003)	0.990 (0.003)
p_5	0.996 (0.002)	0.989 (0.003)	0.992 (0.003)	0.990 (0.003)	0.985 (0.004)
δ_1	0.940 (0.008)	0.939 (0.008)	0.017 (0.004)	0.941 (0.007)	0.941 (0.007)
δ_2	0.911 (0.009)	0.944 (0.007)	0.933 (0.008)	0.929 (0.008)	0.948 (0.007)
δ_3	0.956 (0.006)	0.983 (0.004)	0.987 (0.004)	0.966 (0.006)	0.968 (0.006)
δ_4	0.956 (0.006)	0.944 (0.007)	0.435 (0.016)	0.958 (0.006)	0.949 (0.007)
δ_5	0.932 (0.008)	0.939 (0.008)	0.540 (0.016)	0.939 (0.008)	0.939 (0.008)
ρ	1.000 (0.000)	0.999 (0.001)	0.997 (0.002)	0.997 (0.002)	0.997 (0.002)

TABLE C22

Simulation results comparing data generated under the EM-UV scenario with MAR missingness of treatment arms. The 95% CrI's estimated coverage probability (CP) and the Monte Carlo standard error of the posterior median are summarized for the five methods (NB, CPV, FBV, CPM, and DCP).

Parameter	CP (Monte Carlo standard error)				
	NB	CPV	FBV	CPM	DCP
cLOR_{12}	0.981 (0.004)	0.959 (0.006)	0.963 (0.006)	0.988 (0.003)	0.977 (0.005)
cLOR_{13}	0.999 (0.001)	0.933 (0.008)	0.925 (0.008)	0.999 (0.001)	0.968 (0.006)
cLOR_{14}	0.998 (0.001)	0.993 (0.003)	0.999 (0.001)	0.991 (0.003)	0.990 (0.003)
cLOR_{15}	0.999 (0.001)	0.997 (0.002)	0.998 (0.001)	0.995 (0.002)	0.994 (0.002)
cLOR_{23}	1.000 (0.000)	0.970 (0.005)	0.956 (0.006)	0.998 (0.001)	0.977 (0.005)
cLOR_{24}	0.995 (0.002)	0.983 (0.004)	0.980 (0.004)	0.993 (0.003)	0.987 (0.004)
cLOR_{25}	0.997 (0.002)	0.994 (0.002)	0.990 (0.003)	0.996 (0.002)	0.994 (0.002)
cLOR_{34}	0.999 (0.001)	0.957 (0.006)	0.945 (0.007)	0.998 (0.001)	0.977 (0.005)
cLOR_{35}	0.999 (0.001)	0.975 (0.005)	0.963 (0.006)	1.000 (0.000)	0.983 (0.004)
cLOR_{45}	1.000 (0.000)	1.000 (0.000)	1.000 (0.000)	0.998 (0.001)	0.999 (0.001)
μ_1	0.976 (0.005)	0.974 (0.005)	1.000 (0.000)	0.968 (0.006)	0.969 (0.005)
μ_2	0.982 (0.004)	0.955 (0.007)	0.952 (0.007)	0.990 (0.003)	0.973 (0.005)
μ_3	0.999 (0.001)	0.931 (0.008)	0.907 (0.009)	0.998 (0.001)	0.970 (0.005)
μ_4	0.995 (0.002)	0.990 (0.003)	0.991 (0.003)	0.989 (0.003)	0.986 (0.004)
μ_5	0.999 (0.001)	0.996 (0.002)	0.995 (0.002)	0.996 (0.002)	0.990 (0.003)
p_1	0.966 (0.006)	0.968 (0.006)	0.987 (0.004)	0.960 (0.006)	0.962 (0.006)
p_2	0.972 (0.005)	0.949 (0.007)	0.898 (0.010)	0.980 (0.004)	0.955 (0.007)
p_3	0.986 (0.004)	0.926 (0.008)	0.903 (0.009)	0.972 (0.005)	0.971 (0.005)
p_4	0.984 (0.004)	0.988 (0.003)	0.989 (0.003)	0.981 (0.004)	0.981 (0.004)
p_5	0.993 (0.003)	0.997 (0.002)	0.993 (0.003)	0.990 (0.003)	0.986 (0.004)
δ_1	0.943 (0.007)	0.938 (0.008)	0.017 (0.004)	0.943 (0.007)	0.939 (0.008)
δ_2	0.922 (0.008)	0.946 (0.007)	0.958 (0.006)	0.934 (0.008)	0.940 (0.008)
δ_3	0.934 (0.008)	0.988 (0.003)	0.994 (0.002)	0.953 (0.007)	0.979 (0.005)
δ_4	0.954 (0.007)	0.958 (0.006)	0.462 (0.016)	0.957 (0.006)	0.962 (0.006)
δ_5	0.933 (0.008)	0.939 (0.008)	0.547 (0.016)	0.948 (0.007)	0.952 (0.007)
ρ	1.000 (0.000)	1.000 (0.000)	0.997 (0.002)	1.000 (0.000)	1.000 (0.000)

TABLE C23

Simulation results comparing data generated under the UM-UV scenario with MCAR missingness of treatment arms. The 95% CrI's estimated coverage probability (CP) and the Monte Carlo standard error of the posterior median are summarized for the five methods (NB, CPV, FBV, CPM, and DCP).

Parameter	CP (Monte Carlo standard error)				
	NB	CPV	FBV	CPM	DCP
cLOR_{12}	0.981 (0.004)	0.937 (0.008)	0.955 (0.007)	0.980 (0.004)	0.953 (0.007)
cLOR_{13}	0.999 (0.001)	0.907 (0.009)	0.899 (0.010)	0.993 (0.003)	0.919 (0.009)
cLOR_{14}	0.994 (0.002)	0.991 (0.003)	0.998 (0.001)	0.989 (0.003)	0.988 (0.003)
cLOR_{15}	0.999 (0.001)	0.997 (0.002)	0.999 (0.001)	0.995 (0.002)	0.988 (0.003)
cLOR_{23}	0.999 (0.001)	0.937 (0.008)	0.909 (0.009)	0.999 (0.001)	0.956 (0.006)
cLOR_{24}	0.995 (0.002)	0.975 (0.005)	0.981 (0.004)	0.983 (0.004)	0.963 (0.006)
cLOR_{25}	0.999 (0.001)	0.984 (0.004)	0.984 (0.004)	0.987 (0.004)	0.970 (0.005)
cLOR_{34}	1.000 (0.000)	0.939 (0.008)	0.925 (0.008)	0.987 (0.004)	0.923 (0.008)
cLOR_{35}	1.000 (0.000)	0.964 (0.006)	0.952 (0.007)	0.996 (0.002)	0.957 (0.006)
cLOR_{45}	0.999 (0.001)	0.997 (0.002)	0.998 (0.001)	0.998 (0.001)	0.994 (0.002)
μ_1	0.974 (0.005)	0.973 (0.005)	1.000 (0.000)	0.955 (0.007)	0.960 (0.006)
μ_2	0.978 (0.005)	0.932 (0.008)	0.939 (0.008)	0.973 (0.005)	0.941 (0.007)
μ_3	0.999 (0.001)	0.898 (0.010)	0.857 (0.011)	0.992 (0.003)	0.900 (0.009)
μ_4	0.999 (0.001)	0.991 (0.003)	0.995 (0.002)	0.991 (0.003)	0.982 (0.004)
μ_5	0.999 (0.001)	0.994 (0.002)	0.996 (0.002)	0.995 (0.002)	0.988 (0.003)
p_1	0.967 (0.006)	0.968 (0.006)	0.985 (0.004)	0.946 (0.007)	0.949 (0.007)
p_2	0.962 (0.006)	0.928 (0.008)	0.922 (0.008)	0.918 (0.009)	0.934 (0.008)
p_3	0.983 (0.004)	0.904 (0.009)	0.871 (0.011)	0.897 (0.010)	0.916 (0.009)
p_4	0.991 (0.003)	0.990 (0.003)	0.992 (0.003)	0.996 (0.002)	0.990 (0.003)
p_5	0.996 (0.002)	0.993 (0.003)	0.993 (0.003)	0.998 (0.001)	0.992 (0.003)
δ_1	0.941 (0.007)	0.941 (0.007)	0.005 (0.002)	0.938 (0.008)	0.942 (0.007)
δ_2	0.913 (0.009)	0.938 (0.008)	0.949 (0.007)	0.932 (0.008)	0.941 (0.007)
δ_3	0.957 (0.006)	0.978 (0.005)	0.972 (0.005)	0.968 (0.006)	0.945 (0.007)
δ_4	0.956 (0.006)	0.955 (0.007)	0.516 (0.016)	0.955 (0.007)	0.948 (0.007)
δ_5	0.932 (0.008)	0.933 (0.008)	0.583 (0.016)	0.929 (0.008)	0.932 (0.008)
ρ	1.000 (0.000)	0.999 (0.001)	0.998 (0.001)	0.997 (0.002)	0.999 (0.001)

TABLE C24

Simulation results comparing data generated under the UM-UV scenario with MAR missingness of treatment arms. The 95% CrI's estimated coverage probability (CP) and the Monte Carlo standard error of the posterior median are summarized for the five methods (NB, CPV, FBV, CPM, and DCP).

Parameter	CP (Monte Carlo standard error)				
	NB	CPV	FBV	CPM	DCP
cLOR_{12}	0.983 (0.004)	0.948 (0.007)	0.951 (0.007)	0.984 (0.004)	0.952 (0.007)
cLOR_{13}	0.999 (0.001)	0.922 (0.008)	0.914 (0.009)	0.995 (0.002)	0.932 (0.008)
cLOR_{14}	0.999 (0.001)	0.993 (0.003)	0.999 (0.001)	0.992 (0.003)	0.984 (0.004)
cLOR_{15}	0.999 (0.001)	0.999 (0.001)	1.000 (0.000)	0.999 (0.001)	0.989 (0.003)
cLOR_{23}	1.000 (0.000)	0.963 (0.006)	0.939 (0.008)	0.999 (0.001)	0.980 (0.004)
cLOR_{24}	0.995 (0.002)	0.980 (0.004)	0.972 (0.005)	0.981 (0.004)	0.962 (0.006)
cLOR_{25}	0.997 (0.002)	0.990 (0.003)	0.991 (0.003)	1.000 (0.000)	0.988 (0.003)
cLOR_{34}	0.999 (0.001)	0.951 (0.007)	0.937 (0.008)	0.998 (0.001)	0.935 (0.008)
cLOR_{35}	0.998 (0.001)	0.973 (0.005)	0.965 (0.006)	1.000 (0.000)	0.966 (0.006)
cLOR_{45}	1.000 (0.000)	1.000 (0.000)	1.000 (0.000)	1.000 (0.000)	0.997 (0.002)
μ_1	0.974 (0.005)	0.973 (0.005)	1.000 (0.000)	0.956 (0.006)	0.964 (0.006)
μ_2	0.984 (0.004)	0.945 (0.007)	0.939 (0.008)	0.983 (0.004)	0.943 (0.007)
μ_3	0.999 (0.001)	0.913 (0.009)	0.875 (0.010)	0.996 (0.002)	0.913 (0.009)
μ_4	0.995 (0.002)	0.992 (0.003)	0.992 (0.003)	0.995 (0.002)	0.984 (0.004)
μ_5	0.999 (0.001)	0.999 (0.001)	0.999 (0.001)	0.999 (0.001)	0.985 (0.004)
p_1	0.967 (0.006)	0.966 (0.006)	0.985 (0.004)	0.943 (0.007)	0.949 (0.007)
p_2	0.974 (0.005)	0.940 (0.008)	0.884 (0.010)	0.927 (0.008)	0.929 (0.008)
p_3	0.983 (0.004)	0.919 (0.009)	0.884 (0.010)	0.888 (0.010)	0.925 (0.008)
p_4	0.984 (0.004)	0.988 (0.003)	0.990 (0.003)	0.991 (0.003)	0.989 (0.003)
p_5	0.995 (0.002)	0.997 (0.002)	0.996 (0.002)	0.998 (0.001)	0.989 (0.003)
δ_1	0.944 (0.007)	0.939 (0.008)	0.005 (0.002)	0.944 (0.007)	0.939 (0.008)
δ_2	0.922 (0.008)	0.944 (0.007)	0.964 (0.006)	0.956 (0.006)	0.931 (0.008)
δ_3	0.935 (0.008)	0.988 (0.003)	0.990 (0.003)	0.960 (0.006)	0.966 (0.006)
δ_4	0.955 (0.007)	0.959 (0.006)	0.533 (0.016)	0.964 (0.006)	0.962 (0.006)
δ_5	0.932 (0.008)	0.948 (0.007)	0.579 (0.016)	0.950 (0.007)	0.957 (0.006)
ρ	1.000 (0.000)	1.000 (0.000)	1.000 (0.000)	1.000 (0.000)	1.000 (0.000)

C.4. Empirical standard error (Empse). Tables C25–C32 provide the empirical standard error and the Monte Carlo standard error of the posterior median for the five methods (NB, CPV, FBV, CPM, and DCP) using different data-generating mechanisms (EM-EV, UM-EV, EM-UV, and UM-UV) and missingness structures (MCAR and MAR). The relative percent increase in precision comparing four methods (CPV, FBV, CPM, and DCP) versus NB is also summarized.

TABLE C25

Simulation results comparing data generated under the EM-EV scenario with MCAR missingness of treatment arms. The Empse and the Monte Carlo standard error of the posterior median are rounded to 3 decimal places for the five methods (NB, CPV, FBV, CPM, and DCP). The relative percent increase in precision when comparing four methods (CPV, FBV, CPM, and DCP) versus NB is also summarized.

Parameter	Empse (Monte Carlo standard error)					Relative % increase in precision			
	NB	CPV	FBV	CPM	DCP	CPV	FBV	CPM	DCP
$cLOR_{12}$	0.520 (0.012)	0.500 (0.011)	0.503 (0.011)	0.426 (0.010)	0.425 (0.010)	8.1	6.6	48.6	49.8
$cLOR_{13}$	0.813 (0.018)	0.803 (0.018)	0.792 (0.018)	0.520 (0.012)	0.543 (0.012)	2.7	5.4	144.4	124.5
$cLOR_{14}$	0.215 (0.005)	0.208 (0.005)	0.208 (0.005)	0.148 (0.003)	0.157 (0.004)	7.0	7.4	111.4	88.9
$cLOR_{15}$	0.235 (0.005)	0.224 (0.005)	0.223 (0.005)	0.163 (0.004)	0.172 (0.004)	10.3	10.5	106.5	87.4
$cLOR_{23}$	0.995 (0.022)	0.972 (0.022)	0.965 (0.022)	0.682 (0.015)	0.698 (0.016)	4.8	6.4	112.7	103.2
$cLOR_{24}$	0.568 (0.013)	0.544 (0.012)	0.547 (0.012)	0.444 (0.010)	0.447 (0.010)	9.2	7.8	64.0	61.2
$cLOR_{25}$	0.590 (0.013)	0.559 (0.013)	0.563 (0.013)	0.455 (0.010)	0.460 (0.010)	11.3	9.9	68.1	64.7
$cLOR_{34}$	0.849 (0.019)	0.835 (0.019)	0.824 (0.018)	0.533 (0.012)	0.560 (0.013)	3.4	6.2	153.6	129.6
$cLOR_{35}$	0.852 (0.019)	0.833 (0.019)	0.823 (0.018)	0.529 (0.012)	0.556 (0.012)	4.6	7.1	159.3	134.6
$cLOR_{45}$	0.304 (0.007)	0.282 (0.006)	0.282 (0.006)	0.193 (0.004)	0.206 (0.005)	15.9	15.9	148.6	118.6
μ_1	0.125 (0.003)	0.124 (0.003)	0.124 (0.003)	0.085 (0.002)	0.091 (0.002)	2.0	2.5	117.1	92.0
μ_2	0.533 (0.012)	0.513 (0.011)	0.517 (0.012)	0.429 (0.010)	0.428 (0.010)	8.0	6.6	54.8	54.9
μ_3	0.828 (0.019)	0.817 (0.018)	0.806 (0.018)	0.518 (0.012)	0.542 (0.012)	2.7	5.5	155.7	132.9
μ_4	0.202 (0.005)	0.196 (0.004)	0.196 (0.004)	0.129 (0.003)	0.140 (0.003)	6.4	6.5	143.6	107.6
μ_5	0.217 (0.005)	0.206 (0.005)	0.205 (0.005)	0.146 (0.003)	0.154 (0.003)	11.3	11.3	121.8	97.3
p_1	0.014 (0.000)	0.014 (0.000)	0.013 (0.000)	0.010 (0.000)	0.010 (0.000)	2.8	3.4	96.3	91.9
p_2	0.037 (0.001)	0.033 (0.001)	0.034 (0.001)	0.033 (0.001)	0.026 (0.001)	23.2	19.3	22.7	100.6
p_3	0.070 (0.002)	0.069 (0.002)	0.071 (0.002)	0.055 (0.001)	0.048 (0.001)	2.8	−1.8	64.3	112.9
p_4	0.021 (0.000)	0.020 (0.000)	0.020 (0.000)	0.015 (0.000)	0.015 (0.000)	9.3	9.5	108.4	110.1
p_5	0.032 (0.001)	0.030 (0.001)	0.030 (0.001)	0.023 (0.001)	0.023 (0.001)	14.6	15.0	94.2	100.7
δ_1	0.133 (0.003)	0.110 (0.002)	0.095 (0.002)	0.130 (0.003)	0.108 (0.002)	45.2	96.5	4.2	50.4
δ_2	0.632 (0.014)	0.505 (0.011)	0.502 (0.011)	0.588 (0.013)	0.459 (0.010)	56.4	58.7	15.3	89.2
δ_3	0.703 (0.016)	0.673 (0.015)	0.653 (0.015)	0.674 (0.015)	0.549 (0.012)	9.2	15.8	8.7	64.1
δ_4	0.234 (0.005)	0.143 (0.003)	0.130 (0.003)	0.200 (0.004)	0.131 (0.003)	168.9	223.5	37.5	219.0
δ_5	0.309 (0.007)	0.176 (0.004)	0.164 (0.004)	0.244 (0.005)	0.154 (0.003)	209.7	254.1	60.7	302.9
ρ	0.209 (0.005)	0.208 (0.005)	0.210 (0.005)	0.213 (0.005)	0.211 (0.005)	0.8	−1.2	−3.7	−1.5

TABLE C26

Simulation results comparing data generated under the EM-EV scenario with MAR missingness of treatment arms. The Empse and the Monte Carlo standard error of the posterior median are rounded to 3 decimal places for the five methods (NB, CPV, FBV, CPM, and DCP). The relative percent increase in precision when comparing four methods (CPV, FBV, CPM, and DCP) versus NB is also summarized.

Parameter	Empse (Monte Carlo standard error)					Relative % increase in precision			
	NB	CPV	FBV	CPM	DCP	CPV	FBV	CPM	DCP
cLOR_{12}	0.594 (0.013)	0.527 (0.012)	0.544 (0.012)	0.464 (0.010)	0.452 (0.010)	26.9	19.3	64.2	72.8
cLOR_{13}	0.779 (0.017)	0.768 (0.017)	0.749 (0.017)	0.505 (0.011)	0.519 (0.012)	2.8	8.2	137.6	124.9
cLOR_{14}	0.215 (0.005)	0.212 (0.005)	0.212 (0.005)	0.150 (0.003)	0.160 (0.004)	3.4	3.4	107.0	80.3
cLOR_{15}	0.283 (0.006)	0.240 (0.005)	0.240 (0.005)	0.169 (0.004)	0.175 (0.004)	38.9	38.6	181.4	161.2
cLOR_{23}	0.949 (0.021)	0.907 (0.020)	0.902 (0.020)	0.664 (0.015)	0.670 (0.015)	9.5	10.7	104.6	101.1
cLOR_{24}	0.645 (0.014)	0.567 (0.013)	0.584 (0.013)	0.476 (0.011)	0.467 (0.010)	29.2	21.9	83.7	90.3
cLOR_{25}	0.715 (0.016)	0.593 (0.013)	0.611 (0.014)	0.489 (0.011)	0.476 (0.011)	45.5	36.8	113.6	125.6
cLOR_{34}	0.819 (0.018)	0.804 (0.018)	0.786 (0.018)	0.524 (0.012)	0.541 (0.012)	3.7	8.4	144.6	128.7
cLOR_{35}	0.839 (0.019)	0.803 (0.018)	0.783 (0.018)	0.519 (0.012)	0.535 (0.012)	9.2	14.8	162.0	146.1
cLOR_{45}	0.317 (0.007)	0.287 (0.006)	0.288 (0.006)	0.196 (0.004)	0.211 (0.005)	21.6	21.5	161.1	126.6
μ_1	0.125 (0.003)	0.124 (0.003)	0.124 (0.003)	0.085 (0.002)	0.091 (0.002)	2.0	2.5	118.9	91.7
μ_2	0.609 (0.014)	0.543 (0.012)	0.558 (0.012)	0.465 (0.010)	0.455 (0.010)	25.9	19.0	71.8	78.9
μ_3	0.789 (0.018)	0.777 (0.017)	0.758 (0.017)	0.501 (0.011)	0.518 (0.012)	2.9	8.3	147.5	132.2
μ_4	0.201 (0.004)	0.198 (0.004)	0.198 (0.004)	0.131 (0.003)	0.145 (0.003)	3.1	2.6	133.2	92.3
μ_5	0.268 (0.006)	0.221 (0.005)	0.222 (0.005)	0.149 (0.003)	0.158 (0.004)	46.9	45.8	221.9	187.6
p_1	0.014 (0.000)	0.014 (0.000)	0.013 (0.000)	0.010 (0.000)	0.010 (0.000)	2.5	3.1	98.6	90.3
p_2	0.030 (0.001)	0.030 (0.001)	0.030 (0.001)	0.027 (0.001)	0.024 (0.001)	−3.1	−1.3	17.9	58.0
p_3	0.065 (0.001)	0.065 (0.001)	0.066 (0.001)	0.054 (0.001)	0.046 (0.001)	2.3	−2.2	48.3	99.8
p_4	0.024 (0.001)	0.020 (0.000)	0.020 (0.000)	0.016 (0.000)	0.015 (0.000)	41.1	40.0	129.2	162.8
p_5	0.050 (0.001)	0.033 (0.001)	0.033 (0.001)	0.026 (0.001)	0.023 (0.001)	126.1	123.5	271.8	361.9
δ_1	0.130 (0.003)	0.110 (0.002)	0.095 (0.002)	0.129 (0.003)	0.109 (0.002)	38.7	88.0	1.1	41.5
δ_2	0.622 (0.014)	0.475 (0.011)	0.480 (0.011)	0.546 (0.012)	0.438 (0.010)	71.4	68.3	29.8	101.5
δ_3	0.694 (0.016)	0.656 (0.015)	0.631 (0.014)	0.668 (0.015)	0.528 (0.012)	11.9	21.1	8.0	73.2
δ_4	0.275 (0.006)	0.144 (0.003)	0.133 (0.003)	0.225 (0.005)	0.130 (0.003)	263.0	329.3	49.4	346.6
δ_5	0.325 (0.007)	0.173 (0.004)	0.163 (0.004)	0.233 (0.005)	0.147 (0.003)	252.1	298.2	94.0	390.2
ρ	0.187 (0.004)	0.176 (0.004)	0.181 (0.004)	0.199 (0.004)	0.187 (0.004)	12.8	6.1	−12.4	0.1

TABLE C27

Simulation results comparing data generated under the UM-EV scenario with MCAR missingness of treatment arms. The Empse and the Monte Carlo standard error of the posterior median are rounded to 3 decimal places for the five methods (NB, CPV, FBV, CPM, and DCP). The relative percent increase in precision when comparing four methods (CPV, FBV, CPM, and DCP) versus NB is also summarized.

Parameter	Empse (Monte Carlo standard error)					Relative % increase in precision			
	NB	CPV	FBV	CPM	DCP	CPV	FBV	CPM	DCP
cLOR_{12}	0.519 (0.012)	0.495 (0.011)	0.496 (0.011)	0.411 (0.009)	0.406 (0.009)	10.2	9.8	60.0	63.8
cLOR_{13}	0.813 (0.018)	0.797 (0.018)	0.787 (0.018)	0.505 (0.011)	0.527 (0.012)	4.2	6.7	159.1	138.4
cLOR_{14}	0.215 (0.005)	0.208 (0.005)	0.208 (0.005)	0.210 (0.005)	0.211 (0.005)	6.9	7.2	4.7	4.1
cLOR_{15}	0.234 (0.005)	0.224 (0.005)	0.223 (0.005)	0.214 (0.005)	0.216 (0.005)	9.8	10.3	20.1	17.7
cLOR_{23}	0.995 (0.022)	0.963 (0.022)	0.952 (0.021)	0.658 (0.015)	0.673 (0.015)	6.9	9.2	128.9	118.9
cLOR_{24}	0.568 (0.013)	0.539 (0.012)	0.541 (0.012)	0.449 (0.010)	0.449 (0.010)	10.8	10.2	59.9	59.9
cLOR_{25}	0.589 (0.013)	0.555 (0.012)	0.556 (0.012)	0.455 (0.010)	0.457 (0.010)	13.0	12.4	67.8	66.0
cLOR_{34}	0.849 (0.019)	0.829 (0.019)	0.819 (0.018)	0.529 (0.012)	0.558 (0.012)	4.9	7.5	157.7	131.6
cLOR_{35}	0.852 (0.019)	0.828 (0.019)	0.819 (0.018)	0.522 (0.012)	0.551 (0.012)	5.9	8.3	166.5	139.4
cLOR_{45}	0.304 (0.007)	0.283 (0.006)	0.283 (0.006)	0.266 (0.006)	0.275 (0.006)	15.0	14.9	30.5	21.7
μ_1	0.125 (0.003)	0.124 (0.003)	0.123 (0.003)	0.120 (0.003)	0.120 (0.003)	2.3	3.3	9.1	8.8
μ_2	0.533 (0.012)	0.508 (0.011)	0.509 (0.011)	0.415 (0.009)	0.411 (0.009)	10.1	9.6	64.7	67.9
μ_3	0.828 (0.019)	0.811 (0.018)	0.801 (0.018)	0.500 (0.011)	0.528 (0.012)	4.2	6.8	173.7	145.7
μ_4	0.202 (0.005)	0.196 (0.004)	0.196 (0.004)	0.200 (0.004)	0.202 (0.005)	5.8	5.8	2.0	−0.4
μ_5	0.217 (0.005)	0.206 (0.005)	0.206 (0.005)	0.197 (0.004)	0.200 (0.004)	10.6	10.7	21.1	17.4
p_1	0.014 (0.000)	0.014 (0.000)	0.013 (0.000)	0.013 (0.000)	0.013 (0.000)	2.8	3.9	3.7	6.0
p_2	0.037 (0.001)	0.033 (0.001)	0.033 (0.001)	0.039 (0.001)	0.029 (0.001)	27.2	22.7	−12.7	60.2
p_3	0.070 (0.002)	0.069 (0.002)	0.071 (0.002)	0.063 (0.001)	0.053 (0.001)	4.1	−1.5	24.0	75.6
p_4	0.021 (0.000)	0.020 (0.000)	0.020 (0.000)	0.019 (0.000)	0.020 (0.000)	9.0	9.0	26.2	13.5
p_5	0.032 (0.001)	0.030 (0.001)	0.030 (0.001)	0.027 (0.001)	0.028 (0.001)	13.6	14.2	48.5	30.8
δ_1	0.133 (0.003)	0.112 (0.003)	0.088 (0.002)	0.133 (0.003)	0.112 (0.003)	39.7	129.1	0.3	40.7
δ_2	0.632 (0.014)	0.474 (0.011)	0.458 (0.010)	0.586 (0.013)	0.434 (0.010)	77.6	90.2	16.4	112.5
δ_3	0.701 (0.016)	0.634 (0.014)	0.611 (0.014)	0.696 (0.016)	0.520 (0.012)	22.1	31.6	1.4	82.1
δ_4	0.234 (0.005)	0.149 (0.003)	0.138 (0.003)	0.224 (0.005)	0.150 (0.003)	148.8	189.5	8.9	143.7
δ_5	0.308 (0.007)	0.181 (0.004)	0.172 (0.004)	0.266 (0.006)	0.173 (0.004)	189.6	222.1	33.9	218.3
ρ	0.209 (0.005)	0.208 (0.005)	0.209 (0.005)	0.216 (0.005)	0.213 (0.005)	1.4	0.2	−5.7	−3.3

TABLE C28

Simulation results comparing data generated under the UM-EV scenario with MAR missingness of treatment arms. The Empse and the Monte Carlo standard error of the posterior median are rounded to 3 decimal places for the five methods (NB, CPV, FBV, CPM, and DCP). The relative percent increase in precision when comparing four methods (CPV, FBV, CPM, and DCP) versus NB is also summarized.

Parameter	Empse (Monte Carlo standard error)					Relative % increase in precision			
	NB	CPV	FBV	CPM	DCP	CPV	FBV	CPM	DCP
cLOR_{12}	0.594 (0.013)	0.520 (0.012)	0.533 (0.012)	0.418 (0.009)	0.409 (0.009)	30.1	23.8	102.1	111.2
cLOR_{13}	0.778 (0.017)	0.766 (0.017)	0.749 (0.017)	0.507 (0.011)	0.517 (0.012)	3.2	8.0	135.7	126.8
cLOR_{14}	0.215 (0.005)	0.212 (0.005)	0.212 (0.005)	0.206 (0.005)	0.210 (0.005)	3.3	3.1	8.9	5.3
cLOR_{15}	0.283 (0.006)	0.241 (0.005)	0.241 (0.005)	0.216 (0.005)	0.215 (0.005)	37.8	37.9	72.0	73.1
cLOR_{23}	0.949 (0.021)	0.902 (0.020)	0.899 (0.020)	0.636 (0.014)	0.643 (0.014)	10.6	11.4	122.3	117.4
cLOR_{24}	0.644 (0.014)	0.562 (0.013)	0.576 (0.013)	0.455 (0.010)	0.448 (0.010)	31.0	24.7	99.7	106.4
cLOR_{25}	0.714 (0.016)	0.591 (0.013)	0.607 (0.014)	0.471 (0.011)	0.455 (0.010)	46.2	38.3	129.8	146.0
cLOR_{34}	0.819 (0.018)	0.803 (0.018)	0.787 (0.018)	0.536 (0.012)	0.550 (0.012)	4.0	8.2	132.8	121.6
cLOR_{35}	0.839 (0.019)	0.802 (0.018)	0.784 (0.018)	0.529 (0.012)	0.542 (0.012)	9.6	14.5	151.5	139.7
cLOR_{45}	0.317 (0.007)	0.288 (0.006)	0.288 (0.006)	0.255 (0.006)	0.265 (0.006)	21.1	21.3	55.6	43.9
μ_1	0.126 (0.003)	0.124 (0.003)	0.123 (0.003)	0.121 (0.003)	0.121 (0.003)	2.4	3.4	6.9	7.6
μ_2	0.609 (0.014)	0.536 (0.012)	0.548 (0.012)	0.425 (0.010)	0.417 (0.009)	29.2	23.6	105.2	113.5
μ_3	0.789 (0.018)	0.776 (0.017)	0.758 (0.017)	0.501 (0.011)	0.514 (0.012)	3.3	8.2	147.3	135.0
μ_4	0.201 (0.004)	0.198 (0.004)	0.199 (0.004)	0.196 (0.004)	0.199 (0.004)	2.7	2.1	4.3	1.3
μ_5	0.268 (0.006)	0.222 (0.005)	0.223 (0.005)	0.195 (0.004)	0.195 (0.004)	45.4	44.1	89.7	89.6
p_1	0.014 (0.000)	0.014 (0.000)	0.013 (0.000)	0.014 (0.000)	0.013 (0.000)	2.6	3.6	0.6	3.4
p_2	0.030 (0.001)	0.030 (0.001)	0.030 (0.001)	0.034 (0.001)	0.028 (0.001)	−3.2	−1.6	−23.2	13.9
p_3	0.065 (0.001)	0.064 (0.001)	0.066 (0.001)	0.061 (0.001)	0.051 (0.001)	3.4	−1.3	14.1	65.8
p_4	0.024 (0.001)	0.021 (0.000)	0.021 (0.000)	0.019 (0.000)	0.019 (0.000)	39.1	37.5	60.9	54.6
p_5	0.050 (0.001)	0.034 (0.001)	0.034 (0.001)	0.028 (0.001)	0.027 (0.001)	121.3	117.6	211.6	240.5
δ_1	0.130 (0.003)	0.112 (0.003)	0.088 (0.002)	0.133 (0.003)	0.115 (0.003)	33.7	119.1	−5.3	27.3
δ_2	0.622 (0.014)	0.452 (0.010)	0.447 (0.010)	0.523 (0.012)	0.405 (0.009)	89.9	93.3	41.7	136.0
δ_3	0.695 (0.016)	0.637 (0.014)	0.600 (0.013)	0.671 (0.015)	0.512 (0.011)	19.1	33.9	7.3	84.1
δ_4	0.275 (0.006)	0.151 (0.003)	0.141 (0.003)	0.230 (0.005)	0.147 (0.003)	232.3	278.6	43.0	250.9
δ_5	0.326 (0.007)	0.178 (0.004)	0.171 (0.004)	0.246 (0.005)	0.162 (0.004)	232.8	263.0	75.5	306.1
ρ	0.187 (0.004)	0.176 (0.004)	0.181 (0.004)	0.201 (0.004)	0.177 (0.004)	12.2	6.2	−13.8	11.6

TABLE C29

Simulation results comparing data generated under the EM-UV scenario with MCAR missingness of treatment arms. The Empse and the Monte Carlo standard error of the posterior median are rounded to 3 decimal places for the five methods (NB, CPV, FBV, CPM, and DCP). The relative percent increase in precision when comparing four methods (CPV, FBV, CPM, and DCP) versus NB is also summarized.

Parameter	Empse (Monte Carlo standard error)					Relative % increase in precision			
	NB	CPV	FBV	CPM	DCP	CPV	FBV	CPM	DCP
cLOR_{12}	0.519 (0.012)	0.485 (0.011)	0.478 (0.011)	0.373 (0.008)	0.390 (0.009)	14.4	17.9	93.7	77.6
cLOR_{13}	0.812 (0.018)	0.772 (0.017)	0.753 (0.017)	0.342 (0.008)	0.514 (0.012)	10.6	16.2	463.6	149.4
cLOR_{14}	0.215 (0.005)	0.215 (0.005)	0.221 (0.005)	0.203 (0.005)	0.203 (0.005)	0.7	−5.3	12.7	13.0
cLOR_{15}	0.234 (0.005)	0.231 (0.005)	0.240 (0.005)	0.229 (0.005)	0.222 (0.005)	3.3	−4.4	4.9	11.6
cLOR_{23}	0.994 (0.022)	0.931 (0.021)	0.908 (0.020)	0.498 (0.011)	0.636 (0.014)	14.0	19.9	298.0	144.3
cLOR_{24}	0.567 (0.013)	0.534 (0.012)	0.530 (0.012)	0.410 (0.009)	0.428 (0.010)	12.7	14.6	91.8	76.0
cLOR_{25}	0.589 (0.013)	0.551 (0.012)	0.544 (0.012)	0.431 (0.010)	0.445 (0.010)	14.5	17.5	87.1	75.6
cLOR_{34}	0.848 (0.019)	0.806 (0.018)	0.787 (0.018)	0.381 (0.009)	0.538 (0.012)	10.7	16.0	394.2	148.5
cLOR_{35}	0.851 (0.019)	0.806 (0.018)	0.788 (0.018)	0.383 (0.009)	0.537 (0.012)	11.7	16.8	394.7	151.3
cLOR_{45}	0.304 (0.007)	0.297 (0.007)	0.306 (0.007)	0.285 (0.006)	0.277 (0.006)	5.0	−1.4	14.2	20.3
μ_1	0.125 (0.003)	0.126 (0.003)	0.130 (0.003)	0.119 (0.003)	0.119 (0.003)	−0.4	−6.7	11.3	10.2
μ_2	0.533 (0.012)	0.498 (0.011)	0.491 (0.011)	0.371 (0.008)	0.390 (0.009)	14.4	17.8	106.6	86.9
μ_3	0.826 (0.018)	0.786 (0.018)	0.767 (0.017)	0.329 (0.007)	0.514 (0.012)	10.4	15.9	529.8	158.0
μ_4	0.202 (0.005)	0.201 (0.005)	0.206 (0.005)	0.190 (0.004)	0.189 (0.004)	0.6	−4.2	12.8	13.7
μ_5	0.217 (0.005)	0.212 (0.005)	0.218 (0.005)	0.208 (0.005)	0.200 (0.004)	4.2	−1.0	8.2	17.2
p_1	0.014 (0.000)	0.014 (0.000)	0.018 (0.000)	0.013 (0.000)	0.013 (0.000)	−0.5	−39.3	10.2	9.3
p_2	0.037 (0.001)	0.033 (0.001)	0.037 (0.001)	0.030 (0.001)	0.025 (0.001)	24.4	−3.2	47.6	118.0
p_3	0.070 (0.002)	0.067 (0.001)	0.067 (0.002)	0.046 (0.001)	0.048 (0.001)	9.1	8.2	135.7	112.9
p_4	0.021 (0.000)	0.021 (0.000)	0.025 (0.001)	0.020 (0.000)	0.020 (0.000)	1.0	−29.5	8.8	13.2
p_5	0.032 (0.001)	0.031 (0.001)	0.035 (0.001)	0.031 (0.001)	0.030 (0.001)	7.4	−12.6	6.6	20.2
δ_1	0.133 (0.003)	0.136 (0.003)	0.212 (0.005)	0.132 (0.003)	0.135 (0.003)	−4.9	−60.7	0.9	−2.6
δ_2	0.632 (0.014)	0.490 (0.011)	0.552 (0.012)	0.577 (0.013)	0.452 (0.010)	66.7	31.1	19.9	95.3
δ_3	0.701 (0.016)	0.607 (0.014)	0.523 (0.012)	0.672 (0.015)	0.459 (0.010)	33.5	79.5	8.7	133.2
δ_4	0.234 (0.005)	0.208 (0.005)	0.310 (0.007)	0.215 (0.005)	0.195 (0.004)	26.9	−42.8	18.2	44.8
δ_5	0.309 (0.007)	0.253 (0.006)	0.370 (0.008)	0.276 (0.006)	0.232 (0.005)	48.4	−30.3	25.2	77.3
ρ	0.209 (0.005)	0.214 (0.005)	0.209 (0.005)	0.215 (0.005)	0.217 (0.005)	−4.3	0.5	−5.2	−7.0

TABLE C30

Simulation results comparing data generated under the EM-UV scenario with MAR missingness of treatment arms. The Empse and the Monte Carlo standard error of the posterior median are rounded to 3 decimal places for the five methods (NB, CPV, FBV, CPM, and DCP). The relative percent increase in precision when comparing four methods (CPV, FBV, CPM, and DCP) versus NB is also summarized.

Parameter	Empse (Monte Carlo standard error)					Relative % increase in precision			
	NB	CPV	FBV	CPM	DCP	CPV	FBV	CPM	DCP
$cLOR_{12}$	0.593 (0.013)	0.510 (0.011)	0.486 (0.011)	0.398 (0.009)	0.409 (0.009)	35.1	48.7	121.8	110.0
$cLOR_{13}$	0.778 (0.017)	0.748 (0.017)	0.716 (0.016)	0.348 (0.008)	0.486 (0.011)	8.4	18.1	400.5	156.8
$cLOR_{14}$	0.215 (0.005)	0.215 (0.005)	0.220 (0.005)	0.203 (0.005)	0.201 (0.005)	0.6	−3.9	11.9	14.2
$cLOR_{15}$	0.283 (0.006)	0.259 (0.006)	0.282 (0.006)	0.252 (0.006)	0.242 (0.005)	19.8	0.6	26.2	36.6
$cLOR_{23}$	0.948 (0.021)	0.880 (0.020)	0.840 (0.019)	0.514 (0.012)	0.612 (0.014)	15.9	27.2	239.3	139.8
$cLOR_{24}$	0.643 (0.014)	0.559 (0.013)	0.540 (0.012)	0.434 (0.010)	0.446 (0.010)	32.3	42.1	119.4	107.8
$cLOR_{25}$	0.714 (0.016)	0.602 (0.013)	0.591 (0.013)	0.463 (0.010)	0.469 (0.011)	40.6	45.8	137.9	131.1
$cLOR_{34}$	0.818 (0.018)	0.788 (0.018)	0.759 (0.017)	0.390 (0.009)	0.522 (0.012)	7.7	16.1	339.4	145.7
$cLOR_{35}$	0.839 (0.019)	0.798 (0.018)	0.771 (0.017)	0.408 (0.009)	0.528 (0.012)	10.5	18.5	323.2	152.3
$cLOR_{45}$	0.317 (0.007)	0.300 (0.007)	0.315 (0.007)	0.281 (0.006)	0.273 (0.006)	11.6	1.2	27.6	35.0
μ_1	0.126 (0.003)	0.126 (0.003)	0.130 (0.003)	0.119 (0.003)	0.119 (0.003)	−0.3	−6.5	11.0	10.4
μ_2	0.608 (0.014)	0.525 (0.012)	0.503 (0.011)	0.394 (0.009)	0.410 (0.009)	34.0	46.3	138.1	120.0
μ_3	0.789 (0.018)	0.757 (0.017)	0.725 (0.016)	0.332 (0.007)	0.484 (0.011)	8.5	18.2	463.8	165.3
μ_4	0.201 (0.004)	0.200 (0.004)	0.205 (0.005)	0.190 (0.004)	0.187 (0.004)	0.2	−4.0	11.3	15.5
μ_5	0.268 (0.006)	0.241 (0.005)	0.264 (0.006)	0.233 (0.005)	0.220 (0.005)	23.7	3.3	32.9	49.1
p_1	0.014 (0.000)	0.014 (0.000)	0.018 (0.000)	0.013 (0.000)	0.013 (0.000)	−0.4	−39.8	8.8	9.8
p_2	0.030 (0.001)	0.030 (0.001)	0.034 (0.001)	0.025 (0.001)	0.023 (0.001)	−4.2	−22.5	38.7	69.4
p_3	0.065 (0.001)	0.062 (0.001)	0.062 (0.001)	0.046 (0.001)	0.045 (0.001)	9.6	9.5	99.8	113.8
p_4	0.024 (0.001)	0.022 (0.000)	0.028 (0.001)	0.023 (0.001)	0.021 (0.000)	19.4	−23.5	7.2	33.2
p_5	0.050 (0.001)	0.041 (0.001)	0.050 (0.001)	0.041 (0.001)	0.036 (0.001)	50.0	−1.1	48.3	90.1
δ_1	0.130 (0.003)	0.134 (0.003)	0.213 (0.005)	0.131 (0.003)	0.133 (0.003)	−6.6	−62.8	−1.5	−5.0
δ_2	0.621 (0.014)	0.460 (0.010)	0.509 (0.011)	0.528 (0.012)	0.424 (0.009)	82.2	49.2	38.6	114.4
δ_3	0.694 (0.016)	0.632 (0.014)	0.505 (0.011)	0.679 (0.015)	0.478 (0.011)	20.5	89.1	4.4	110.6
δ_4	0.275 (0.006)	0.224 (0.005)	0.326 (0.007)	0.252 (0.006)	0.212 (0.005)	50.5	−28.9	19.6	68.8
δ_5	0.325 (0.007)	0.255 (0.006)	0.380 (0.008)	0.263 (0.006)	0.224 (0.005)	62.2	−26.6	52.5	110.5
ρ	0.186 (0.004)	0.184 (0.004)	0.195 (0.004)	0.198 (0.004)	0.190 (0.004)	3.0	−8.7	−11.4	−4.1

TABLE C31

Simulation results comparing data generated under the UM-UV scenario with MCAR missingness of treatment arms. The Empse and the Monte Carlo standard error of the posterior median are rounded to 3 decimal places for the five methods (NB, CPV, FBV, CPM, and DCP). The relative percent increase in precision when comparing four methods (CPV, FBV, CPM, and DCP) versus NB is also summarized.

Parameter	Empse (Monte Carlo standard error)					Relative % increase in precision			
	NB	CPV	FBV	CPM	DCP	CPV	FBV	CPM	DCP
cLOR_{12}	0.519 (0.012)	0.477 (0.011)	0.466 (0.010)	0.346 (0.008)	0.366 (0.008)	18.7	24.0	125.1	101.1
cLOR_{13}	0.812 (0.018)	0.771 (0.017)	0.751 (0.017)	0.325 (0.007)	0.526 (0.012)	11.1	16.8	523.7	138.6
cLOR_{14}	0.215 (0.005)	0.213 (0.005)	0.216 (0.005)	0.212 (0.005)	0.208 (0.005)	2.2	−0.7	2.8	6.8
cLOR_{15}	0.234 (0.005)	0.231 (0.005)	0.240 (0.005)	0.231 (0.005)	0.225 (0.005)	2.6	−4.3	3.4	8.5
cLOR_{23}	0.995 (0.022)	0.926 (0.021)	0.901 (0.020)	0.469 (0.010)	0.642 (0.014)	15.3	22.0	350.1	139.9
cLOR_{24}	0.568 (0.013)	0.524 (0.012)	0.513 (0.011)	0.388 (0.009)	0.408 (0.009)	17.5	22.4	113.9	93.7
cLOR_{25}	0.589 (0.013)	0.541 (0.012)	0.531 (0.012)	0.406 (0.009)	0.423 (0.009)	18.5	23.4	110.9	94.1
cLOR_{34}	0.848 (0.019)	0.804 (0.018)	0.784 (0.018)	0.367 (0.008)	0.555 (0.012)	11.1	17.0	432.5	133.1
cLOR_{35}	0.851 (0.019)	0.802 (0.018)	0.783 (0.018)	0.368 (0.008)	0.550 (0.012)	12.6	18.2	436.1	139.8
cLOR_{45}	0.304 (0.007)	0.295 (0.007)	0.300 (0.007)	0.291 (0.007)	0.280 (0.006)	6.2	2.9	9.3	18.2
μ_1	0.125 (0.003)	0.126 (0.003)	0.130 (0.003)	0.122 (0.003)	0.122 (0.003)	−0.2	−6.7	6.6	5.1
μ_2	0.533 (0.012)	0.489 (0.011)	0.478 (0.011)	0.345 (0.008)	0.367 (0.008)	18.7	24.4	138.2	110.3
μ_3	0.827 (0.018)	0.784 (0.018)	0.766 (0.017)	0.309 (0.007)	0.529 (0.012)	11.0	16.5	614.7	143.9
μ_4	0.202 (0.005)	0.200 (0.004)	0.202 (0.005)	0.199 (0.004)	0.194 (0.004)	1.7	−0.2	3.1	8.8
μ_5	0.217 (0.005)	0.213 (0.005)	0.217 (0.005)	0.216 (0.005)	0.210 (0.005)	3.8	−0.8	0.3	6.3
p_1	0.014 (0.000)	0.014 (0.000)	0.017 (0.000)	0.014 (0.000)	0.014 (0.000)	−0.1	−37.5	−5.7	−4.9
p_2	0.037 (0.001)	0.032 (0.001)	0.035 (0.001)	0.037 (0.001)	0.027 (0.001)	32.5	10.3	−3.3	85.2
p_3	0.070 (0.002)	0.067 (0.001)	0.067 (0.001)	0.049 (0.001)	0.051 (0.001)	10.1	10.4	103.2	85.4
p_4	0.021 (0.000)	0.021 (0.000)	0.025 (0.001)	0.020 (0.000)	0.019 (0.000)	2.5	−24.4	18.9	23.2
p_5	0.032 (0.001)	0.031 (0.001)	0.035 (0.001)	0.029 (0.001)	0.029 (0.001)	8.4	−14.1	22.2	27.2
δ_1	0.133 (0.003)	0.135 (0.003)	0.199 (0.004)	0.133 (0.003)	0.134 (0.003)	−3.7	−55.6	−0.9	−2.2
δ_2	0.632 (0.014)	0.450 (0.010)	0.472 (0.011)	0.579 (0.013)	0.408 (0.009)	97.2	79.5	19.1	139.8
δ_3	0.702 (0.016)	0.585 (0.013)	0.476 (0.011)	0.702 (0.016)	0.447 (0.010)	44.0	117.4	0.1	146.5
δ_4	0.234 (0.005)	0.211 (0.005)	0.315 (0.007)	0.227 (0.005)	0.204 (0.005)	23.4	−44.8	6.0	31.8
δ_5	0.308 (0.007)	0.271 (0.006)	0.420 (0.009)	0.286 (0.006)	0.249 (0.006)	29.3	−46.4	15.4	52.4
ρ	0.209 (0.005)	0.214 (0.005)	0.208 (0.005)	0.217 (0.005)	0.218 (0.005)	−4.3	1.0	−6.6	−7.8

TABLE C32

Simulation results comparing data generated under the UM-UV scenario with MAR missingness of treatment arms. The Empse and the Monte Carlo standard error of the posterior median are rounded to 3 decimal places for the five methods (NB, CPV, FBV, CPM, and DCP). The relative percent increase in precision when comparing four methods (CPV, FBV, CPM, and DCP) versus NB is also summarized.

Parameter	Empse (Monte Carlo standard error)					Relative % increase in precision			
	NB	CPV	FBV	CPM	DCP	CPV	FBV	CPM	DCP
cLOR_{12}	0.593 (0.013)	0.492 (0.011)	0.460 (0.010)	0.341 (0.008)	0.353 (0.008)	45.5	66.4	203.2	182.1
cLOR_{13}	0.779 (0.017)	0.742 (0.017)	0.710 (0.016)	0.322 (0.007)	0.498 (0.011)	10.2	20.1	486.0	144.7
cLOR_{14}	0.215 (0.005)	0.215 (0.005)	0.219 (0.005)	0.209 (0.005)	0.208 (0.005)	0.5	−3.7	5.9	7.1
cLOR_{15}	0.284 (0.006)	0.260 (0.006)	0.283 (0.006)	0.241 (0.005)	0.235 (0.005)	18.8	0.6	39.0	46.1
cLOR_{23}	0.949 (0.021)	0.864 (0.019)	0.822 (0.018)	0.449 (0.010)	0.584 (0.013)	20.4	33.3	346.9	164.2
cLOR_{24}	0.643 (0.014)	0.541 (0.012)	0.511 (0.011)	0.385 (0.009)	0.395 (0.009)	41.5	58.3	179.6	164.7
cLOR_{25}	0.714 (0.016)	0.582 (0.013)	0.558 (0.012)	0.408 (0.009)	0.411 (0.009)	50.7	63.7	205.6	201.6
cLOR_{34}	0.818 (0.018)	0.782 (0.018)	0.753 (0.017)	0.362 (0.008)	0.533 (0.012)	9.4	18.0	410.7	135.7
cLOR_{35}	0.840 (0.019)	0.792 (0.018)	0.766 (0.017)	0.378 (0.008)	0.538 (0.012)	12.5	20.3	394.8	143.9
cLOR_{45}	0.317 (0.007)	0.302 (0.007)	0.320 (0.007)	0.283 (0.006)	0.277 (0.006)	10.5	−1.5	25.9	31.1
μ_1	0.126 (0.003)	0.126 (0.003)	0.130 (0.003)	0.123 (0.003)	0.123 (0.003)	−0.2	−6.7	4.9	4.1
μ_2	0.608 (0.014)	0.507 (0.011)	0.476 (0.011)	0.341 (0.008)	0.358 (0.008)	44.1	63.2	218.5	188.6
μ_3	0.789 (0.018)	0.751 (0.017)	0.719 (0.016)	0.305 (0.007)	0.498 (0.011)	10.3	20.4	570.6	150.8
μ_4	0.200 (0.004)	0.200 (0.004)	0.204 (0.005)	0.195 (0.004)	0.192 (0.004)	0.2	−3.2	5.2	8.6
μ_5	0.269 (0.006)	0.242 (0.005)	0.263 (0.006)	0.225 (0.005)	0.217 (0.005)	23.2	4.3	43.0	53.0
p_1	0.014 (0.000)	0.014 (0.000)	0.017 (0.000)	0.014 (0.000)	0.014 (0.000)	−0.5	−37.9	−8.1	−6.5
p_2	0.030 (0.001)	0.031 (0.001)	0.034 (0.001)	0.031 (0.001)	0.025 (0.001)	−5.0	−21.7	−6.3	38.3
p_3	0.065 (0.001)	0.062 (0.001)	0.062 (0.001)	0.048 (0.001)	0.048 (0.001)	11.0	11.8	84.0	89.7
p_4	0.024 (0.001)	0.022 (0.000)	0.027 (0.001)	0.021 (0.000)	0.020 (0.000)	19.5	−20.0	31.2	46.8
p_5	0.050 (0.001)	0.041 (0.001)	0.051 (0.001)	0.035 (0.001)	0.032 (0.001)	48.3	−3.3	109.9	142.4
δ_1	0.130 (0.003)	0.134 (0.003)	0.199 (0.004)	0.134 (0.003)	0.138 (0.003)	−6.6	−57.5	−5.9	−11.1
δ_2	0.622 (0.014)	0.425 (0.010)	0.431 (0.010)	0.510 (0.011)	0.374 (0.008)	114.2	108.8	48.9	177.2
δ_3	0.695 (0.016)	0.605 (0.014)	0.450 (0.010)	0.687 (0.015)	0.444 (0.010)	31.8	138.7	2.3	144.4
δ_4	0.275 (0.006)	0.228 (0.005)	0.332 (0.007)	0.235 (0.005)	0.208 (0.005)	45.2	−31.6	36.0	74.2
δ_5	0.326 (0.007)	0.273 (0.006)	0.429 (0.010)	0.260 (0.006)	0.235 (0.005)	43.0	−42.1	57.4	92.2
ρ	0.186 (0.004)	0.185 (0.004)	0.200 (0.004)	0.206 (0.005)	0.186 (0.004)	2.0	−13.1	−18.4	0.9

C.5. Effective sample size (ESS). Tables C33–C40 provide median and minimum effective sample size among 1000 simulations for the five methods (NB, CPV, FBV, CPM, and DCP) using different data-generating mechanisms (EM-EV, UM-EV, EM-UV, and UM-UV) and missingness structures (MCAR and MAR).

TABLE C33

Simulation results comparing data generated under the EM-EV scenario with MCAR missingness of treatment arms. The median and minimum effective sample size of the posterior median among 1000 simulations are summarized for the five methods (NB, CPV, FBV, CPM, and DCP)

Parameter	Median ESS (minimum ESS)				
	NB	CPV	FBV	CPM	DCP
$cLOR_{12}$	21878 (3691)	17633 (3870)	28799 (4767)	17476 (3732)	14245 (3210)
$cLOR_{13}$	12591 (1785)	5470 (968)	13924 (1878)	11545 (1977)	8287 (1588)
$cLOR_{14}$	10571 (1789)	11413 (2770)	17800 (3787)	15638 (3411)	11411 (3009)
$cLOR_{15}$	7532 (824)	7737 (1487)	12235 (2797)	11514 (1537)	9155 (2295)
$cLOR_{23}$	12951 (2038)	6348 (975)	14981 (2122)	12361 (2436)	9154 (1904)
$cLOR_{24}$	15451 (2341)	14814 (3232)	24316 (4829)	15998 (3951)	12821 (3315)
$cLOR_{25}$	11480 (2148)	12158 (2618)	20089 (4248)	14207 (3947)	11741 (2742)
$cLOR_{34}$	12035 (1865)	5508 (972)	13697 (1884)	11337 (2111)	8080 (1608)
$cLOR_{35}$	10975 (1809)	5402 (971)	13208 (1781)	11032 (2274)	7978 (1672)
$cLOR_{45}$	8078 (1038)	7360 (1575)	11763 (2860)	11381 (2721)	8186 (2448)
μ_1	52802 (10427)	41960 (5185)	55832 (6932)	39616 (8143)	37326 (4286)
μ_2	22178 (3720)	17922 (3351)	28903 (4762)	17282 (3770)	14137 (3024)
μ_3	12780 (1769)	5521 (973)	13994 (1834)	11507 (2021)	8222 (1583)
μ_4	9879 (1463)	9601 (1914)	15358 (3272)	13859 (3067)	9554 (2101)
μ_5	7490 (782)	6874 (1406)	11000 (2645)	10681 (1482)	7877 (1755)
p_1	55846 (10475)	45022 (5128)	58027 (6949)	43286 (7904)	40457 (4104)
p_2	22749 (3558)	16500 (2522)	32356 (3101)	22279 (2714)	15820 (3016)
p_3	13032 (2675)	6800 (802)	15320 (1856)	13097 (2457)	7571 (1910)
p_4	8432 (1356)	9218 (1921)	15824 (3030)	10011 (2499)	9392 (1860)
p_5	8192 (821)	7129 (1212)	11612 (2454)	8638 (1273)	7741 (1489)
δ_1	37712 (6570)	19887 (2560)	41686 (5970)	40041 (7140)	19620 (3100)
δ_2	16874 (2829)	9665 (2254)	24341 (3113)	17928 (2996)	9960 (2426)
δ_3	10743 (1864)	3068 (222)	15550 (2073)	11377 (2137)	4755 (614)
δ_4	5128 (1050)	4540 (1521)	11434 (3154)	7059 (1633)	4865 (1430)
δ_5	4808 (675)	3095 (897)	6935 (1652)	5227 (857)	3889 (1112)
ρ	10232 (4033)	8645 (3817)	11817 (4467)	11015 (4099)	9069 (3556)

TABLE C34

Simulation results comparing data generated under the EM-EV scenario with MAR missingness of treatment arms. The median and minimum effective sample size of the posterior median among 1000 simulations are summarized for the five methods (NB, CPV, FBV, CPM, and DCP)

Parameter	Median ESS (minimum ESS)				
	NB	CPV	FBV	CPM	DCP
cLOR_{12}	7230 (1444)	7462 (1740)	11496 (2931)	8862 (1186)	7786 (1167)
cLOR_{13}	12244 (4228)	5812 (552)	14621 (3484)	11994 (3161)	8832 (1845)
cLOR_{14}	7628 (1274)	9736 (3027)	14963 (4664)	13638 (2546)	10879 (3270)
cLOR_{15}	3343 (435)	4082 (909)	6283 (1262)	6924 (1234)	6239 (1119)
cLOR_{23}	10173 (3509)	5800 (555)	12921 (4241)	10324 (2052)	8091 (2017)
cLOR_{24}	6514 (1540)	7066 (1807)	10786 (3013)	8599 (1345)	7489 (1371)
cLOR_{25}	4333 (818)	5414 (1399)	8326 (2109)	7216 (1259)	6646 (1227)
cLOR_{34}	11124 (3676)	5761 (556)	14255 (3551)	11718 (3038)	8616 (1726)
cLOR_{35}	7297 (1220)	5145 (552)	12027 (2157)	9942 (2285)	7979 (1971)
cLOR_{45}	3847 (514)	4434 (925)	6907 (1633)	7852 (1365)	6439 (1652)
μ_1	37479 (9248)	41466 (3817)	49036 (8202)	33985 (8934)	37846 (4464)
μ_2	7434 (1434)	7557 (1747)	11549 (2991)	8899 (1189)	7789 (1203)
μ_3	12389 (4331)	5836 (552)	14693 (3444)	11894 (3203)	8838 (1873)
μ_4	7364 (1180)	8207 (2264)	13045 (3557)	12172 (2562)	8918 (2315)
μ_5	3342 (438)	3738 (798)	5870 (1272)	6587 (1151)	5501 (1008)
p_1	38647 (9198)	44095 (3906)	51602 (8219)	36794 (8978)	40567 (4795)
p_2	18073 (4851)	14697 (4120)	21741 (6618)	20417 (3474)	15041 (3086)
p_3	12655 (3041)	7224 (1358)	16368 (3446)	14011 (3145)	8036 (1818)
p_4	4725 (708)	6457 (1278)	11212 (2746)	7096 (1376)	7458 (2128)
p_5	3334 (476)	3262 (683)	5286 (1241)	5260 (882)	4665 (860)
δ_1	30123 (6020)	19888 (2376)	38646 (6331)	35501 (5416)	19896 (3011)
δ_2	9562 (1438)	7943 (1674)	17618 (3289)	13888 (1315)	8732 (1108)
δ_3	10333 (1943)	2950 (302)	15549 (1969)	11117 (2191)	4559 (928)
δ_4	3895 (686)	3837 (989)	9315 (2549)	5682 (1091)	4360 (1510)
δ_5	3579 (493)	2566 (783)	5285 (1258)	4947 (793)	3581 (762)
ρ	6620 (2854)	6564 (2665)	8539 (3545)	8265 (3325)	7419 (3169)

TABLE C35

Simulation results comparing data generated under the UM-EV scenario with MCAR missingness of treatment arms. The median and minimum effective sample size of the posterior median among 1000 simulations are summarized for the five methods (NB, CPV, FBV, CPM, and DCP)

Parameter	Median ESS (minimum ESS)				
	NB	CPV	FBV	CPM	DCP
cLOR_{12}	21822 (3841)	17764 (3330)	29165 (6122)	19273 (4470)	16234 (3472)
cLOR_{13}	12570 (1472)	5591 (562)	13677 (1089)	12199 (1925)	9159 (1901)
cLOR_{14}	10647 (1741)	11912 (2995)	18271 (4370)	14567 (2938)	11320 (2892)
cLOR_{15}	7598 (903)	7840 (2086)	12583 (3032)	11339 (1769)	9183 (2043)
cLOR_{23}	13016 (1691)	6313 (566)	14991 (1362)	13006 (2670)	10175 (2328)
cLOR_{24}	15736 (2281)	14965 (3646)	25073 (5950)	15909 (4289)	13655 (3741)
cLOR_{25}	11348 (2034)	12188 (2701)	20122 (4303)	14031 (3779)	12186 (3003)
cLOR_{34}	11869 (1595)	5598 (561)	13569 (1181)	11681 (2267)	8932 (2018)
cLOR_{35}	11096 (1553)	5435 (562)	13094 (1152)	11026 (2131)	8728 (2035)
cLOR_{45}	8087 (1560)	7605 (1761)	12331 (2988)	10899 (2543)	8451 (1959)
μ_1	52597 (9967)	41534 (3170)	53903 (6047)	45710 (10439)	38877 (3692)
μ_2	22264 (3890)	18220 (3391)	29638 (6084)	18699 (3884)	16194 (3464)
μ_3	12699 (1498)	5601 (563)	13802 (1086)	12063 (1914)	9157 (1841)
μ_4	9990 (1762)	10120 (2113)	16511 (3240)	12668 (2476)	9503 (1903)
μ_5	7510 (841)	7092 (1740)	11611 (2701)	10321 (1596)	8121 (1914)
p_1	56232 (9854)	44737 (3204)	56215 (6321)	48040 (10702)	40167 (3718)
p_2	23100 (2712)	17071 (1902)	33303 (3999)	20337 (2852)	15761 (3254)
p_3	13156 (2655)	6917 (748)	15518 (1856)	11835 (2505)	7956 (1443)
p_4	8592 (1437)	9705 (1920)	17073 (3187)	12401 (2445)	10510 (1926)
p_5	8089 (832)	7230 (1428)	12310 (2421)	11697 (1320)	8768 (1841)
δ_1	37933 (6519)	20154 (2984)	40270 (6520)	40818 (7190)	20499 (3150)
δ_2	17169 (2390)	9985 (1875)	26827 (3972)	18640 (3145)	11085 (2666)
δ_3	10540 (1684)	3107 (292)	16226 (2185)	11473 (1695)	5087 (1150)
δ_4	5100 (796)	4658 (1589)	11431 (2738)	7260 (1348)	5327 (1421)
δ_5	4766 (695)	3174 (948)	7133 (1568)	6009 (641)	4227 (1227)
ρ	10216 (4133)	8649 (3697)	11728 (4893)	11040 (3923)	9320 (3137)

TABLE C36

Simulation results comparing data generated under the UM-EV scenario with MAR missingness of treatment arms. The median and minimum effective sample size of the posterior median among 1000 simulations are summarized for the five methods (NB, CPV, FBV, CPM, and DCP)

Parameter	Median ESS (minimum ESS)				
	NB	CPV	FBV	CPM	DCP
$cLOR_{12}$	7184 (1483)	7793 (2135)	12135 (3161)	11003 (1673)	10511 (2335)
$cLOR_{13}$	12104 (4328)	5932 (638)	14625 (2929)	14003 (3868)	10519 (2729)
$cLOR_{14}$	7551 (1341)	10007 (2934)	15139 (3923)	14468 (2647)	12029 (3607)
$cLOR_{15}$	3303 (364)	4130 (593)	6248 (1481)	8269 (1518)	7636 (1661)
$cLOR_{23}$	10116 (3454)	5896 (685)	13158 (3654)	12676 (2758)	10255 (2605)
$cLOR_{24}$	6501 (1767)	7341 (2082)	11356 (3523)	9988 (2096)	9466 (2182)
$cLOR_{25}$	4307 (603)	5452 (1319)	8396 (2378)	8107 (1716)	7984 (2016)
$cLOR_{34}$	10999 (3702)	5912 (641)	14189 (3199)	13240 (3833)	10109 (2733)
$cLOR_{35}$	7204 (1336)	5212 (676)	11591 (2157)	11165 (2831)	9570 (2524)
$cLOR_{45}$	3828 (444)	4577 (726)	7098 (1551)	9572 (1587)	8015 (1896)
μ_1	38069 (10672)	39785 (4038)	47977 (8082)	46802 (9813)	46032 (3628)
μ_2	7450 (1513)	7905 (2166)	12218 (2941)	10858 (1680)	10343 (2176)
μ_3	12231 (4211)	5959 (645)	14693 (2807)	13894 (3891)	10525 (2633)
μ_4	7389 (1136)	8664 (2305)	13636 (3284)	12205 (2409)	9814 (2848)
μ_5	3314 (323)	3850 (611)	5932 (1372)	7688 (1449)	6646 (1517)
p_1	39664 (11151)	42306 (4075)	49109 (8142)	48335 (9938)	47334 (3850)
p_2	18354 (3653)	14830 (3758)	21494 (5787)	19949 (3609)	15848 (2856)
p_3	12673 (2834)	7261 (1521)	16249 (1985)	14225 (3104)	8889 (1173)
p_4	4719 (860)	6767 (1801)	11616 (2755)	9635 (1698)	9180 (2235)
p_5	3338 (359)	3326 (666)	5431 (1239)	6828 (1179)	5767 (1252)
δ_1	30208 (6771)	20878 (2960)	37779 (5957)	40959 (6685)	23357 (2981)
δ_2	9583 (1473)	8300 (1831)	19720 (3138)	16929 (1774)	11202 (2131)
δ_3	10163 (2123)	2973 (458)	15397 (2238)	12204 (2325)	5364 (546)
δ_4	3803 (702)	3995 (1137)	9325 (2684)	6608 (1291)	5136 (1597)
δ_5	3519 (272)	2647 (695)	5412 (1233)	5833 (1085)	4098 (1175)
ρ	6665 (3136)	6625 (3246)	8570 (3768)	7989 (3191)	7559 (2775)

TABLE C37

Simulation results comparing data generated under the EM-UV scenario with MCAR missingness of treatment arms. The median and minimum effective sample size of the posterior median among 1000 simulations are summarized for the five methods (NB, CPV, FBV, CPM, and DCP)

Parameter	Median ESS (minimum ESS)				
	NB	CPV	FBV	CPM	DCP
cLOR_{12}	22108 (3726)	18004 (2921)	41494 (4251)	18856 (4715)	15041 (2615)
cLOR_{13}	12496 (1658)	5169 (701)	16423 (1829)	13697 (2905)	8161 (1408)
cLOR_{14}	10621 (1842)	16031 (2312)	42827 (8196)	13150 (3141)	14668 (3731)
cLOR_{15}	7501 (848)	9401 (1689)	26946 (6107)	9361 (1535)	10177 (2423)
cLOR_{23}	12864 (1879)	6523 (872)	19737 (2072)	14438 (3503)	9625 (1980)
cLOR_{24}	15673 (3030)	15568 (3650)	34034 (6554)	15200 (3693)	13241 (4012)
cLOR_{25}	11624 (1922)	11645 (2151)	27697 (5947)	12308 (2819)	11211 (3091)
cLOR_{34}	12041 (1692)	5572 (873)	17330 (1850)	12780 (2821)	8557 (1918)
cLOR_{35}	11011 (1714)	5399 (873)	16991 (2057)	11338 (3108)	8053 (1894)
cLOR_{45}	7925 (1050)	9783 (2039)	25491 (5597)	9204 (2804)	9936 (2922)
μ_1	52706 (9712)	52449 (4684)	79115 (10705)	38251 (9983)	39324 (5256)
μ_2	22268 (3802)	18164 (2256)	37347 (3369)	18285 (4344)	14469 (2708)
μ_3	12621 (1661)	5007 (629)	14834 (1359)	13610 (2913)	7801 (1315)
μ_4	9928 (1712)	14893 (2236)	35122 (5122)	11384 (3002)	12883 (2718)
μ_5	7405 (906)	8945 (1706)	23190 (5370)	8654 (1481)	9245 (2239)
p_1	55848 (9749)	54641 (4537)	81089 (12878)	41565 (10841)	42663 (5298)
p_2	22832 (3118)	17184 (2819)	40517 (5023)	22810 (2684)	16590 (3065)
p_3	13175 (2879)	5538 (787)	16003 (1759)	14179 (3200)	6631 (1362)
p_4	8608 (1593)	13473 (2143)	35539 (5222)	9423 (1815)	12388 (2229)
p_5	8059 (960)	9822 (1789)	24903 (3914)	8353 (1317)	9323 (2069)
δ_1	38259 (6639)	33303 (3609)	107055 (26740)	39189 (7353)	32834 (4078)
δ_2	16908 (2995)	9444 (2037)	27368 (4527)	17886 (3019)	9983 (2413)
δ_3	10521 (1855)	2614 (440)	12393 (1246)	11272 (2743)	3992 (1038)
δ_4	5153 (1071)	7060 (1721)	29192 (5109)	6556 (1129)	7823 (1747)
δ_5	4729 (596)	4414 (1224)	17290 (3597)	5172 (1053)	5564 (1384)
ρ	10449 (4043)	9738 (3115)	19333 (4575)	10994 (4449)	10340 (3554)

TABLE C38

Simulation results comparing data generated under the EM-UV scenario with MAR missingness of treatment arms. The median and minimum effective sample size of the posterior median among 1000 simulations are summarized for the five methods (NB, CPV, FBV, CPM, and DCP)

Parameter	Median ESS (minimum ESS)				
	NB	CPV	FBV	CPM	DCP
$cLOR_{12}$	7168 (1450)	7593 (1764)	21094 (2760)	9274 (1524)	8280 (1556)
$cLOR_{13}$	12356 (4055)	5346 (683)	18242 (1449)	14281 (4066)	8535 (1958)
$cLOR_{14}$	7527 (1674)	13522 (1910)	41732 (9694)	10782 (1827)	13099 (2470)
$cLOR_{15}$	3324 (425)	4854 (1061)	16794 (2411)	5557 (1146)	6607 (1020)
$cLOR_{23}$	10098 (3322)	5658 (683)	17585 (3131)	11184 (2798)	8187 (2155)
$cLOR_{24}$	6548 (1846)	7406 (1843)	20155 (3569)	8269 (2064)	8075 (2080)
$cLOR_{25}$	4327 (753)	5222 (1400)	14525 (2549)	6207 (1509)	6391 (1628)
$cLOR_{34}$	11222 (3342)	5723 (689)	18673 (1710)	12458 (3058)	8680 (2030)
$cLOR_{35}$	7122 (1491)	4518 (690)	15346 (1905)	8630 (1798)	6959 (1487)
$cLOR_{45}$	3720 (502)	5704 (1149)	18598 (3168)	6338 (1103)	7388 (1127)
μ_1	37854 (10409)	47340 (5804)	75265 (10195)	30478 (9635)	36996 (6101)
μ_2	7398 (1397)	7689 (1836)	19978 (2647)	9329 (1535)	8157 (1430)
μ_3	12408 (4131)	5242 (684)	16483 (1354)	14253 (4159)	8204 (1827)
μ_4	7301 (1743)	12493 (1938)	32109 (4926)	9589 (1840)	11587 (2448)
μ_5	3319 (378)	4694 (989)	14872 (2125)	5403 (1027)	6165 (989)
p_1	39778 (10916)	49383 (5752)	77725 (10955)	32435 (10346)	39215 (6211)
p_2	18223 (4200)	16443 (3237)	44890 (5664)	21253 (4180)	17015 (2607)
p_3	12774 (2609)	5842 (881)	17537 (2225)	14592 (2519)	6841 (1055)
p_4	4754 (935)	8947 (1261)	27236 (5077)	6522 (973)	9341 (1718)
p_5	3342 (408)	4489 (920)	13868 (2087)	4734 (786)	5458 (917)
δ_1	29286 (6002)	32479 (4338)	101346 (26906)	33675 (8045)	33866 (3537)
δ_2	9757 (1236)	7277 (1447)	17022 (2154)	14157 (1624)	8699 (1495)
δ_3	10101 (2120)	2404 (517)	12707 (2171)	10976 (1858)	3719 (707)
δ_4	3782 (661)	5986 (1326)	24659 (4466)	5173 (780)	6810 (1266)
δ_5	3512 (364)	3583 (789)	13803 (1899)	4820 (695)	5027 (1026)
ρ	6614 (2906)	7171 (2776)	15109 (2626)	7734 (3393)	7938 (3196)

TABLE C39

Simulation results comparing data generated under the UM-UV scenario with MCAR missingness of treatment arms. The median and minimum effective sample size of the posterior median among 1000 simulations are summarized for the five methods (NB, CPV, FBV, CPM, and DCP)

Parameter	Median ESS (minimum ESS)				
	NB	CPV	FBV	CPM	DCP
cLOR_{12}	22133 (4273)	17479 (3128)	42791 (6732)	21089 (4765)	16733 (3923)
cLOR_{13}	12522 (1486)	4881 (652)	16397 (1436)	14779 (2915)	8855 (1275)
cLOR_{14}	10646 (1605)	15496 (3323)	43531 (6062)	12570 (1634)	14079 (2859)
cLOR_{15}	7460 (648)	9217 (1020)	27194 (6517)	8939 (1648)	9793 (1463)
cLOR_{23}	13004 (1811)	6290 (649)	19137 (1773)	15680 (3672)	10177 (1492)
cLOR_{24}	15767 (2583)	14347 (2389)	34490 (5723)	15392 (3047)	13810 (3381)
cLOR_{25}	11536 (2229)	11097 (1775)	27392 (4045)	12122 (2362)	11149 (2538)
cLOR_{34}	11949 (1519)	5403 (653)	17026 (1391)	13148 (3119)	8883 (1233)
cLOR_{35}	11037 (1578)	5330 (652)	17074 (1271)	11460 (2424)	8230 (1283)
cLOR_{45}	8037 (1538)	9549 (1340)	25816 (4050)	8970 (1727)	9662 (2047)
μ_1	51542 (8698)	52523 (6338)	81843 (13005)	41676 (8985)	43379 (5547)
μ_2	22424 (4293)	17395 (2882)	37868 (4707)	20396 (4379)	16163 (3809)
μ_3	12599 (1514)	4711 (653)	14330 (1072)	14533 (2921)	8337 (1246)
μ_4	9995 (1632)	14108 (3282)	34523 (4881)	11009 (1521)	12223 (2589)
μ_5	7429 (664)	8739 (1048)	22868 (3139)	8356 (1295)	8919 (1381)
p_1	54926 (8785)	55348 (6084)	83859 (14340)	43200 (9132)	44256 (5819)
p_2	22731 (2917)	17532 (2627)	40409 (5756)	20545 (2490)	15559 (2846)
p_3	12992 (2354)	5437 (552)	15149 (1544)	12883 (3449)	6787 (804)
p_4	8637 (1675)	13143 (2441)	35247 (3799)	11168 (1950)	12951 (3125)
p_5	8164 (695)	9494 (975)	25278 (2782)	9923 (1466)	9992 (1267)
δ_1	37672 (6689)	33075 (3072)	110671 (42655)	38931 (7705)	34106 (3922)
δ_2	16990 (2768)	9534 (2130)	27623 (5109)	18566 (2545)	10511 (2376)
δ_3	10559 (1676)	2566 (360)	12493 (2197)	11674 (2259)	4113 (752)
δ_4	5145 (838)	6804 (1568)	28382 (3356)	6462 (1160)	7537 (1780)
δ_5	4811 (504)	4224 (797)	16411 (2434)	5341 (659)	5312 (960)
ρ	10113 (3811)	9752 (3725)	19902 (4484)	10922 (4196)	10300 (3936)

TABLE C40

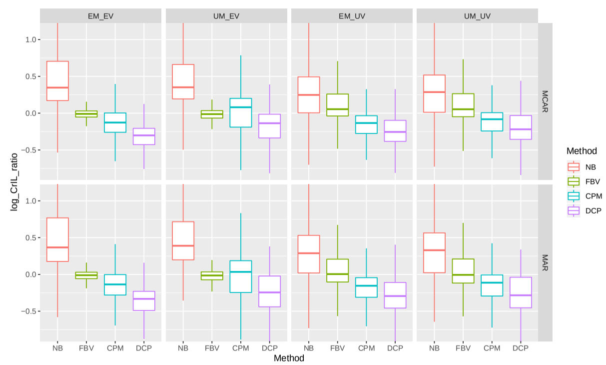
Simulation results comparing data generated under the UM-UV scenario with MAR missingness of treatment arms. The median and minimum effective sample size of the posterior median among 1000 simulations are summarized for the five methods (NB, CPV, FBV, CPM, and DCP)

Parameter	Median ESS (minimum ESS)				
	NB	CPV	FBV	CPM	DCP
cLOR_{12}	7153 (1573)	7739 (1956)	25010 (4837)	11414 (1996)	11123 (2691)
cLOR_{13}	12437 (3803)	5356 (824)	18402 (2466)	16939 (5016)	10203 (1966)
cLOR_{14}	7608 (1327)	13327 (2449)	43731 (6768)	11871 (1169)	14623 (3162)
cLOR_{15}	3348 (371)	4885 (702)	18660 (1400)	6595 (1131)	7933 (1364)
cLOR_{23}	10142 (3453)	5701 (854)	18149 (3008)	13929 (3682)	10086 (2819)
cLOR_{24}	6502 (1691)	7634 (1892)	23441 (4816)	9681 (2112)	9905 (2607)
cLOR_{25}	4377 (934)	5235 (907)	16651 (2579)	7204 (1720)	7641 (2121)
cLOR_{34}	11319 (3295)	5683 (835)	18553 (2354)	14088 (2563)	10003 (2415)
cLOR_{35}	7304 (1256)	4476 (776)	15978 (2089)	9983 (2300)	8029 (1883)
cLOR_{45}	3838 (364)	5604 (932)	20099 (2099)	7551 (1328)	8764 (1485)
μ_1	37225 (7605)	48655 (5202)	83019 (12321)	39008 (7525)	50919 (4735)
μ_2	7359 (1393)	7855 (1954)	23145 (3311)	11604 (1599)	10603 (2248)
μ_3	12516 (3924)	5173 (835)	16551 (2312)	16771 (5037)	9449 (1890)
μ_4	7249 (1297)	12138 (2490)	33620 (5572)	10149 (1108)	12266 (3212)
μ_5	3336 (344)	4650 (630)	15713 (1277)	6248 (1105)	7290 (1163)
p_1	39071 (7664)	51242 (5170)	85148 (13409)	37893 (7935)	51411 (4767)
p_2	18270 (3877)	16673 (3403)	47924 (5602)	21240 (3616)	17518 (3198)
p_3	12841 (2748)	5614 (1111)	17638 (2186)	14812 (2655)	7333 (1247)
p_4	4638 (798)	8678 (2207)	28960 (4399)	8167 (1280)	10982 (2222)
p_5	3362 (488)	4535 (574)	14696 (1268)	5824 (1102)	6651 (976)
δ_1	29669 (6627)	33184 (3950)	107552 (37133)	38075 (7074)	39213 (2606)
δ_2	9609 (1178)	7458 (1710)	18453 (3328)	17101 (1769)	10863 (1969)
δ_3	10166 (1995)	2496 (408)	12800 (2359)	12001 (2189)	4201 (1019)
δ_4	3813 (646)	5740 (1812)	23597 (4752)	5861 (920)	7278 (1951)
δ_5	3545 (433)	3638 (521)	14149 (1148)	5423 (827)	5497 (977)
ρ	6612 (2864)	7189 (3029)	16832 (3542)	7770 (3004)	8260 (2514)

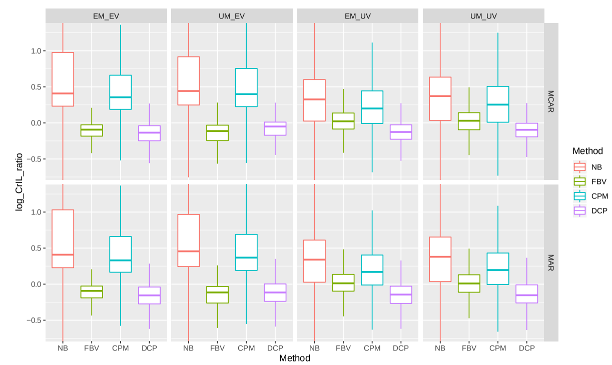
APPENDIX D: ADDITIONAL SIMULATION RESULTS

Figure D1 and Table D1 present additional simulation results.

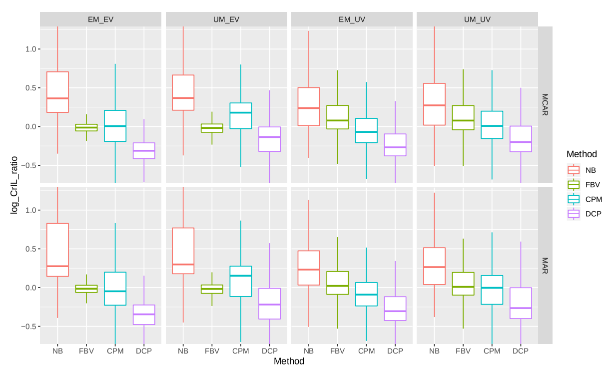
FIG D1. *Simulation results comparing data generated under the four different scenarios (EM-EV, UM-EV, EM-UV, and UM-UV) with the two different missingness settings (MCAR and MAR). For each estimand, the log of the ratio of 95% credible interval lengths (CrIL) of each of the four methods (NB, FBV, CPM, and DCP) versus the CPV method are presented as box plots with whiskers showing the 1st and 99th percentiles (outliers not displayed). Subplots show results for: (a) fixed effects of log-odds* μ_t*; (b) standard deviations of log-odds* σ_t*; (c) absolute risks* p_t*; and (d) log odds ratios* LOR_{ij}.



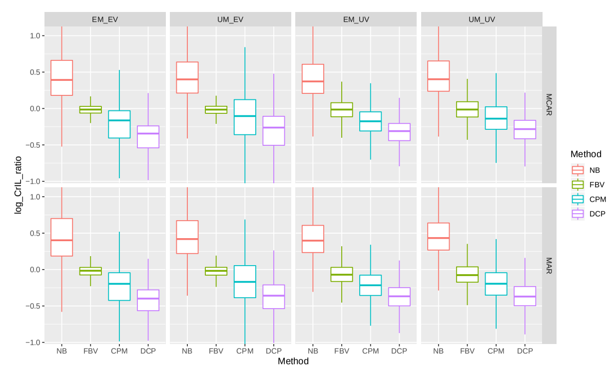
(a) fixed effects μ_t



(b) standard deviations σ_t



(c) absolute risks p_t



(d) log odds ratios LOR_{ij}

TABLE D1

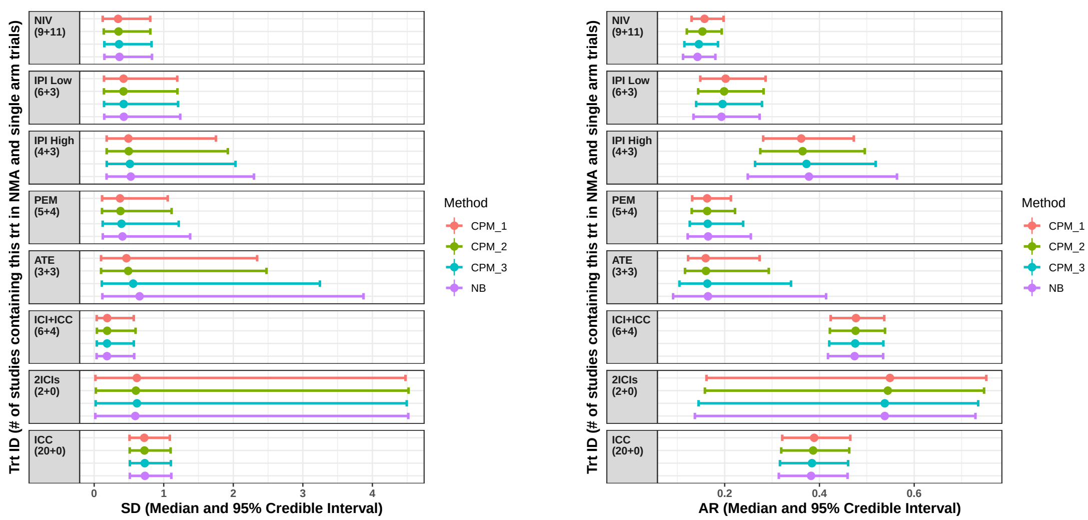
Simulation results comparing data generated under four different scenarios (EM-EV, UM-EV, EM-UV, and UM-UV) with MCAR missingness of treatment arms. The estimated bias and mean squared error of the posterior median and the estimated coverage probability of the 95% credible interval are summarized for the five methods (NB, CPV, FBV, CPM, and DCP). For example, the value in the column of bias and in the row of LOR_{ij} is calculated as $\sum_{i \neq j} |bias(LOR_{ij})|$; the value in the column of coverage probability and in the row of LOR_{ij} is calculated as $\sum_{i \neq j}(0.95 - CP(LOR_{ij}))_+$.

Parameter	Truth	Bias					Mean squared error					Coverage probability				
		NB	CPV	FBV	CPM	DCP	NB	CPV	FBV	CPM	DCP	NB	CPV	FBV	CPM	DCP
Scenario EM-EV																
LOR_{ij}	.	0.57	0.49	0.53	0.34	0.39	4.27	4.04	3.99	1.99	2.11	0.00	0.00	0.00	0.00	0.00
μ_t	.	0.23	0.17	0.19	0.15	0.16	1.09	1.04	1.02	0.50	0.54	0.00	0.01	0.02	0.00	0.00
p_t	.	0.08	0.03	0.04	0.07	0.02	0.01	0.01	0.01	0.01	0.00	0.00	0.02	0.02	0.00	0.00
δ_t	.	1.52	0.46	0.65	1.06	0.32	1.81	0.84	0.89	1.27	0.59	0.07	0.04	0.09	0.03	0.05
LOR_{25}	−1.50	−0.08	−0.05	−0.06	−0.06	−0.06	0.35	0.32	0.32	0.21	0.22	1.00	0.98	0.98	0.99	0.97
p_5	0.19	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.97	0.98	1.00	0.98
δ_5	0.30	0.26	−0.01	0.01	0.16	−0.04	0.16	0.03	0.03	0.09	0.03	0.93	0.98	0.98	0.95	0.99
Scenario UM-EV																
LOR_{ij}	.	0.57	0.48	0.53	2.02	1.38	4.27	3.98	3.92	2.51	2.33	0.00	0.00	0.00	0.00	0.02
μ_t	.	0.23	0.17	0.19	0.63	0.44	1.09	1.02	1.01	0.62	0.59	0.00	0.02	0.04	0.00	0.06
p_t	.	0.08	0.03	0.04	0.10	0.06	0.01	0.01	0.01	0.01	0.01	0.00	0.03	0.04	0.05	0.07
δ_t	.	1.52	0.39	0.58	1.23	0.25	1.81	0.75	0.76	1.40	0.54	0.07	0.07	0.16	0.05	0.07
LOR_{25}	−1.50	−0.08	−0.05	−0.06	0.25	0.17	0.35	0.31	0.31	0.27	0.24	1.00	0.98	0.98	0.98	0.96
p_5	0.19	0.01	0.00	0.00	−0.00	−0.01	0.00	0.00	0.00	0.00	0.00	1.00	0.98	0.98	1.00	0.97
δ_5	0.30	0.26	0.00	0.03	0.24	0.02	0.16	0.03	0.03	0.13	0.03	0.93	0.97	0.97	0.93	0.97
Scenario EM-UV																
LOR_{ij}	.	0.57	0.31	0.24	0.47	0.38	4.26	3.78	3.64	1.35	1.96	0.00	0.05	0.09	0.00	0.00
μ_t	.	0.23	0.13	0.15	0.19	0.16	1.09	0.97	0.94	0.35	0.51	0.00	0.05	0.07	0.00	0.00
p_t	.	0.08	0.03	0.08	0.06	0.02	0.01	0.01	0.01	0.01	0.00	0.00	0.05	0.09	0.00	0.00
δ_t	.	1.52	0.65	1.87	1.07	0.69	1.81	0.85	1.70	1.24	0.67	0.07	0.03	1.87	0.04	0.02
LOR_{25}	−1.50	−0.08	−0.03	−0.01	−0.09	−0.08	0.35	0.30	0.30	0.19	0.20	1.00	0.99	0.99	0.99	0.99
p_5	0.19	0.01	0.01	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.00	1.00	0.99	0.99	0.99	0.98
δ_5	0.30	0.26	0.21	0.47	0.21	0.18	0.16	0.11	0.35	0.12	0.09	0.93	0.94	0.54	0.94	0.94
Scenario UM-UV																
LOR_{ij}	.	0.57	0.29	0.27	2.01	1.30	4.27	3.73	3.57	1.76	2.17	0.00	0.08	0.12	0.00	0.06
μ_t	.	0.23	0.11	0.14	0.64	0.43	1.09	0.96	0.92	0.45	0.56	0.00	0.07	0.10	0.00	0.06
p_t	.	0.08	0.03	0.08	0.11	0.03	0.01	0.01	0.01	0.01	0.01	0.00	0.07	0.11	0.09	0.05
δ_t	.	1.52	0.71	1.86	1.15	0.79	1.81	0.82	1.65	1.35	0.66	0.06	0.04	1.75	0.05	0.04
LOR_{25}	−1.50	−0.08	−0.01	0.01	0.22	0.17	0.35	0.29	0.28	0.21	0.21	1.00	0.98	0.98	0.99	0.97
p_5	0.19	0.01	0.01	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.99	0.99	1.00	0.99
δ_5	0.30	0.26	0.21	0.48	0.23	0.20	0.16	0.12	0.41	0.14	0.10	0.93	0.93	0.58	0.93	0.93

APPENDIX E: SENSITIVITY ANALYSES

This appendix presents sensitivity analyses testing how much importance should be placed on the mean and variance information from single-arm trials. We first focused on choice of p^{m} for the CPM method. For the CPM1, CPM2, and CPM3 methods mentioned in Figure E1, we selected $p^{\mathrm{m}} = 0.9$, 0.5, and 0.1 respectively. As we can see, both standard deviations and absolute risks were quite sensitive to the choice of p^{m}, especially for the treatments ATE and IPI high.

FIG E1. *Results for the dataset about safety of ICIs in cancer treatment: forest plot of posterior estimates of standard deviations σ_t and absolute risks p_t (posterior median with 95% credible interval). Different colors indicate different methods (CPM1, CPM2, CPM3, and NB). The y-axis represents regimen abbreviations, with the number of RCTs (B_t) and single-arm trials (B_t^s) in parentheses.*

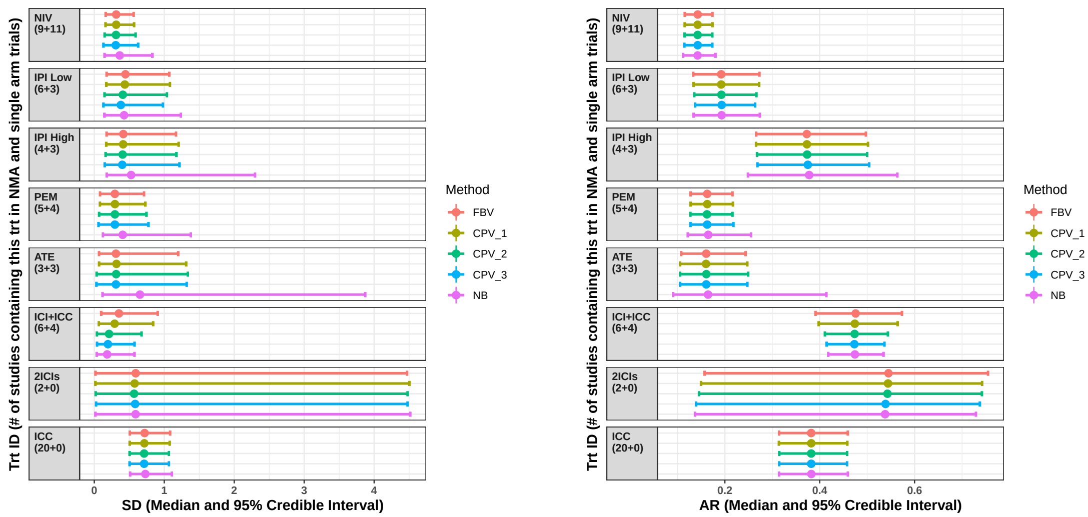


(a) standard deviation σ_t

(b) absolute risk p_t

We then focused on choice of p^{v} for the CPV method. For the CPV1, CPV2, and CPV3 methods mentioned in Figure E2, we selected $p^{\mathrm{v}} = 0.9$, 0.5, and 0.1 respectively. As we can see, the choice of p^{v} was less sensitive; any choice of $0.1 \leq p^{\mathrm{v}} \leq 0.5$ could be a reasonable selection for the CPV method.

FIG E2. *Results for the dataset about safety of ICIs in cancer treatment: forest plot of posterior estimates of standard deviations σ_t and absolute risks p_t (posterior median with 95% credible interval). Different colors indicate different methods (FBV, CPV1, CPV2, CPV3, and NB). The y-axis represents regimen abbreviations, with the number of RCTs (B_t) and single-arm trials (B_t^s) in parentheses.*

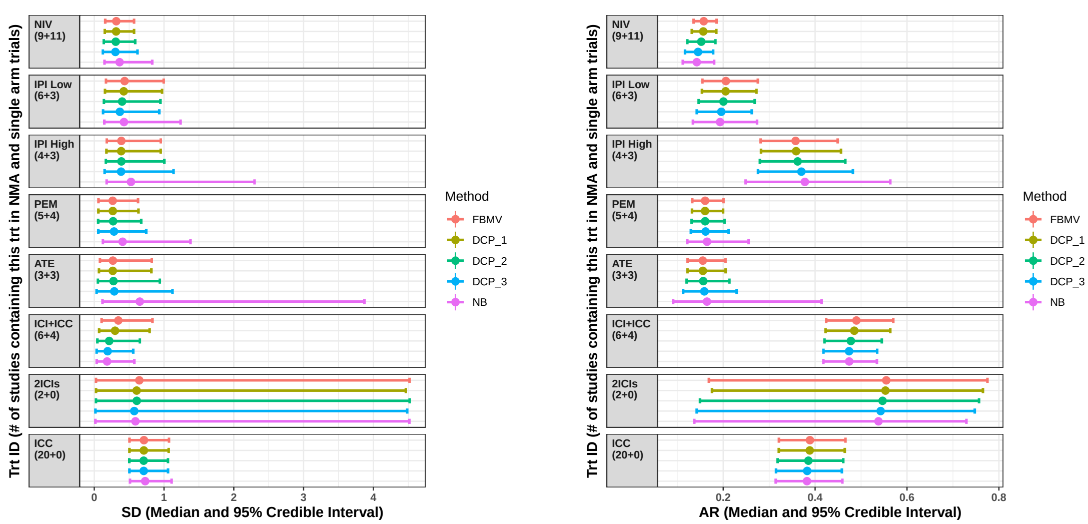


(a) standard deviation σ_t

(b) absolute risk p_t

Last, we wanted to examine the influence of p^{m} and p^{v} in the DCP method. For the DCP1, DCP2, and DCP3 methods mentioned in Figure E3, we selected $(p^{\mathrm{m}}, p^{\mathrm{v}}) = (0.9, 0.9)$, (0.5, 0.5), and (0.1, 0.1) respectively. The results were a mix of the previous two sensitivity analyses.

FIG E3. *Results for the dataset about safety of ICIs in cancer treatment: forest plot of posterior estimates of standard deviations σ_t and absolute risks p_t (posterior median with 95% credible interval). Different colors indicate different methods (FBMV, DCP1, DCP2, DCP3, and NB). The y-axis represents regimen abbreviations, with the number of RCTs (B_t) and single-arm trials (B_t^s) in parentheses.*



(a) standard deviation σ_t

(b) absolute risk p_t

APPENDIX F: COMPARISON WITH CONTRAST-BASED METHODS

In this appendix, we compare our CPV and NB models with two contrast-based approaches in the case study:

- the contrast-based (CB) model with equal contrast heterogeneity variance, which is Model 1 in White et al. (2019);
- the CB with random study intercepts (CB-2), which is Model 3 in White et al. (2019).

Table F1 presents the results.

TABLE F1

Analysis of ICI safety in cancer treatment: posterior medians and 95% credible intervals by 4 different models (NB, CPV, CB, and CB-2). The estimated parameters include absolute risk of events for the t^{th} treatment (p_t), and log odds ratios LOR_{ij} comparing treatments i and j. Treatment labels: 1) NIV; 2) IPI low; 3) IPI high; 4) PEM; 5) ATE; 6) ICI+ICC; 7) 2ICIs; and 8) ICC.

	NB	CPV	CB-2	CB
LOR_{12}	−0.36 (−0.88, 0.26)	−0.35 (−0.82, 0.20)	−0.27 (−0.77, 0.23)	−0.40 (−1.20, 0.39)
LOR_{13}	−1.32 (−2.20, −0.46)	−1.30 (−1.87, −0.69)	−1.26 (−1.82, −0.68)	−1.48 (−2.37, −0.60)
LOR_{14}	−0.17 (−0.72, 0.38)	−0.16 (−0.57, 0.23)	−0.11 (−0.59, 0.37)	−0.23 (−0.97, 0.49)
LOR_{15}	−0.08 (−1.26, 1.66)	−0.13 (−0.67, 0.55)	0.00 (−0.60, 0.60)	−0.10 (−0.99, 0.80)
LOR_{16}	−1.74 (−2.16, −1.38)	−1.72 (−2.10, −1.36)	−1.86 (−2.34, −1.39)	−2.29 (−3.03, −1.57)
LOR_{17}	−1.99 (−3.41, 2.23)	−1.99 (−3.69, 2.00)	−1.86 (−2.59, −1.14)	−1.86 (−2.91, −0.84)
LOR_{18}	−1.33 (−1.73, −0.93)	−1.31 (−1.69, −0.93)	−1.30 (−1.60, −1.00)	−1.50 (−1.99, −1.02)
LOR_{23}	−0.97 (−1.90, −0.11)	−0.95 (−1.63, −0.30)	−0.99 (−1.61, −0.37)	−1.07 (−1.80, −0.35)
LOR_{24}	0.19 (−0.52, 0.82)	0.18 (−0.40, 0.69)	0.16 (−0.46, 0.78)	0.17 (−0.73, 1.06)
LOR_{25}	0.28 (−1.00, 2.04)	0.22 (−0.49, 0.98)	0.27 (−0.50, 1.00)	0.31 (−0.83, 1.45)
LOR_{26}	−1.38 (−2.00, −0.90)	−1.37 (−1.95, −0.89)	−1.59 (−2.23, −0.96)	−1.89 (−2.91, −0.88)
LOR_{27}	−1.61 (−3.09, 2.55)	−1.63 (−3.35, 2.32)	−1.59 (−2.34, −0.86)	−1.46 (−2.39, −0.54)
LOR_{28}	−0.97 (−1.61, −0.44)	−0.96 (−1.56, −0.45)	−1.03 (−1.57, −0.50)	−1.10 (−1.94, −0.25)
LOR_{34}	1.15 (0.21, 2.16)	1.13 (0.48, 1.76)	1.15 (0.45, 1.83)	1.25 (0.20, 2.26)
LOR_{35}	1.25 (−0.23, 3.20)	1.17 (0.40, 2.01)	1.25 (0.45, 2.03)	1.38 (0.18, 2.61)
LOR_{36}	−0.43 (−1.28, 0.46)	−0.43 (−1.04, 0.17)	−0.61 (−1.31, 0.09)	−0.81 (−1.93, 0.30)
LOR_{37}	−0.62 (−2.37, 3.62)	−0.67 (−2.49, 3.32)	−0.61 (−1.50, 0.27)	−0.38 (−1.49, 0.73)
LOR_{38}	−0.01 (−0.88, 0.89)	−0.01 (−0.65, 0.61)	−0.04 (−0.66, 0.56)	−0.02 (−0.98, 0.91)
LOR_{45}	0.09 (−1.18, 1.88)	0.03 (−0.55, 0.75)	0.10 (−0.60, 0.80)	0.14 (−0.83, 1.11)
LOR_{46}	−1.57 (−2.12, −1.06)	−1.56 (−1.99, −1.13)	−1.75 (−2.33, −1.18)	−2.05 (−2.90, −1.24)
LOR_{47}	−1.80 (−3.35, 2.41)	−1.82 (−3.54, 2.17)	−1.76 (−2.59, −0.93)	−1.62 (−2.80, −0.47)
LOR_{48}	−1.16 (−1.69, −0.63)	−1.14 (−1.57, −0.71)	−1.20 (−1.64, −0.75)	−1.27 (−1.88, −0.66)
LOR_{56}	−1.66 (−3.42, −0.48)	−1.59 (−2.30, −1.03)	−1.86 (−2.53, −1.16)	−2.19 (−3.15, −1.24)
LOR_{57}	−1.87 (−4.16, 2.35)	−1.84 (−3.65, 2.14)	−1.86 (−2.77, −0.93)	−1.76 (−3.08, −0.44)
LOR_{58}	−1.25 (−2.96, −0.09)	−1.18 (−1.85, −0.63)	−1.30 (−1.86, −0.71)	−1.40 (−2.16, −0.66)
LOR_{67}	−0.24 (−1.72, 4.00)	−0.26 (−2.00, 3.75)	0.00 (−0.85, 0.85)	0.43 (−0.83, 1.66)
LOR_{68}	0.42 (0.04, 0.80)	0.42 (0.02, 0.80)	0.56 (0.13, 0.98)	0.79 (0.22, 1.35)
LOR_{78}	0.65 (−3.56, 2.12)	0.67 (−3.33, 2.39)	0.56 (−0.20, 1.33)	0.35 (−0.74, 1.47)
p_1	0.14 (0.11, 0.18)	0.14 (0.12, 0.17)	0.14 (0.11, 0.17)	
p_2	0.19 (0.13, 0.27)	0.19 (0.14, 0.27)	0.18 (0.12, 0.26)	
p_3	0.38 (0.25, 0.56)	0.37 (0.27, 0.50)	0.37 (0.25, 0.50)	
p_4	0.16 (0.12, 0.26)	0.16 (0.13, 0.22)	0.15 (0.10, 0.22)	
p_5	0.16 (0.09, 0.41)	0.16 (0.11, 0.25)	0.14 (0.09, 0.23)	
p_6	0.47 (0.42, 0.53)	0.47 (0.41, 0.54)	0.51 (0.41, 0.62)	
p_7	0.54 (0.14, 0.73)	0.54 (0.14, 0.75)	0.51 (0.34, 0.68)	
p_8	0.38 (0.31, 0.46)	0.38 (0.31, 0.46)	0.37 (0.32, 0.44)	

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