Simulation Tables

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Simulation Result Table for Intercept model with High Prevalence

Number of Cluster	Cluster Size	$\widehat{\beta_0}$	$\widehat{\beta_1}$	$\widehat{\beta_2}$	$\widehat{\sigma_u^2}$	$\widehat{MOR}$	Relative Bias (%)	$\widehat{SE}_{MOR}$	Simulation $\widehat{SE}_{MOR}$	Ratio[1]	CI coverage (95%)	Runs used	Runs Required
10	5	2.17	2.01	0.76	2.74	5.68	25.65	3.19	2.39	1.34	0.91	1000	1255
10	10	2.17	1.90	0.78	2.83	5.59	23.63	2.09	1.98	1.05	0.95	1000	1033
10	30	2.04	1.79	0.71	2.37	4.53	0.23	1.55	1.56	0.99	0.88	1000	1001
10	50	2.01	1.76	0.66	2.35	4.45	-1.41	1.48	1.50	0.99	0.86	1000	1000
30	5	2.08	1.86	0.76	2.92	5.52	22.11	1.80	1.77	1.02	0.98	1000	1015
30	10	2.05	1.79	0.70	2.63	4.85	7.26	1.45	1.49	0.98	0.93	1000	1000
30	30	2.01	1.76	0.68	2.47	4.54	0.50	1.29	1.30	0.99	0.92	1000	1000
30	50	2.01	1.76	0.67	2.43	4.47	-1.18	1.26	1.26	1.00	0.92	1000	1000
50	5	2.07	1.82	0.70	2.72	5.01	10.82	1.53	1.54	1.00	0.96	1000	1000
50	10	2.01	1.77	0.69	2.51	4.59	1.64	1.32	1.32	1.00	0.94	1000	1000
50	30	2.00	1.76	0.68	2.48	4.52	-0.06	1.22	1.22	1.00	0.94	1000	1000
50	50	1.99	1.75	0.67	2.45	4.47	-0.99	1.20	1.19	1.01	0.94	1000	1000
100	5	2.01	1.77	0.68	2.54	4.64	2.76	1.33	1.34	1.00	0.94	1000	1000
100	10	2.00	1.76	0.67	2.50	4.55	0.59	1.22	1.23	0.99	0.93	1000	1000
100	30	2.00	1.75	0.68	2.47	4.49	-0.54	1.15	1.15	1.00	0.93	1000	1000
100	50	1.99	1.75	0.67	2.48	4.51	-0.30	1.14	1.13	1.00	0.95	1000	1000

Note:

The mean prevalence for this simulation is 77%

[1] Ratio = $\dfrac{\widehat{SE}_{MOR}}{Simulation\ \widehat{SE}_{MOR}}$

[*] True MOR is 4.52

[†] True σ_u^2 is 2.5

[‡] True Values of $\beta_0 = 2$, $\beta_1 = 1.75$, $\beta_2 = 0.67$

Simulation Result Table for Intercept model with Low Prevalence

Number of Cluster	Cluster Size	$\widehat{\beta_0}$	$\widehat{\beta_1}$	$\widehat{\beta_2}$	$\widehat{\sigma_u^2}$	$\widehat{MOR}$	Relative Bias (%)	$\widehat{SE}_{MOR}$	Simulation $\widehat{SE}_{MOR}$	Ratio[1]	CI coverage (95%)	Runs used	Runs Required
10	5	-2.21	2.06	0.69	3.09	6.34	40.29	3.18	2.41	1.32	0.94	1000	1157
10	10	-2.08	1.89	0.70	2.90	5.62	24.42	1.96	1.89	1.03	0.94	1000	1036
10	30	-2.05	1.80	0.69	2.45	4.65	2.89	1.54	1.58	0.97	0.87	1000	1001
10	50	-2.03	1.78	0.69	2.30	4.38	-3.05	1.46	1.49	0.98	0.86	1000	1000
30	5	-2.10	1.86	0.67	2.90	5.43	20.19	1.72	1.71	1.01	0.98	1000	1020
30	10	-2.03	1.80	0.67	2.59	4.77	5.58	1.42	1.44	0.99	0.94	1000	1000
30	30	-2.01	1.76	0.66	2.48	4.54	0.43	1.28	1.29	0.99	0.93	1000	1000
30	50	-2.02	1.76	0.67	2.46	4.50	-0.34	1.25	1.26	1.00	0.92	1000	1000
50	5	-2.05	1.82	0.68	2.76	5.12	13.40	1.50	1.54	0.97	0.96	1000	1002
50	10	-2.03	1.78	0.67	2.59	4.71	4.17	1.31	1.31	1.00	0.94	1000	1000
50	30	-2.01	1.75	0.67	2.47	4.50	-0.32	1.21	1.21	1.00	0.94	1000	1000
50	50	-2.02	1.75	0.67	2.45	4.47	-1.07	1.19	1.18	1.01	0.94	1000	1000
100	5	-2.02	1.76	0.67	2.58	4.70	3.96	1.31	1.32	0.99	0.95	1000	1000
100	10	-2.02	1.76	0.68	2.50	4.54	0.54	1.21	1.21	1.00	0.95	1000	1000
100	30	-2.01	1.75	0.67	2.46	4.48	-0.78	1.14	1.14	1.00	0.95	1000	1000
100	50	-2.01	1.75	0.67	2.48	4.50	-0.38	1.13	1.13	1.00	0.95	1000	1000

Note:

The mean prevalence for this simulation is 27%

[1] Ratio = $\dfrac{\widehat{SE}_{MOR}}{Simulation\ \widehat{SE}_{MOR}}$

[*] True MOR is 4.52

[†] True σ_u^2 is 2.5

[‡] True Values of $\beta_0 = -2$, $\beta_1 = 1.75$, $\beta_2 = 0.67$

Simulation Result Table for Slope model with High Prevalence

Number of Cluster	Cluster Size	$\widehat{\beta_0}$	$\widehat{\beta_1}$	$\widehat{\beta_2}$	$\widehat{\sigma^2_{u_1}}$	$\widehat{\sigma^2_{u_2}}$	$\widehat{\sigma^2_{u_{12}}}$	MOR	$\widehat{MOR}$	Relative Bias (%)	$\widehat{SE}_{MOR}$	Simulation $\widehat{SE}_{MOR}$	Ratio[1]	CI coverage (95%)	Runs used	Runs Required
10	5	2.28	2.16	0.86	1.83	3.47	-0.04	2.64	4.07	54.06	4.14	2.08	1.99	0.99	1000	1436
10	10	2.17	1.98	0.85	1.38	2.94	-0.10	2.62	3.20	22.10	2.25	1.81	1.25	0.98	1000	1038
10	30	2.02	1.78	0.72	0.98	1.97	-0.03	2.60	2.58	-0.93	1.49	1.46	1.02	0.93	1000	1001
10	50	2.02	1.76	0.69	0.95	1.91	-0.06	2.60	2.53	-2.77	1.39	1.40	0.99	0.90	1000	1000
30	5	2.16	1.89	0.76	1.50	2.82	-0.05	2.61	3.43	31.35	1.95	1.80	1.08	0.98	1000	1009
30	10	2.04	1.79	0.72	1.03	2.13	0.00	2.60	2.64	1.41	1.47	1.46	1.00	0.95	1000	1000
30	30	1.99	1.75	0.70	0.97	1.96	-0.03	2.60	2.56	-1.45	1.24	1.24	1.00	0.94	1000	1000
30	50	2.01	1.75	0.68	1.00	1.97	-0.01	2.60	2.59	-0.33	1.20	1.21	0.99	0.92	1000	1000
50	5	2.06	1.81	0.71	1.20	2.41	-0.05	2.61	2.88	10.39	1.63	1.55	1.05	0.98	1000	1000
50	10	2.01	1.77	0.69	1.01	2.12	0.01	2.60	2.60	0.07	1.34	1.35	0.99	0.96	1000	1000
50	30	2.00	1.74	0.67	0.98	1.98	-0.03	2.60	2.57	-1.14	1.18	1.19	0.99	0.93	1000	1000
50	50	2.00	1.74	0.69	0.97	1.95	-0.02	2.60	2.56	-1.47	1.15	1.15	1.00	0.93	1000	1000
100	5	2.03	1.77	0.69	1.08	2.12	-0.02	2.60	2.70	3.78	1.40	1.38	1.01	0.98	1000	1000
100	10	1.99	1.73	0.68	1.01	1.97	-0.03	2.60	2.60	0.21	1.22	1.23	0.99	0.96	1000	1000
100	30	2.00	1.75	0.67	1.00	1.97	-0.01	2.60	2.59	-0.24	1.12	1.13	1.00	0.94	1000	1000
100	50	1.99	1.74	0.68	0.99	1.98	0.00	2.60	2.59	-0.30	1.10	1.10	1.00	0.94	1000	1000

Note:

The mean prevalence for this simulation is 79%

[1] Ratio = $\dfrac{\widehat{SE}_{MOR}}{Simulation\ \widehat{SE}_{MOR}}$

[*] True $\sigma^2_{u_1} = 1$, $\sigma^2_{u_2} = 2$, $\sigma^2_{u_{12}} = 0$

[†] True Values of $\beta_0 = 2$, $\beta_1 = 1.75$, $\beta_2 = 0.67$

Simulation Result Table for Slope model with Low Prevalence

Number of Cluster	Cluster Size	$\widehat{\beta_0}$	$\widehat{\beta_1}$	$\widehat{\beta_2}$	$\widehat{\sigma^2_{u_1}}$	$\widehat{\sigma^2_{u_2}}$	$\widehat{\sigma^2_{u_{12}}}$	MOR	$\widehat{MOR}$	Relative Bias (%)	$\widehat{SE}_{MOR}$	Simulation $\widehat{SE}_{MOR}$	Ratio[1]	CI coverage (95%)	Runs used	Runs Required
10	5	-2.29	2.10	0.76	1.81	3.57	0.23	2.64	4.07	54.25	3.71	2.10	1.77	0.99	1000	1258
10	10	-2.17	1.93	0.71	1.31	2.53	0.04	2.62	3.12	19.21	2.07	1.76	1.17	0.97	1000	1025
10	30	-2.05	1.79	0.68	1.00	1.99	0.02	2.60	2.60	-0.11	1.44	1.47	0.98	0.91	1000	1000
10	50	-2.00	1.76	0.67	0.94	1.90	0.00	2.60	2.53	-2.89	1.35	1.37	0.98	0.89	1000	1000
30	5	-2.13	1.84	0.72	1.32	2.61	0.07	2.61	3.07	17.68	1.80	1.68	1.07	0.98	1000	1006
30	10	-2.01	1.78	0.65	1.01	2.19	0.06	2.60	2.62	0.54	1.41	1.39	1.01	0.97	1000	1000
30	30	-2.00	1.75	0.67	0.97	1.99	0.01	2.60	2.56	-1.55	1.22	1.23	0.99	0.93	1000	1000
30	50	-2.00	1.74	0.67	0.97	1.94	0.01	2.60	2.56	-1.51	1.18	1.19	1.00	0.92	1000	1000
50	5	-2.06	1.82	0.68	1.17	2.33	0.06	2.61	2.83	8.82	1.54	1.50	1.03	0.97	1000	1000
50	10	-2.00	1.75	0.66	1.00	2.08	0.04	2.60	2.60	0.16	1.29	1.29	1.00	0.97	1000	1000
50	30	-2.00	1.74	0.67	0.98	1.98	0.02	2.60	2.57	-0.87	1.16	1.16	1.00	0.94	1000	1000
50	50	-1.99	1.74	0.67	0.99	1.95	0.01	2.60	2.58	-0.74	1.14	1.14	1.00	0.93	1000	1000
100	5	-2.01	1.75	0.66	1.07	2.10	0.05	2.60	2.68	3.18	1.34	1.33	1.01	0.97	1000	1000
100	10	-2.01	1.75	0.67	1.01	2.03	0.02	2.60	2.60	0.23	1.19	1.19	1.00	0.96	1000	1000
100	30	-2.00	1.75	0.67	1.00	1.98	0.01	2.60	2.59	-0.17	1.11	1.12	0.99	0.92	1000	1000
100	50	-2.01	1.74	0.67	1.00	1.97	0.01	2.60	2.59	-0.05	1.10	1.10	1.00	0.95	1000	1000

Note:

The mean prevalence for this simulation is 26%

[1] Ratio = $\dfrac{\widehat{SE}_{MOR}}{Simulation\ \widehat{SE}_{MOR}}$

* True $\sigma^2_{u_1} = 1$, $\sigma^2_{u_2} = 2$, $\sigma^2_{u_{12}} = 0$

† True Values of $\beta_0 = -2$, $\beta_1 = 1.75$, $\beta_2 = 0.67$