Simulation Result

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Histograms for $log(\widehat{MOR})$ When Cluster Size is 10

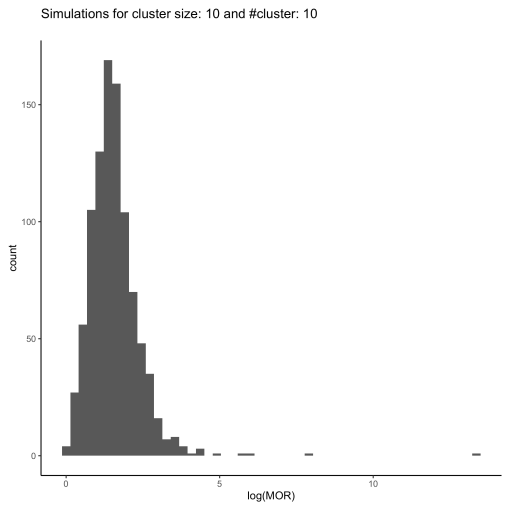

Figure 1: For 10 clusters when each of the cluster size is 10

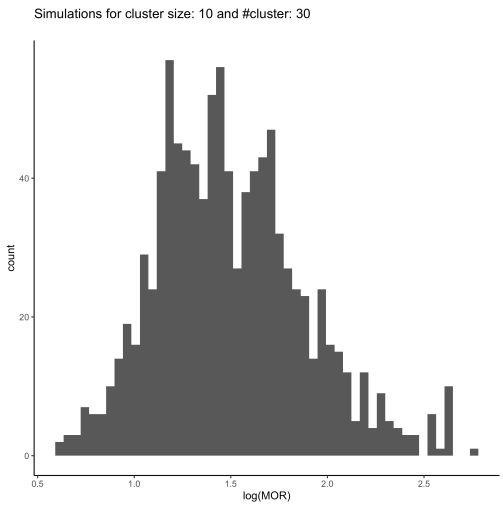

Figure 2: For 30 clusters when each of the cluster size is 10

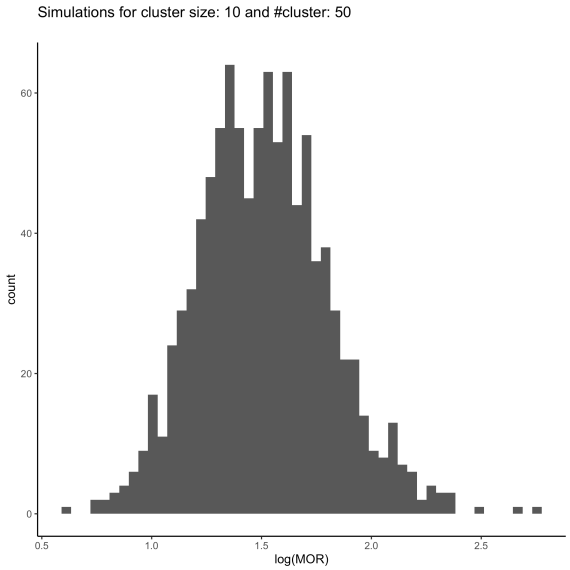

Figure 3: For 50 clusters when each of the cluster size is 10

Histograms for $log(\widehat{MOR})$ When Cluster Size is 15

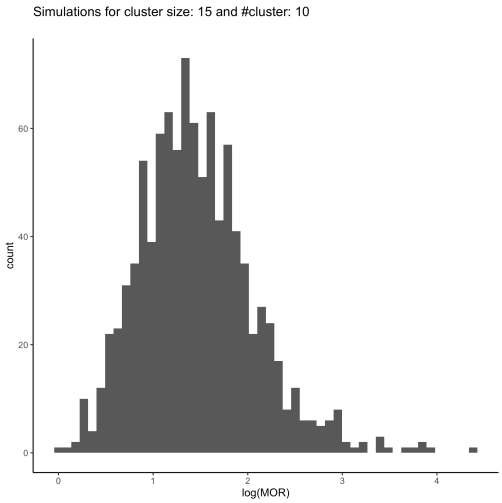

Figure 4: For 10 clusters when each of the cluster size is 115

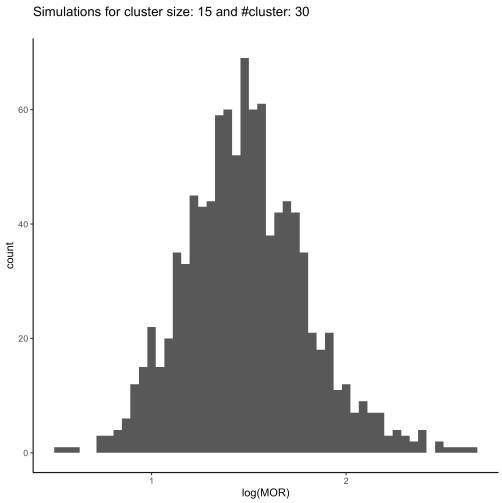

Figure 5: For 30 clusters when each of the cluster size is 15

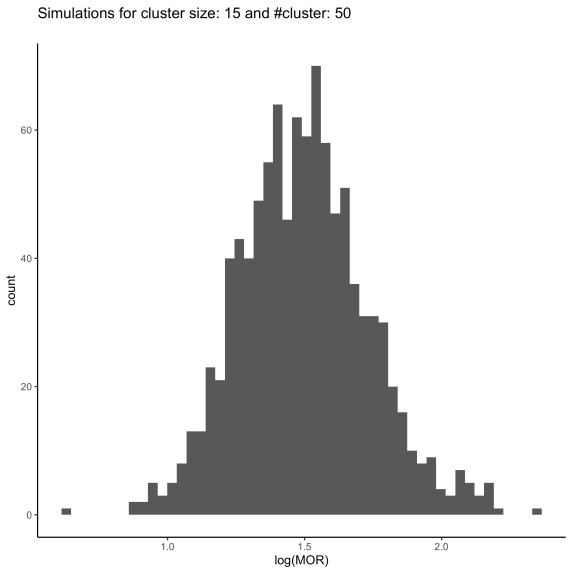

Figure 6: For 50 clusters when each of the cluster size is 15

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

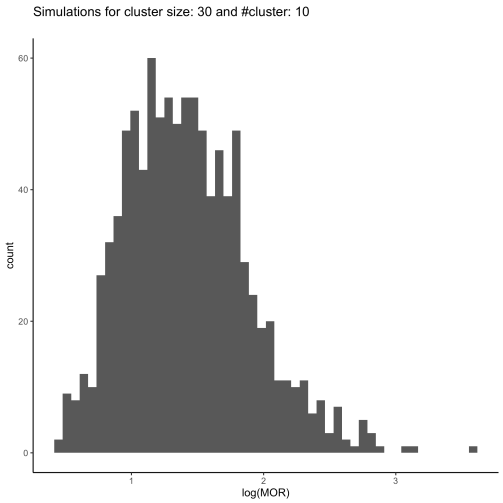

Figure 7: For 10 clusters when each of the cluster size is 30

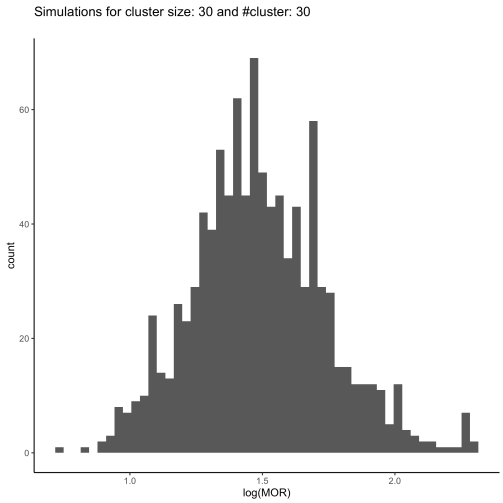

Figure 8: For 30 clusters when each of the cluster size is 30

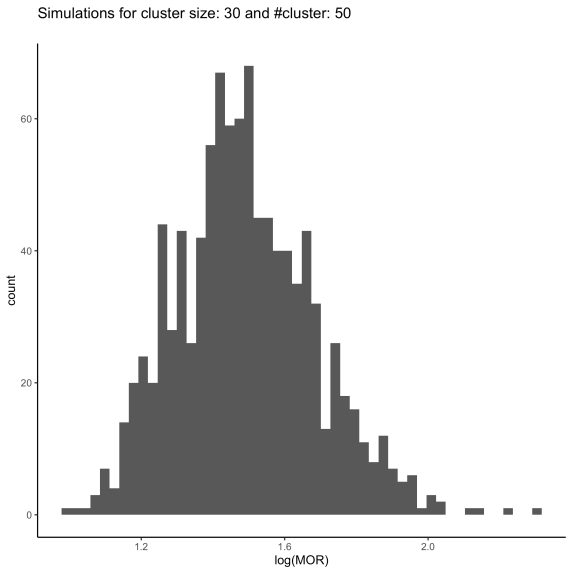

Figure 9: For 50 clusters when each of the cluster size is 30

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

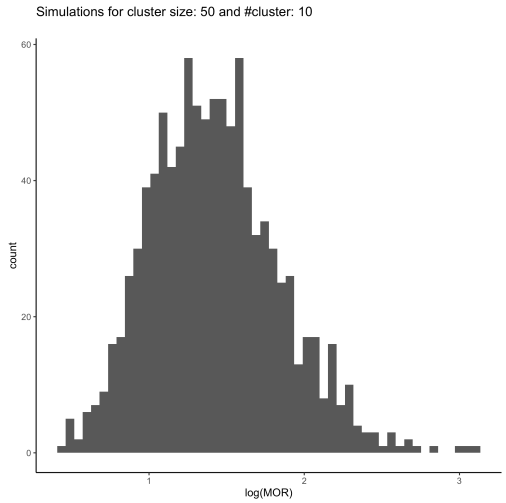

Figure 10: For 10 clusters when each of the cluster size is 50

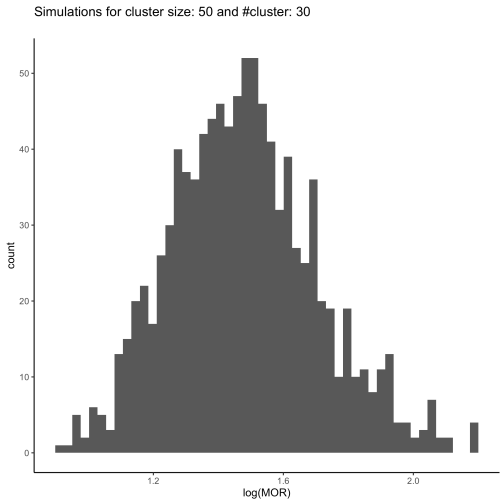

Figure 11: For 30 clusters when each of the cluster size is 50

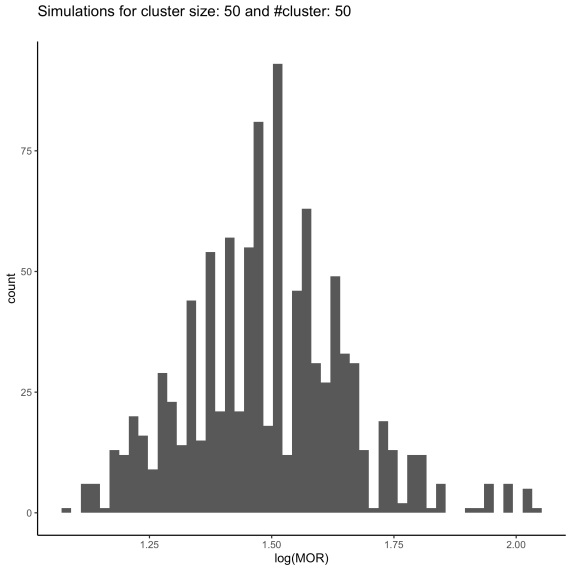

Figure 12: For 50 clusters when each of the cluster size is 50

Note: 50 bins were used to create these histograms

Simulation Result Table

m	n	$\widehat{MOR}$	$\widehat{SE}(MOR)$	$\widehat{\sigma_u^2}$	$\widehat{\beta_0}$	$\widehat{\beta_1}$	$\widehat{\beta_2}$	CI_coverage	$Sim\_\widehat{SE(MOR)}$	Relative Bias (%)	Problems	Runs used
10	10	688.751	136.147	3.332	2.117	1.867	0.759	0.926	21471.659	15142.532	0.049	951
30	10	4.854	1.453	2.639	2.054	1.785	0.704	0.950	2.123	7.421	0.000	1000
50	10	4.743	1.329	2.607	2.040	1.784	0.687	0.940	1.520	4.959	0.000	1000
10	15	5.341	1.946	2.731	2.070	1.829	0.707	0.901	5.295	18.191	0.008	992
30	15	4.644	1.366	2.529	2.029	1.781	0.692	0.925	1.611	2.767	0.000	1000
50	15	4.596	1.271	2.524	2.018	1.766	0.677	0.949	1.132	1.715	0.000	1000
10	30	4.666	1.562	2.456	2.021	1.773	0.708	0.876	2.757	3.272	0.001	999
30	30	4.581	1.292	2.507	2.023	1.763	0.674	0.920	1.233	1.371	0.000	1000
50	30	4.525	1.219	2.483	2.018	1.757	0.658	0.947	0.917	0.146	0.000	1000
10	50	4.556	1.489	2.417	2.024	1.777	0.687	0.873	2.246	0.832	0.000	1000
30	50	4.505	1.261	2.460	2.024	1.755	0.679	0.929	1.065	-0.305	0.000	1000
50	50	4.506	1.198	2.475	2.029	1.750	0.660	0.946	0.772	-0.270	0.000	1000

Here,

- True MOR is 4.52
- True σ_u^2 is 2.5
- "Problems" column represent out of 1000 simulation runs, how many runs were problematic
- "Runs used" column represent how many simulation runs were used to calculate the numbers in the corresponding row.