Simulation Result For Two-Level Intercept Model With High Prevalence

The mean prevalence for this simulation is 29 %

Shafayet Khan Shafee

03 September 2023

Histograms for $log(\widehat{MOR})$

Cluster Number 10

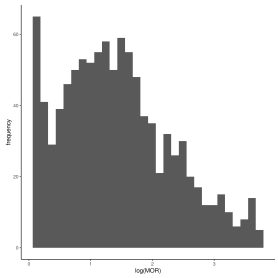

Figure 1: Cluster size 5

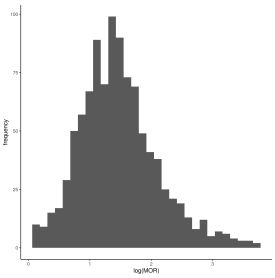

Figure 2: Cluster size 10

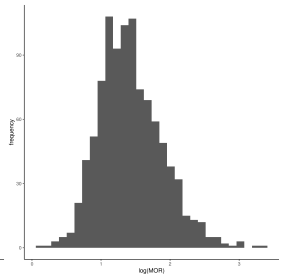

Figure 3: Cluster size 30

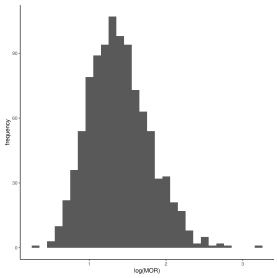

Figure 4: Cluster size 50

Cluster Number 30

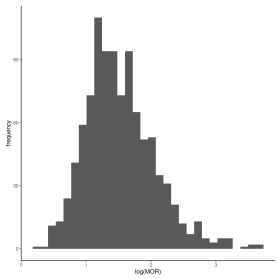

Figure 5: Cluster size 5

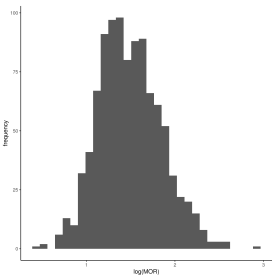

Figure 6: Cluster size 10

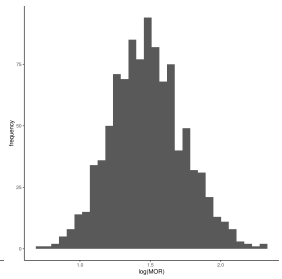

Figure 7: Cluster size 30

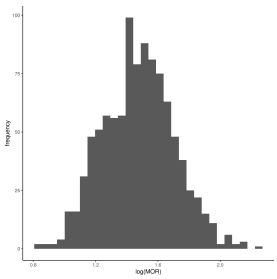

Figure 8: Cluster size 50

Cluster Number 50

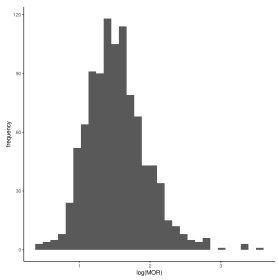

Figure 9: Cluster size 5

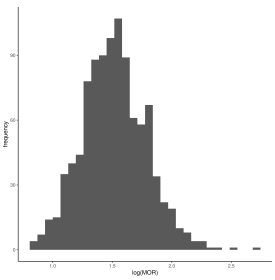

Figure 10: Cluster size 10

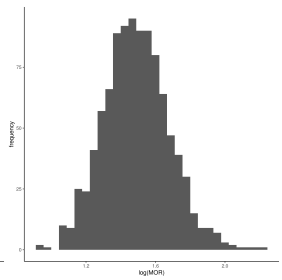

Figure 11: Cluster size 30

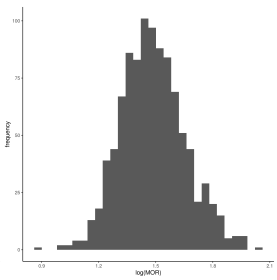

Figure 12: Cluster size 50

Cluster Number 100

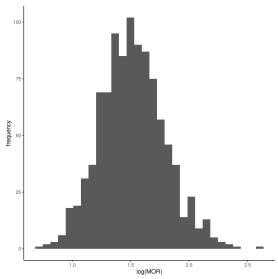

Figure 13: Cluster size 5

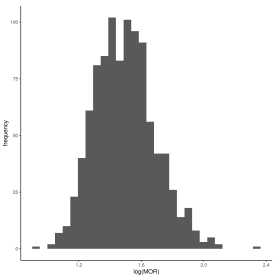

Figure 14: Cluster size 10

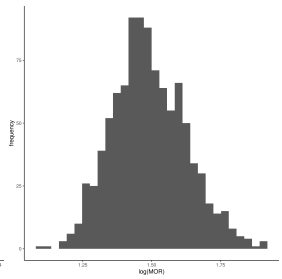

Figure 15: Cluster size 30

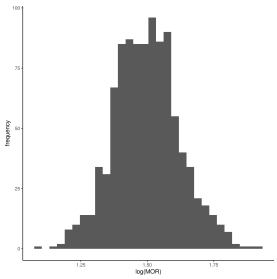

Figure 16: Cluster size 50

Simulation Result Table

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%)	Model Conver-gence
10	5	-2.05	2.03	0.70	3.10	6.41	41.80	3.07	2.40	1.28	0.94	0.88
10	10	-1.92	1.88	0.69	2.82	5.50	21.65	1.93	1.88	1.02	0.94	0.98
10	30	-1.90	1.80	0.68	2.47	4.67	3.43	1.53	1.58	0.97	0.88	1.00
10	50	-1.88	1.78	0.70	2.30	4.37	-3.36	1.46	1.49	0.98	0.86	1.00
30	5	-1.94	1.86	0.67	2.87	5.42	19.86	1.70	1.71	1.00	0.97	0.99
30	10	-1.88	1.80	0.67	2.58	4.74	4.88	1.41	1.43	0.99	0.94	1.00
30	30	-1.86	1.76	0.68	2.48	4.54	0.50	1.28	1.29	0.99	0.92	1.00
30	50	-1.87	1.76	0.68	2.45	4.49	-0.57	1.25	1.25	1.00	0.91	1.00
50	5	-1.90	1.82	0.67	2.76	5.08	12.48	1.49	1.52	0.98	0.96	1.00
50	10	-1.89	1.79	0.68	2.60	4.72	4.41	1.31	1.31	1.00	0.94	1.00
50	30	-1.86	1.76	0.67	2.48	4.52	-0.04	1.21	1.21	1.00	0.93	1.00
50	50	-1.87	1.76	0.67	2.46	4.48	-0.78	1.19	1.18	1.00	0.95	1.00
100	5	-1.87	1.76	0.66	2.61	4.74	4.83	1.31	1.32	0.99	0.94	1.00
100	10	-1.87	1.76	0.67	2.50	4.54	0.56	1.20	1.21	0.99	0.94	1.00
100	30	-1.86	1.75	0.67	2.46	4.48	-0.85	1.14	1.14	1.00	0.94	1.00
100	50	-1.86	1.75	0.67	2.48	4.50	-0.37	1.13	1.13	1.00	0.95	1.00

Note:

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

[*] The mean prevalence for this simulation is 29%

[†] True MOR is 4.52

[‡] True σ_u^2 is 2.5

[§] True Values of $\beta_0 = -1.85$, $\beta_1 = 1.75$, $\beta_2 = 0.67$