Simulation Result For Two-Level Slope Model With Low Prevalence

The mean prevalence for this simulation is 26 %

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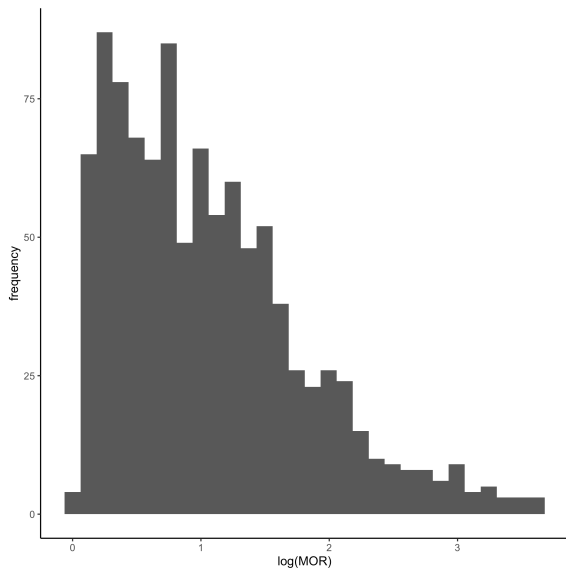# Histograms for $log(\widehat{MOR})$ When Number of Cluster is 10
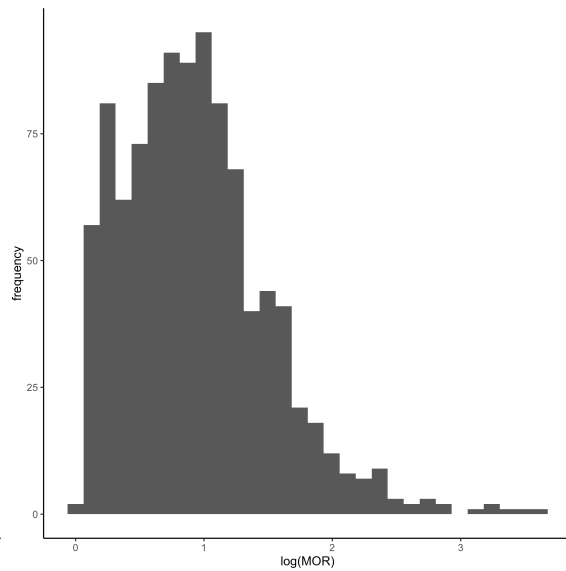

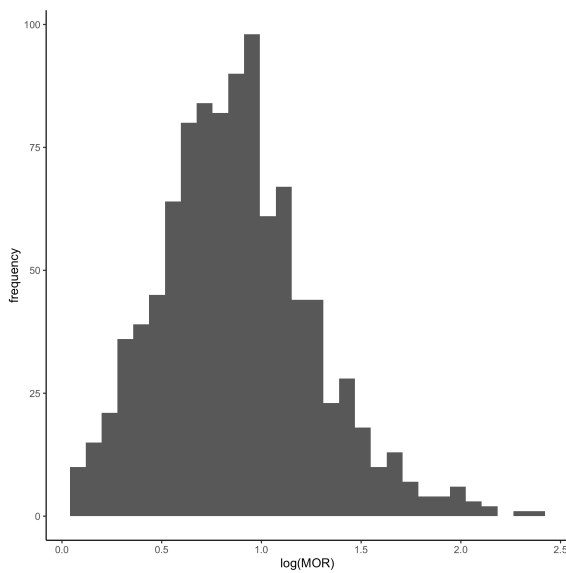Figure 1: For cluster size 5

Figure 2: For cluster size 10

Figure 3: For cluster size 30

Figure 4: For cluster size 50

Histograms for $log(\widehat{MOR})$ When Number of Cluster is 30

Figure 5: For cluster size 5

Figure 6: For cluster size 10

Figure 7: For cluster size 30
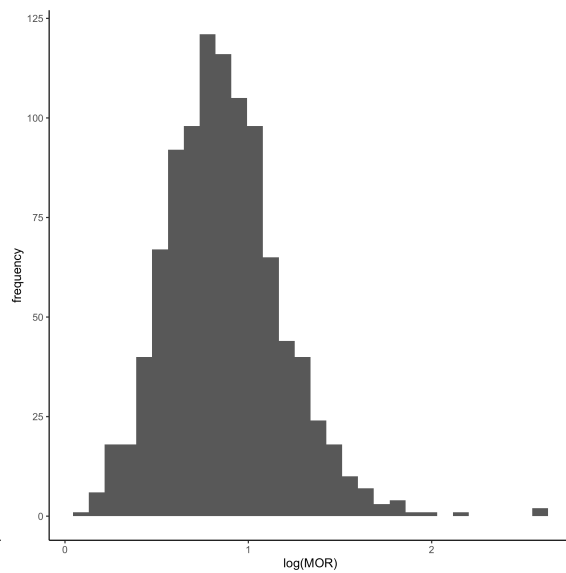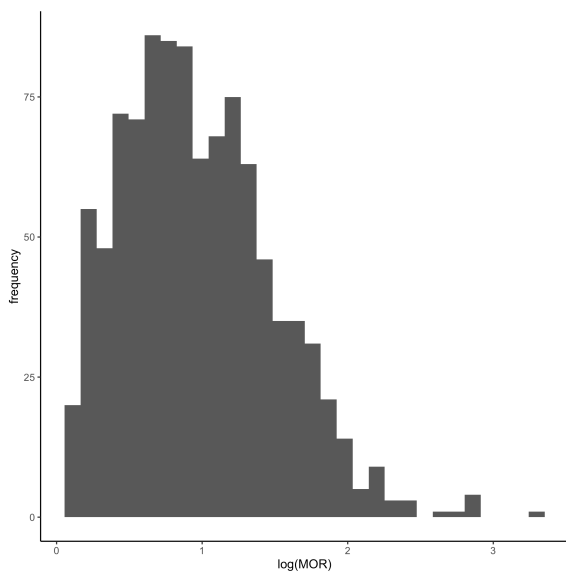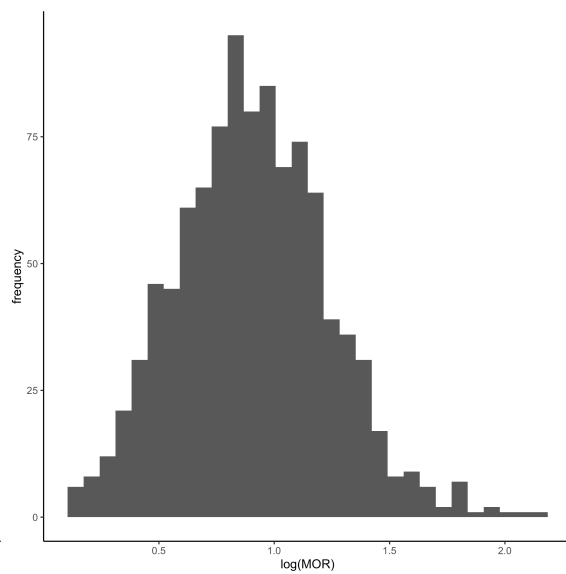

Figure 8: For cluster size 50

Histograms for $log(\widehat{MOR})$ When Number of Cluster is 50

Figure 9: For cluster size 5

Figure 10: For cluster size 10

Figure 11: For cluster size 30

Figure 12: For cluster size 50

Histograms for $log(\widehat{MOR})$ When Number of Cluster is 100

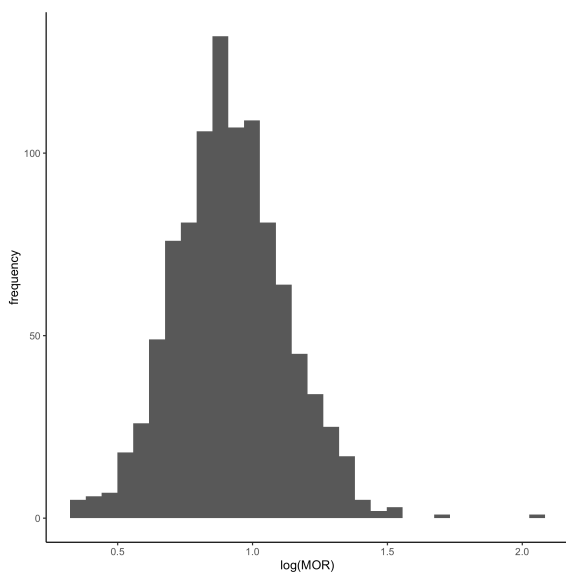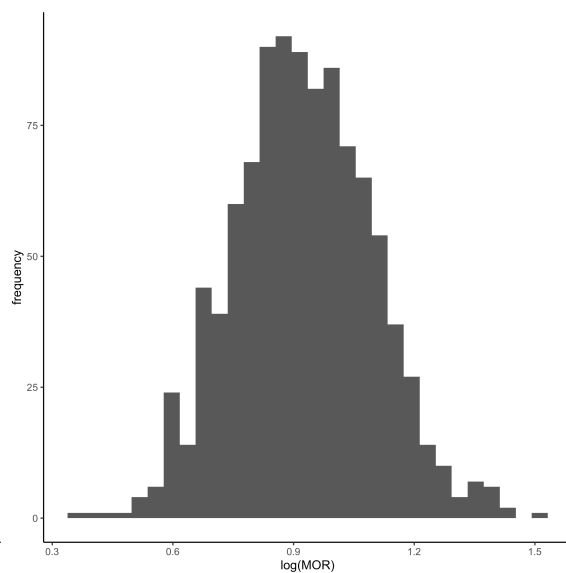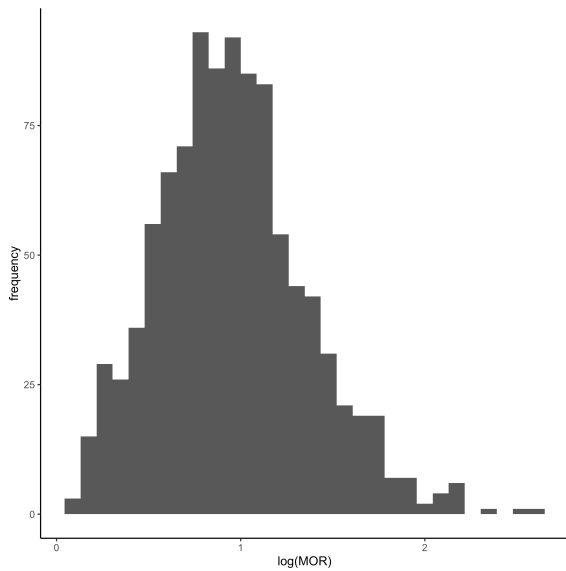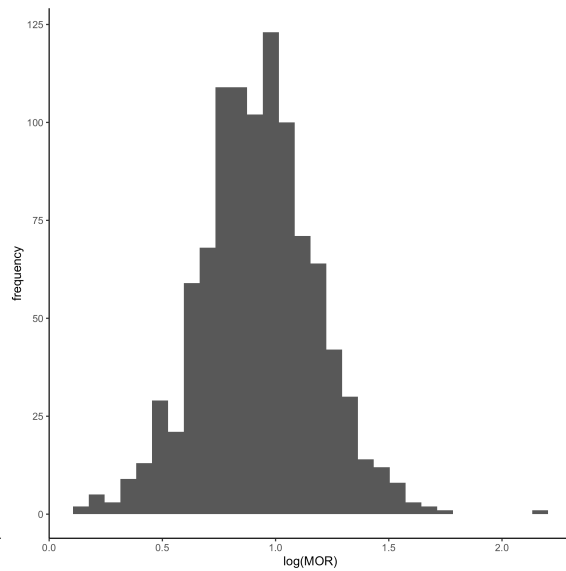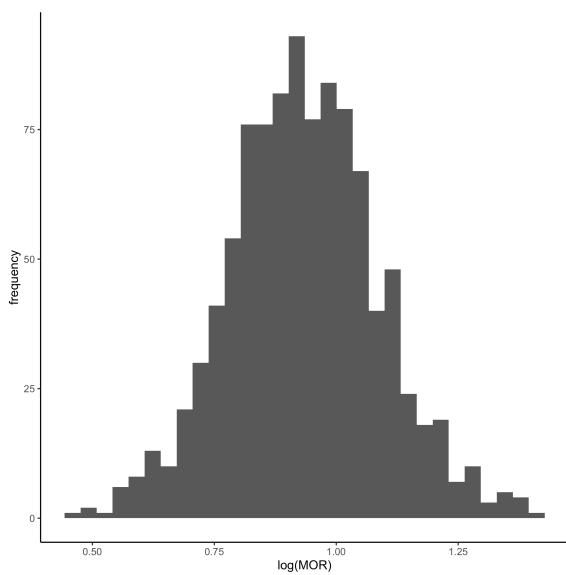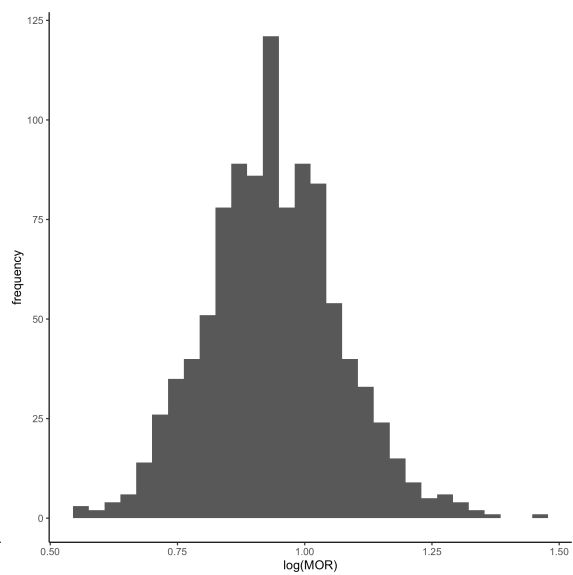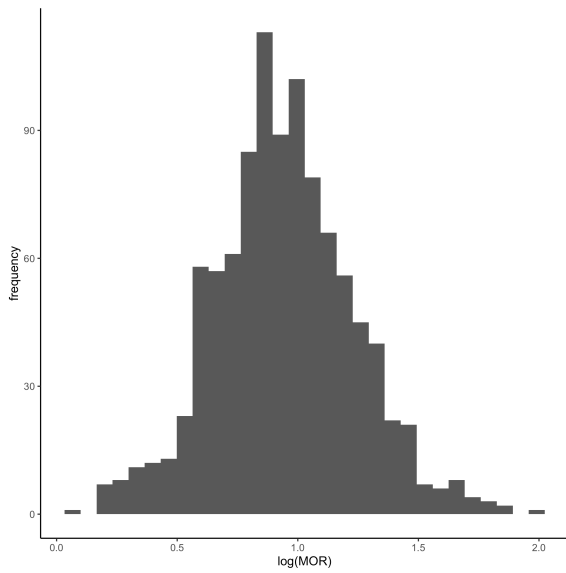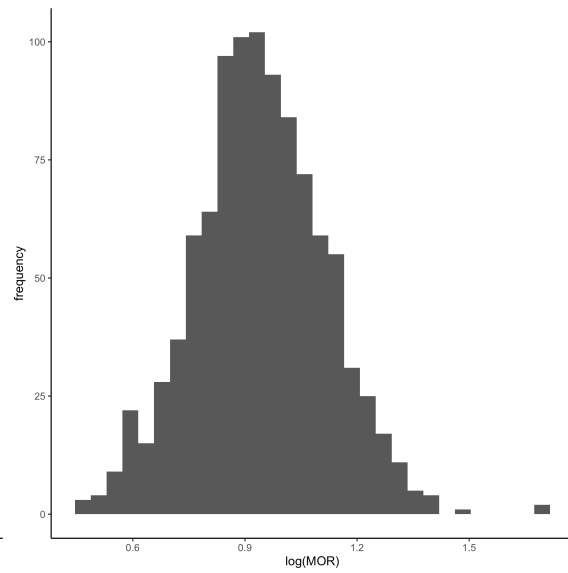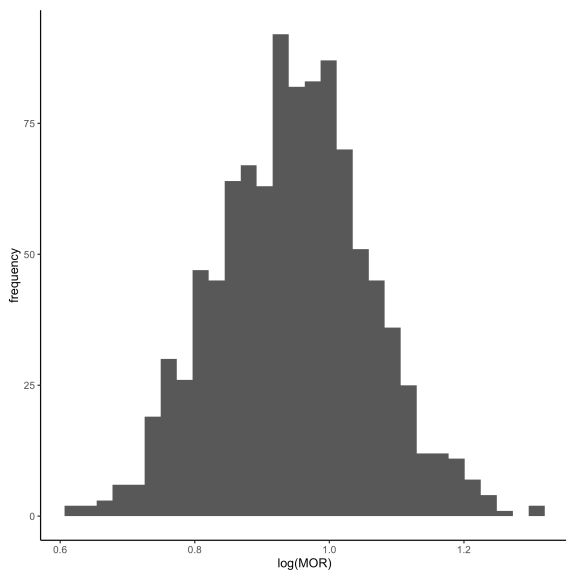Figure 13: For cluster size 5

Figure 14: For cluster size 10
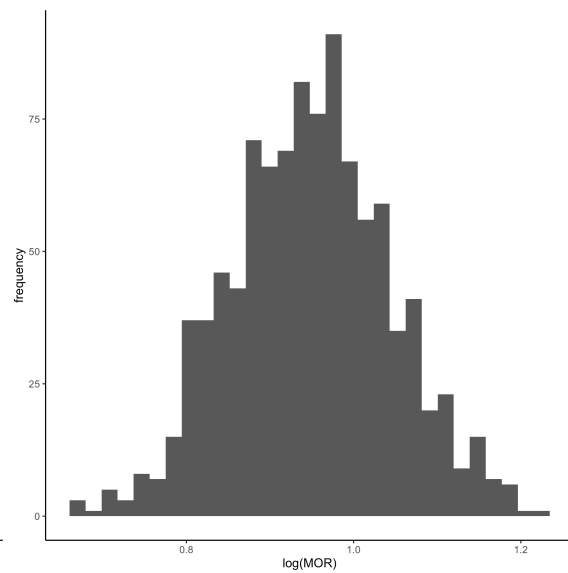

Figure 15: For cluster size 30

Figure 16: For cluster size 50

Simulation Result Table

Number of Cluster	Cluster Size	$\widehat{\beta_0}$	$\widehat{\beta_1}$	$\widehat{\beta_2}$	$\widehat{\sigma_{u_1}^2}$	$\widehat{\sigma_{u_2}^2}$	$\widehat{\sigma_{u_{12}}^2}$	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 = $\dfrac{\widehat{SE}_{MOR}}{Simulation\ \widehat{SE}_{MOR}}$

Here,

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

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

- "Runs used" column represent how many simulation runs were used to calculate the numbers in the corresponding row.