

S5 Table. Performance comparison of different methods on negative binomial model.

Method	L_1	ACC	AUPR	L_1	ACC	AUPR	L_1	ACC	AUPR
Random Graph									
MPLasso	0.036 (0.004)	0.982 (0.003)	0.783 (0.033)	0.033 (0.003)	0.991 (0.003)	0.927 (0.028)	0.028 (0.003)	0.997 (0.001)	0.990 (0.008)
CCLasso	0.048 (0.005)	0.973 (0.003)	0.609 (0.041)	0.045 (0.002)	0.979 (0.003)	0.777 (0.045)	0.036 (0.002)	0.986 (0.003)	0.893 (0.033)
SparCC	0.054 (0.002)	0.973 (0.003)	0.580 (0.036)	0.045 (0.002)	0.978 (0.003)	0.753 (0.045)	0.038 (0.002)	0.986 (0.003)	0.881 (0.032)
REBACCA	0.036 (0.004)	0.977 (0.003)	0.715 (0.038)	0.032 (0.003)	0.984 (0.004)	0.855 (0.045)	0.027 (0.003)	0.990 (0.003)	0.932 (0.028)
SPIEC (mb)	-	0.974 (0.003)	0.620 (0.044)	-	0.984 (0.003)	0.766 (0.036)	-	0.990 (0.004)	0.866 (0.046)
SPIEC (gl)	0.038 (0.005)	0.974 (0.003)	0.671 (0.023)	0.039 (0.004)	0.983 (0.003)	0.797 (0.041)	0.037 (0.004)	0.989 (0.004)	0.869 (0.050)
CCREPE	0.048 (0.003)	0.972 (0.003)	0.600 (0.041)	0.048 (0.003)	0.980 (0.003)	0.791 (0.042)	0.047 (0.003)	0.988 (0.003)	0.911 (0.029)
Hub Graph									
MPLasso	0.050 (0.001)	0.990 (0.001)	0.846 (0.027)	0.047 (0.001)	0.995 (0.001)	0.958 (0.015)	0.044 (0.001)	0.999 (0.001)	0.996 (0.003)
CCLasso	0.072 (0.003)	0.982 (0.001)	0.648 (0.038)	0.062 (0.002)	0.985 (0.002)	0.796 (0.041)	0.049 (0.001)	0.990 (0.002)	0.904 (0.030)
SparCC	0.074 (0.001)	0.982 (0.000)	0.621 (0.029)	0.064 (0.001)	0.984 (0.001)	0.762 (0.031)	0.057 (0.000)	0.995 (0.001)	0.967 (0.010)
REBACCA	0.043 (0.001)	0.989 (0.002)	0.847 (0.037)	0.031 (0.002)	0.995 (0.002)	0.966 (0.015)	0.017 (0.002)	0.999 (0.001)	0.997 (0.003)
SPIEC (mb)	-	0.982 (0.001)	0.620 (0.049)	-	0.987 (0.002)	0.746 (0.039)	-	0.968 (0.004)	0.708 (0.035)
SPIEC (gl)	0.052 (0.000)	0.983 (0.001)	0.701 (0.020)	0.052 (0.000)	0.987 (0.001)	0.779 (0.027)	0.089 (0.000)	0.968 (0.004)	0.731 (0.034)
CCREPE	0.060 (0.003)	0.981 (0.000)	0.620 (0.030)	0.062 (0.002)	0.984 (0.001)	0.780 (0.031)	0.103 (0.005)	0.969 (0.003)	0.758 (0.031)
Cluster Graph									
MPLasso	0.029 (0.002)	0.959 (0.004)	0.694 (0.023)	0.024 (0.002)	0.970 (0.003)	0.802 (0.024)	0.020 (0.001)	0.979 (0.003)	0.891 (0.023)
CCLasso	0.051 (0.004)	0.946 (0.003)	0.489 (0.025)	0.044 (0.003)	0.952 (0.003)	0.608 (0.029)	0.036 (0.001)	0.956 (0.004)	0.682 (0.025)
SparCC	0.056 (0.002)	0.946 (0.003)	0.474 (0.024)	0.046 (0.002)	0.951 (0.003)	0.589 (0.028)	0.038 (0.002)	0.955 (0.004)	0.663 (0.026)
REBACCA	0.025 (0.002)	0.950 (0.004)	0.582 (0.025)	0.019 (0.001)	0.956 (0.004)	0.674 (0.027)	0.014 (0.001)	0.959 (0.005)	0.719 (0.026)
SPIEC (mb)	-	0.948 (0.003)	0.546 (0.034)	-	0.955 (0.004)	0.623 (0.026)	-	0.957 (0.004)	0.649 (0.028)
SPIEC (gl)	0.031 (0.002)	0.948 (0.003)	0.584 (0.016)	0.031 (0.003)	0.954 (0.004)	0.641 (0.029)	0.030 (0.002)	0.955 (0.004)	0.650 (0.027)
CCREPE	0.063 (0.005)	0.945 (0.003)	0.482 (0.024)	0.063 (0.005)	0.953 (0.003)	0.620 (0.028)	0.062 (0.005)	0.957 (0.004)	0.695 (0.026)
Band(4) Graph									
MPLasso	0.048 (0.001)	0.939 (0.003)	0.656 (0.015)	0.041 (0.001)	0.950 (0.001)	0.723 (0.011)	0.033 (0.001)	0.959 (0.001)	0.779 (0.009)
CCLasso	0.059 (0.003)	0.925 (0.001)	0.435 (0.014)	0.052 (0.001)	0.932 (0.002)	0.543 (0.013)	0.041 (0.001)	0.939 (0.002)	0.626 (0.010)
SparCC	0.062 (0.001)	0.925 (0.001)	0.419 (0.015)	0.052 (0.001)	0.931 (0.001)	0.523 (0.012)	0.046 (0.001)	0.938 (0.002)	0.611 (0.010)
REBACCA	0.044 (0.001)	0.930 (0.002)	0.539 (0.015)	0.034 (0.001)	0.939 (0.001)	0.629 (0.011)	0.027 (0.001)	0.945 (0.002)	0.684 (0.009)
SPIEC (mb)	-	0.926 (0.001)	0.556 (0.027)	-	0.930 (0.003)	0.602 (0.014)	-	0.934 (0.003)	0.644 (0.016)
SPIEC (gl)	0.050 (0.000)	0.926 (0.001)	0.574 (0.017)	0.050 (0.000)	0.930 (0.002)	0.611 (0.013)	0.050 (0.000)	0.935 (0.003)	0.649 (0.014)
CCREPE	0.091 (0.002)	0.923 (0.001)	0.428 (0.014)	0.093 (0.001)	0.933 (0.002)	0.554 (0.012)	0.095 (0.001)	0.942 (0.002)	0.643 (0.009)
Scale-free Graph									
MPLasso	0.032 (0.005)	0.986 (0.001)	0.761 (0.024)	0.031 (0.004)	0.990 (0.002)	0.846 (0.038)	0.028 (0.005)	0.993 (0.002)	0.923 (0.036)
CCLasso	0.042 (0.005)	0.981 (0.001)	0.565 (0.031)	0.041 (0.003)	0.984 (0.001)	0.696 (0.050)	0.036 (0.005)	0.985 (0.001)	0.771 (0.043)
SparCC	0.052 (0.002)	0.981 (0.000)	0.543 (0.028)	0.042 (0.002)	0.983 (0.001)	0.667 (0.045)	0.036 (0.004)	0.985 (0.001)	0.757 (0.044)
REBACCA	0.034 (0.005)	0.984 (0.001)	0.675 (0.027)	0.030 (0.005)	0.986 (0.002)	0.756 (0.051)	0.025 (0.006)	0.986 (0.002)	0.786 (0.055)
SPIEC (mb)	-	0.981 (0.002)	0.625 (0.060)	-	0.985 (0.002)	0.707 (0.047)	-	0.987 (0.002)	0.772 (0.035)
SPIEC (gl)	0.033 (0.005)	0.982 (0.001)	0.680 (0.025)	0.034 (0.005)	0.985 (0.002)	0.752 (0.034)	0.034 (0.005)	0.987 (0.002)	0.785 (0.034)
CCREPE	0.038 (0.002)	0.981 (0.000)	0.563 (0.034)	0.037 (0.002)	0.983 (0.001)	0.703 (0.049)	0.037 (0.002)	0.986 (0.002)	0.802 (0.043)

We consider five different graph structures and three sets of parameters, namely, $(p = 100, n = 100)$, $(p = 100, n = 200)$, and $(p = 100, n = 400)$. For each experiment, we average over 100 simulation runs with standard deviations in round brackets. Bold number shows best result.