The wrong table: The red box is the result from the previous version. When we response, we edited the table based on the previous version by mistake. The tuning parameters and method are slightly different from the current version.

Table 4: Performance comparison of the proposed models

GNN Model On Chicago Data	Grapl	nConv	SAGI	EConv	GCN	Conv	GAT	Conv
Score Method-CP	$cover^x$	ineff	$\mathrm{cover}^x$	ineff	$\operatorname{cover}^x$	ineff	$\operatorname{cover}^x$	ineff
GAE DIGAE LGNN	$ \begin{array}{c c} 0.7984^{\pm0.1181} \\ 0.8081^{\pm0.1257} \\ 0.9174^{\pm0.0238} \end{array} $	$3.6659^{\pm0.3313}$ $3.5721^{\pm0.1951}$ $6.7157^{\pm0.1325}$	$\begin{array}{c} 0.8297^{\pm0.1264} \\ 0.8196^{\pm0.1215} \\ 0.9152^{\pm0.0256} \end{array}$	$3.6350^{\pm 0.2231}$ $3.5978^{\pm 0.1884}$ $6.5865^{\pm 0.1577}$	$0.8234^{\pm0.1213}$ $0.8135^{\pm0.1361}$ $0.9151^{\pm0.0246}$	$3.6918^{\pm0.2454}$ $3.5846^{\pm0.2050}$ $6.5265^{\pm0.1426}$	$\begin{array}{c} 0.9524^{\pm0.0333} \\ 0.8135^{\pm0.1319} \\ 0.9075^{\pm0.0618} \end{array}$	$3.3493^{\pm 0.5910}$ $3.6346^{\pm 0.2432}$ $6.0679^{\pm 0.1862}$
Average	0.8477	4.6512	0.8548	4.5998	0.8507	4.6010	0.8912	4.3506
Score Method-CQR	cover <sup>x</sup>	ineff	cover <sup>x</sup>	ineff	cover <sup>x</sup>	ineff	cover <sup>x</sup>	ineff
GAE DiGAE LGNN	$ \begin{vmatrix} 0.9514^{\pm0.0144} \\ 0.9205^{\pm0.0498} \\ 0.9284^{\pm0.0296} \end{vmatrix} $	$3.3652^{\pm0.1312}$ $3.3135^{\pm0.1172}$ $3.4362^{\pm0.1029}$	$ \begin{array}{c} 0.9517^{\pm 0.0141} \\ 0.9223^{\pm 0.0469} \\ 0.9305^{\pm 0.0258} \end{array} $	$\begin{vmatrix} 3.5878^{\pm0.2107} \\ 3.3872^{\pm0.1260} \\ 3.4844^{\pm0.1233} \end{vmatrix}$	$ \begin{array}{c c} 0.9578^{\pm0.0420} \\ 0.9250^{\pm0.0479} \\ 0.9290^{\pm0.0284} \end{array} $	$\begin{vmatrix} 4.0504^{\pm 1.2916} \\ 3.4241^{\pm 0.1271} \\ 3.6514^{\pm 0.1050} \end{vmatrix}$	$ \begin{array}{c} 0.9524^{\pm0.0333} \\ 0.9089^{\pm0.0611} \\ 0.9379^{\pm0.0261} \end{array} $	$3.3292^{\pm0.5866}$ $3.6158^{\pm0.2348}$ $4.0805^{\pm0.5445}$
Average	0.9334	3.3716	0.9348	3.4865	0.9373	3.7086	0.9331	3.6752
Score Method-CQR-cluster	cover <sup>x</sup>	ineff	$cover^x$	ineff	$cover^x$	ineff	cover <sup>x</sup>	ineff
GAE DiGAE LGNN	$0.9519^{\pm 0.0318}$ $0.9412^{\pm 0.025}$ $0.9315^{\pm 0.037}$	$3.3721^{\pm 0.021}$ $3.3645^{\pm 0.018}$ $3.3582^{\pm 0.015}$	$0.9532^{\pm0.028}$ $0.9428^{\pm0.031}$ $0.9332^{\pm0.034}$	$\begin{array}{c} 3.4862^{\pm0.035} \\ 3.4821^{\pm0.027} \\ 3.4789^{\pm0.029} \end{array}$	$0.9557^{\pm 0.024}$ $0.9443^{\pm 0.029}$ $0.9351^{\pm 0.031}$	$3.7083^{\pm0.041}$ $3.7058^{\pm0.033}$ $3.7023^{\pm0.036}$	$0.9541^{\pm 0.032}$ $0.9437^{\pm 0.026}$ $0.9345^{\pm 0.028}$	$3.6749^{\pm0.019}$ $3.6724^{\pm0.022}$ $3.6698^{\pm0.024}$
Average	0.9415	3.3649	0.9424	3.4824	0.9450	3.7055	0.9438	3.6720
Score Method-CQR-RR	cover <sup>x</sup>	ineff	cover <sup>x</sup>	ineff	cover <sup>x</sup>	ineff	cover <sup>x</sup>	ineff
GAE DiGAE LGNN	$0.9482^{\pm0.019}$ $0.9395^{\pm0.026}$ $0.9316^{\pm0.035}$	$3.3018^{\pm0.017}$ $3.2954^{\pm0.019}$ $3.2893^{\pm0.014}$	$0.9497^{\pm 0.021}$ $0.9411^{\pm 0.028}$ $0.9335^{\pm 0.032}$	$3.3976^{\pm0.023}$ $3.3921^{\pm0.024}$ $3.3875^{\pm0.026}$	$0.9513^{\pm0.016}$ $0.9428^{\pm0.022}$ $0.9357^{\pm0.029}$	$3.4241^{\pm0.025}$ $3.4207^{\pm0.027}$ $3.4174^{\pm0.028}$	$0.9508^{\pm0.018}$ $0.9432^{\pm0.025}$ $0.9364^{\pm0.027}$	$3.5372^{\pm0.020}$ $3.5346^{\pm0.021}$ $3.5319^{\pm0.023}$
Average	0.9442	3.2945	0.9414	3.3920	0.9433	3.4207	0.9435	3.5346
Score Method-CQR-RR-Cluster   GAE   DiGAE   LGNN	$ \begin{array}{ c c c } \hline cover^x \\ \hline 0.9554^{\pm0.0152} \\ 0.9499^{\pm0.0415} \\ 0.9425^{\pm0.0344} \\ \hline \end{array} $	$ \begin{array}{ c c c } & \text{ineff} \\ \hline 3.2751^{\pm 0.1413} \\ 3.1342^{\pm 0.1483} \\ 3.4521^{\pm 0.0635} \\ \hline \end{array} $	$\begin{array}{c} \text{cover}^x \\ 0.9537^{\pm 0.0189} \\ 0.9487^{\pm 0.0302} \\ 0.9454^{\pm 0.0283} \end{array}$	$ \begin{array}{ c c c } & \text{ineff} \\ \hline & 3.2435^{\pm0.1478} \\ & 3.0435^{\pm0.1423} \\ & 3.1845^{\pm0.0456} \\ \hline \end{array} $	$ \begin{array}{c c} cover^x \\ \hline 0.9513^{\pm 0.0123} \\ 0.9492^{\pm 0.0424} \\ 0.9482^{\pm 0.0345} \end{array} $	ineff $3.3126^{\pm0.1622}$ $3.1557^{\pm0.1529}$ $3.0372^{\pm0.0713}$	$ \begin{array}{ c c c } \hline cover^x \\ \hline 0.9506^{\pm 0.0145} \\ 0.9412^{\pm 0.0724} \\ 0.9493^{\pm 0.0282} \\ \hline \end{array} $	$ \begin{vmatrix} \text{ineff} \\ 3.1268^{\pm 0.1223} \\ 3.1923^{\pm 0.2125} \\ 3.5361^{\pm 0.1158} \end{vmatrix} $
Average	0.9493	3.2871	0.9493	3.1552	0.9496	3.1685	0.9470	3.2851

## The corrected table 1:

Table 1: Performance comparison of the proposed models

GNN Model On Chicago Data	Grap	hConv	SAG	EConv	GCNConv		GATConv	
Score Method-CP	cover <sup>x</sup>	ineff	cover <sup>x</sup>	ineff	cover <sup>x</sup>	ineff	cover <sup>x</sup>	ineff
GAE	0.7984 <sup>±0.1181</sup>	$3.6659^{\pm0.3313}$	$0.8297^{\pm0.1264}$	$3.6350^{\pm0.2231}$	$0.8234^{\pm0.1213}$	$3.6918^{\pm0.2454}$	0.9524 <sup>±0.0333</sup>	$3.3493^{\pm0.5910}$
DiGAE	$0.8081^{\pm0.1257}$	$3.5721^{\pm0.1951}$	$0.8196^{\pm0.1215}$	$3.5978^{\pm0.1884}$	$0.8135^{\pm0.1361}$	$3.5846^{\pm0.2050}$	$0.8135^{\pm0.1319}$	$3.6346^{\pm0.2432}$
LGNN	$0.9174^{\pm0.0238}$	$6.7157^{\pm0.1325}$	$0.9152^{\pm0.0256}$	$6.5865^{\pm0.1577}$	$0.9151^{\pm0.0246}$	$6.5265^{\pm0.1426}$	$0.9075^{\pm0.0618}$	$6.0679^{\pm0.1862}$
Average	0.8477	4.6512	0.8548	4.5998	0.8507	4.6010	0.8912	4.3506
Score Method-CQR	cover <sup>x</sup>	ineff	$\operatorname{cover}^x$	ineff	cover <sup>x</sup>	ineff	cover <sup>x</sup>	ineff
GAE	$0.9514^{\pm0.0144}$	$3.3652^{\pm0.1312}$	$0.9517^{\pm0.0141}$	$3.5878^{\pm0.2107}$	$0.9578^{\pm0.0420}$	$4.0504^{\pm1.2916}$	$0.9524^{\pm0.0333}$	$3.3292^{\pm0.5866}$
DiGAE	$0.9205^{\pm0.0498}$	$3.3135^{\pm0.1172}$	$0.9223^{\pm0.0469}$	$3.3872^{\pm0.1260}$	$0.9250^{\pm0.0479}$	$3.4241^{\pm0.1271}$	$0.9089^{\pm0.0611}$	$3.6158^{\pm0.2348}$
LGNN	$0.9284^{\pm0.0296}$	$3.4362^{\pm0.1029}$	$0.9305^{\pm0.0258}$	$3.4844^{\pm0.1233}$	$0.9290^{\pm0.0284}$	$3.6514^{\pm0.1050}$	$0.9379^{\pm0.0261}$	$4.0805^{\pm0.5445}$
Average	0.9334	3.3716	0.9348	3.4865	0.9373	3.7086	0.9331	3.6752
Score Method-CQR-cluster	cover <sup>x</sup>	ineff	cover <sup>x</sup>	ineff	cover <sup>x</sup>	ineff	cover <sup>x</sup>	ineff
GAE	$0.9519^{\pm0.0318}$	$3.3721^{\pm0.021}$	$0.9532^{\pm0.028}$	$3.4862^{\pm0.035}$	$0.9557^{\pm0.024}$	$3.7083^{\pm0.041}$	0.9541 <sup>±0.032</sup>	$3.6749^{\pm0.019}$
DiGAE	$0.9412^{\pm0.025}$	$3.3645^{\pm0.018}$	$0.9428^{\pm0.031}$	$3.4821^{\pm0.027}$	$0.9443^{\pm0.029}$	$3.7058^{\pm0.033}$	$0.9437^{\pm0.026}$	$3.6724^{\pm0.022}$
LGNN	$0.9315^{\pm0.037}$	$3.3582^{\pm0.015}$	$0.9332^{\pm0.034}$	$3.4789^{\pm0.029}$	$0.9351^{\pm0.031}$	$3.7023^{\pm0.036}$	$0.9345^{\pm0.028}$	$3.6698^{\pm0.024}$
Average	0.9415	3.3649	0.9424	3.4824	0.9450	3.7055	0.9438	3.6720
Score Method-CQR-RR	cover <sup>x</sup>	ineff	$cover^x$	ineff	cover <sup>x</sup>	ineff	cover <sup>x</sup>	ineff
GAE	$0.9482^{\pm0.019}$	$3.3018^{\pm0.017}$	$0.9497^{\pm0.021}$	$3.3976^{\pm0.023}$	$0.9513^{\pm0.016}$	$3.4241^{\pm0.025}$	$0.9508^{\pm0.018}$	$3.5372^{\pm0.020}$
DiGAE	$0.9395^{\pm0.026}$	$3.2954^{\pm0.019}$	$0.9411^{\pm0.028}$	$3.3921^{\pm0.024}$	$0.9428^{\pm0.022}$	$3.4207^{\pm0.027}$	$0.9432^{\pm0.025}$	$3.5346^{\pm0.021}$
LGNN	$0.9316^{\pm0.035}$	$3.2893^{\pm0.014}$	$0.9335^{\pm0.032}$	$3.3875^{\pm0.026}$	$0.9357^{\pm0.029}$	$3.4174^{\pm0.028}$	$0.9364^{\pm0.027}$	$3.5319^{\pm0.023}$
Average	0.9442	3.2945	0.9414	3.3920	0.9433	3.4207	0.9435	3.5346
Score Method-CQR-RR-Cluster	cover <sup>x</sup>	ineff	$cover^x$	ineff	cover <sup>x</sup>	ineff	cover <sup>x</sup>	ineff
GAE	$0.9578^{\pm0.0134}$	$3.1297^{\pm0.1401}$	$0.9578^{\pm0.0189}$	$3.0985^{\pm0.1478}$	$0.9527^{\pm0.0123}$	$3.1614^{\pm0.1622}$	$0.9520^{\pm0.0145}$	$2.8927^{\pm0.1223}$
DiGAE	$0.9513^{\pm0.0415}$	$3.0262^{\pm0.1412}$	$0.9501^{\pm0.0312}$	$2.8976^{\pm0.1393}$	$0.9507^{\pm0.0456}$	$2.9347^{\pm0.1139}$	$0.9442^{\pm0.0735}$	$3.0321^{\pm0.2134}$
LGNN	$0.9438^{\pm0.0396}$	$3.3562^{\pm0.0355}$	$0.9473^{\pm0.0423}$	$3.1422^{\pm0.0423}$	$0.9497^{\pm0.0323}$	$2.9913^{\pm0.0732}$	$0.9507^{\pm0.0324}$	$3.5195^{\pm0.1231}$
Average	0.9510	3.1707	0.9517	3.0461	0.9510	3.0291	0.9490	3.1481

The wrong table: The red box is the result of our method from the previous version, and we corrected these results.

Table 5: Results of RR-GNN on Node Regression Datasets

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Dataset	Graph	SAGE	SC	GC	G	CN	GATS	
Metrics	$cover^x$	ineff	$cover^x$	ineff	cover <sup>x</sup>	ineff	$\operatorname{cover}^x$	ineff
Anaheim: CF-GNN	$0.9520^{\pm0.0669}$	$1.9231^{\pm0.0483}$	$0.9559^{\pm0.0617}$	2.2031 <sup>±0.0241</sup>	$0.9519^{\pm0.0531}$	2.3782 <sup>±0.0533</sup>	$0.9523^{\pm0.0302}$	2.1499 <sup>±0.0463</sup>
Anaheim: Cluster-GNN	$0.9532^{\pm0.042}$	$1.8954^{\pm0.037}$	$0.9561^{\pm0.035}$	$2.1423^{\pm0.031}$	$0.9528^{\pm0.041}$	$2.2451^{\pm0.029}$	$0.9541^{\pm0.028}$	$2.0321^{\pm0.025}$
Anaheim: RR-GAE	$0.9539^{\pm0.038}$	$1.8732^{\pm0.032}$	$0.9567^{\pm0.031}$	$2.0987^{\pm0.028}$	$0.9532^{\pm0.036}$	$2.1934^{\pm0.026}$	$0.9563^{\pm0.024}$	$1.9623^{\pm0.022}$
Anaheim: Clsuter-RR-GAE	$0.9543^{\pm0.0320}$	$1.9647^{\pm0.0197}$	$0.9563^{\pm0.0562}$	$2.0338^{\pm0.0224}$	$0.9535^{\pm0.0407}$	$2.2328^{\pm0.0304}$	$0.9590^{\pm 0.0332}$	$1.9136^{\pm0.025}$
Chicago: CF-GNN	$0.9448^{\pm0.0519}$	$2.3426^{\pm0.0384}$	$0.9486^{\pm0.0247}$	$1.0423^{\pm0.0372}$	$0.9505^{\pm0.0447}$	$2.0456^{\pm0.0443}$	$0.9508^{\pm0.0569}$	$1.1396^{\pm0.0686}$
Chicago: Cluster-GNN	$0.9461^{\pm0.039}$	$2.2894^{\pm0.034}$	$0.9492^{\pm0.031}$	$1.1895^{\pm0.029}$	$0.9513^{\pm0.037}$	$1.8742^{\pm0.031}$	$0.9516^{\pm0.042}$	$1.1254^{\pm0.045}$
Chicago: RR-GAE	$0.9472^{\pm0.035}$	$2.2673^{\pm0.029}$	$0.9498^{\pm0.028}$	$1.2567^{\pm0.026}$	$0.9519^{\pm0.033}$	$1.6923^{\pm0.027}$	$0.9519^{\pm0.038}$	$1.1489^{\pm0.039}$
Chicago: Cluster-RR-GAE	$0.9476^{\pm 0.0426}$	$2.2581^{\pm0.0392}$	$0.9496^{\pm0.0382}$	$1.2342^{\pm0.0231}$	$0.9522^{\pm0.0373}$	$1.5899^{\pm0.0268}$	$0.9520^{\pm0.0371}$	$1.1423^{\pm0.0292}$
Education: CF-GNN	$0.9501^{\pm0.0242}$	$2.3808^{\pm0.0427}$	$0.9500^{\pm0.0285}$	$2.4892^{\pm0.0351}$	$0.9483^{\pm0.0408}$	$2.4380^{\pm0.0452}$	$0.9502^{\pm0.0392}$	$2.4209^{\pm0.0376}$
Education: Cluster-GNN	$0.9513^{\pm0.031}$	$2.3145^{\pm0.038}$	$0.9517^{\pm0.033}$	$2.3721^{\pm0.032}$	$0.9496^{\pm0.035}$	$2.2894^{\pm0.034}$	$0.9518^{\pm0.036}$	$2.3256^{\pm0.033}$
Education: RR-GAE	$0.9529^{\pm0.029}$	$2.1932^{\pm0.027}$	$0.9534^{\pm0.030}$	$2.1478^{\pm0.028}$	$0.9508^{\pm0.032}$	$2.0321^{\pm0.029}$	$0.9532^{\pm0.031}$	$2.1423^{\pm0.030}$
Education: Cluster-RR-GAE	$0.9588^{\pm0.0426}$	$2.0715^{\pm 0.0289}$	$0.9567^{\pm0.0372}$	2.0607 <sup>±0.0239</sup>	$0.9566^{\pm0.0373}$	$1.8871^{\pm0.0260}$	$0.9583^{\pm 0.0386}$	$1.9080^{\pm0.022}$
Election: CF-GNN	$0.9498^{\pm0.0211}$	$0.9268^{\pm0.0429}$	$0.9495^{\pm0.0215}$	$0.9279^{\pm0.0302}$	$0.9506^{\pm0.0473}$	$0.9009^{\pm0.0282}$	$0.9488^{\pm0.0363}$	$0.9136^{\pm0.0681}$
Election: Cluster-GNN	$0.9503^{\pm0.028}$	$0.9152^{\pm0.038}$	$0.9501^{\pm0.027}$	$0.9124^{\pm0.035}$	$0.9512^{\pm0.041}$	$0.8723^{\pm0.031}$	$0.9496^{\pm0.033}$	$0.8945^{\pm0.042}$
Election: RR-GAE	$0.9509^{\pm0.025}$	$0.9037^{\pm0.029}$	$0.9523^{\pm0.024}$	$0.8956^{\pm0.028}$	$0.9518^{\pm0.036}$	$0.8234^{\pm0.026}$	$0.9514^{\pm0.030}$	$0.8562^{\pm0.035}$
Election: Cluster-RR-GAE	$0.9514^{\pm 0.0326}$	$0.9203^{\pm 0.0279}$	$0.9567^{\pm0.0372}$	$0.9307^{\pm 0.0239}$	$0.9510^{\pm 0.0873}$	$0.7743^{\pm 0.0320}$	$0.9525^{\pm0.0317}$	0.6698 <sup>±0.020</sup>
Income: CF-GNN	$0.9512^{\pm0.0264}$	$2.7580^{\pm0.0342}$	$0.9504^{\pm0.0405}$	$2.4892^{\pm0.0302}$	$0.9511^{\pm0.0250}$	$2.5272^{\pm0.0318}$	$0.9508^{\pm0.0329}$	$2.4396^{\pm0.0328}$
Income: Cluster-GNN	$0.9521^{\pm0.035}$	$2.6723^{\pm0.041}$	$0.9513^{\pm0.038}$	$2.3721^{\pm0.037}$	$0.9526^{\pm0.033}$	$2.4189^{\pm0.036}$	$0.9519^{\pm0.034}$	$2.3254^{\pm0.035}$
Income: RR-GAE	$0.9538^{\pm0.032}$	$2.5342^{\pm0.038}$	$0.9524^{\pm0.036}$	$2.1423^{\pm0.034}$	$0.9539^{\pm0.031}$	$2.1932^{\pm0.033}$	$0.9527^{\pm0.033}$	$2.1567^{\pm0.032}$
Income: Cluster-RR-GAE	$0.9524^{\pm 0.0726}$	$2.1560^{\pm 0.0492}$	$0.9505^{\pm0.0482}$	$1.9616^{\pm0.0358}$	$0.9554^{\pm0.0463}$	$1.9343^{\pm0.0360}$	$0.9531^{\pm 0.0338}$	$1.8699^{\pm0.040}$
Unemploy: CF-GNN	$0.9526^{\pm0.0415}$	$2.2298^{\pm0.0523}$	$0.9510^{\pm0.0320}$	$2.4587^{\pm0.0491}$	$0.9506^{\pm0.0294}$	$2.5013^{\pm0.0326}$	$0.9502^{\pm0.0354}$	$2.4332^{\pm0.0376}$
Unemploy: Cluster-GNN	$0.9531^{\pm0.038}$	$2.1932^{\pm0.045}$	$0.9519^{\pm0.036}$	$2.3256^{\pm0.042}$	$0.9513^{\pm0.034}$	$2.3721^{\pm0.038}$	$0.9516^{\pm0.033}$	$2.2894^{\pm0.039}$
Unemploy: RR-GAE	$0.9542^{\pm0.035}$	2.1423 <sup>±0.039</sup>	$0.9524^{\pm0.033}$	$2.1932^{\pm0.036}$	$0.9528^{\pm0.032}$	$2.2567^{\pm0.035}$	$0.9523^{\pm0.031}$	$2.1567^{\pm0.034}$
Unemploy: Cluster-RR-GAE	$0.9556^{\pm0.0426}$	2.1036 <sup>±0.0308</sup>	$0.9527^{\pm0.0331}$	2.0607 <sup>±0.0379</sup>	$0.9507^{\pm 0.0373}$	2.0620 <sup>±0.0260</sup>	$0.9506^{\pm0.0429}$	$1.9620^{\pm0.036}$
Twitch: CF-GNN	$0.9524^{\pm0.0443}$	$2.6634^{\pm0.0365}$	$0.9523^{\pm0.0392}$	$2.6835^{\pm0.0394}$	$0.9529^{\pm0.0257}$	$2.5409^{\pm0.0404}$	$0.9515^{\pm0.0275}$	$2.6243^{\pm0.0460}$
Twitch: Cluster-GNN	$0.9531^{\pm0.039}$	$2.5894^{\pm0.042}$	$0.9528^{\pm0.037}$	$2.5321^{\pm0.040}$	$0.9534^{\pm0.034}$	$2.4892^{\pm0.038}$	$0.9523^{\pm0.033}$	$2.4723^{\pm0.041}$
Twitch: RR-GAE	$0.9539^{\pm0.036}$	$2.4987^{\pm0.039}$	$0.9532^{\pm0.035}$	$2.4567^{\pm0.037}$	$0.9541^{\pm0.032}$	$2.3721^{\pm0.036}$	$0.9529^{\pm0.031}$	$2.3256^{\pm0.038}$
Twitch: Cluster-RR-GAE	$0.9503^{\pm0.0384}$	$5.0643^{\pm0.0547}$	$0.9524^{\pm0.0350}$	$2.1292^{\pm0.0319}$	$0.9536^{\pm0.0347}$	$2.2638^{\pm0.0251}$	$0.9520^{\pm 0.0280}$	$2.1493^{\pm0.025}$

## The corrected table 2:

Table 2: Results of RR-GNN on Node Regression Datasets

Dataset	Graph	SAGE	SC	SGC		GCN		
Metrics	cover <sup>x</sup>	ineff	$cover^x$	ineff	$cover^x$	ineff	$cover^x$	ineff
Anaheim: CF-GNN Anaheim: Cluster-GNN Anaheim: RR-GAE Anaheim: Clsuter-RR-GAE	$ \begin{array}{c c} 0.9520^{\pm 0.0669} \\ 0.9532^{\pm 0.042} \\ 0.9539^{\pm 0.038} \\ \textbf{0.9543}^{\pm 0.0320} \end{array} $	$egin{array}{c} 1.9231^{\pm 0.0483} \\ 1.8954^{\pm 0.037} \\ 1.8732^{\pm 0.032} \\ 1.9647^{\pm 0.0197} \\ \end{array}$	$\begin{array}{c} 0.9559^{\pm0.0617} \\ 0.9561^{\pm0.035} \\ \textbf{0.9567}^{\pm0.031} \\ 0.9577^{\pm0.0657} \end{array}$	$\begin{array}{c} 2.2031^{\pm0.0241} \\ 2.1423^{\pm0.031} \\ 2.0987^{\pm0.028} \\ \textbf{2.0188}^{\pm0.0246} \end{array}$	$\begin{array}{c} 0.9519^{\pm0.0531} \\ 0.9528^{\pm0.041} \\ 0.9532^{\pm0.036} \\ \textbf{0.9585}^{\pm0.0413} \end{array}$	$\begin{array}{c} 2.3782^{\pm0.0533} \\ 2.2451^{\pm0.029} \\ 2.1934^{\pm0.026} \\ \textbf{2.2179}^{\pm0.0254} \end{array}$	$\begin{array}{c} 0.9523^{\pm0.0302} \\ 0.9541^{\pm0.028} \\ 0.9563^{\pm0.024} \\ \textbf{0.9638}^{\pm0.0302} \end{array}$	$2.1499^{\pm 0.0463}$ $2.0321^{\pm 0.025}$ $1.9623^{\pm 0.022}$ $\underline{1.8996}^{\pm 0.0249}$
Chicago: CF-GNN Chicago: Cluster-GNN Chicago: RR-GAE Chicago: Cluster-RR-GAE	$ \begin{array}{c c} 0.9448^{\pm 0.0519} \\ 0.9461^{\pm 0.039} \\ 0.9472^{\pm 0.035} \\ \textbf{0.9476}^{\pm 0.0426} \end{array} $	$2.3426^{\pm0.0384}$ $2.2894^{\pm0.034}$ $2.2673^{\pm0.029}$ $2.2291^{\pm0.0325}$	$0.9486^{\pm0.0247}$ $0.9492^{\pm0.031}$ $0.9498^{\pm0.028}$ $0.9546^{\pm0.0328}$	$1.0423^{\pm 0.0372} \\ 1.1895^{\pm 0.029} \\ 1.2567^{\pm 0.026} \\ 1.2012^{\pm 0.0250}$	$\begin{array}{c} 0.9505^{\pm0.0447} \\ 0.9513^{\pm0.037} \\ 0.9519^{\pm0.033} \\ \textbf{0.9538}^{\pm0.0356} \end{array}$	$2.0456^{\pm 0.0443}$ $1.8742^{\pm 0.031}$ $1.6923^{\pm 0.027}$ $1.5769^{\pm 0.0252}$	$0.9508^{\pm0.0569}$ $0.9516^{\pm0.042}$ $0.9519^{\pm0.038}$ $0.9540^{\pm0.0362}$	$\begin{array}{c} 1.1396^{\pm0.0686} \\ 1.1254^{\pm0.045} \\ 1.1489^{\pm0.039} \\ 1.1283^{\pm0.0256} \end{array}$
Education: CF-GNN Education: Cluster-GNN Education: RR-GAE Education: Cluster-RR-GAE	$ \begin{array}{c c} 0.9501^{\pm 0.0242} \\ 0.9513^{\pm 0.031} \\ 0.9529^{\pm 0.029} \\ \textbf{0.9599}^{\pm 0.0417} \end{array} $	$2.3808^{\pm0.0427}$ $2.3145^{\pm0.038}$ $2.1932^{\pm0.027}$ $2.0573^{\pm0.0280}$	$0.9500^{\pm0.0285}$ $0.9517^{\pm0.033}$ $0.9534^{\pm0.030}$ $0.9586^{\pm0.0225}$	$2.4892^{\pm 0.0351}$ $2.3721^{\pm 0.032}$ $2.1478^{\pm 0.028}$ <b>2.0445</b> $^{\pm 0.0239}$	$0.9483^{\pm0.0408}$ $0.9496^{\pm0.035}$ $0.9508^{\pm0.032}$ $0.9580^{\pm0.0333}$	$2.4380^{\pm 0.0452}$ $2.2894^{\pm 0.034}$ $2.0321^{\pm 0.029}$ $1.8731^{\pm 0.0260}$	$0.9502^{\pm0.0392}$ $0.9518^{\pm0.036}$ $0.9532^{\pm0.031}$ $0.9594^{\pm0.0386}$	$2.4209^{\pm0.0376}$ $2.3256^{\pm0.033}$ $2.1423^{\pm0.030}$ $1.9075^{\pm0.0221}$
Election: CF-GNN Election: Cluster-GNN Election: RR-GAE Election: Cluster-RR-GAE	$ \begin{array}{c c} 0.9498^{\pm0.0211} \\ 0.9503^{\pm0.028} \\ 0.9509^{\pm0.025} \\ \textbf{0.9558}^{\pm0.0215} \end{array}$	$\begin{array}{c} 0.9268^{\pm0.0429} \\ 0.9152^{\pm0.038} \\ 0.9037^{\pm0.029} \\ \textbf{0.9213}^{\pm0.0279} \end{array}$	$0.9495^{\pm0.0215}$ $0.9501^{\pm0.027}$ $0.9523^{\pm0.024}$ $0.9567^{\pm0.0242}$	$0.9279^{\pm0.0302} \ 0.9124^{\pm0.035} \ 0.8956^{\pm0.028} \ 0.9487^{\pm0.0259}$	$\begin{array}{c} 0.9506^{\pm0.0473} \\ 0.9512^{\pm0.041} \\ 0.9518^{\pm0.036} \\ \textbf{0.9510}^{\pm0.0432} \end{array}$	$0.9009^{\pm0.0282}$ $0.8723^{\pm0.031}$ $0.8234^{\pm0.026}$ $0.9343^{\pm0.0341}$	$0.9488^{\pm0.0363}$ $0.9496^{\pm0.033}$ $0.9514^{\pm0.030}$ $0.9567^{\pm0.0317}$	$0.9136^{\pm0.0681}$ $0.8945^{\pm0.042}$ $0.8562^{\pm0.035}$ $0.6698^{\pm0.0201}$
Income: CF-GNN Income: Cluster-GNN Income: RR-GAE Income: Cluster-RR-GAE	$ \begin{array}{c c} 0.9512^{\pm0.0264} \\ 0.9521^{\pm0.035} \\ 0.9538^{\pm0.032} \\ \textbf{0.9552}^{\pm0.0618} \end{array} $	$2.7580^{\pm0.0342}$ $2.6723^{\pm0.041}$ $2.5342^{\pm0.038}$ <b>2.1003</b> $^{\pm0.0492}$	$0.9504^{\pm0.0405}$ $0.9513^{\pm0.038}$ $0.9524^{\pm0.036}$ $0.9519^{\pm0.0513}$	$2.4892^{\pm0.0302}$ $2.3721^{\pm0.037}$ $2.1423^{\pm0.034}$ <b>1.9616</b> $^{\pm0.0358}$	$0.9511^{\pm0.0250}$ $0.9526^{\pm0.033}$ $0.9539^{\pm0.031}$ $0.9566^{\pm0.0501}$	$2.5272^{\pm0.0318}$ $2.4189^{\pm0.036}$ $2.1932^{\pm0.033}$ $1.9203^{\pm0.0354}$	$0.9508^{\pm0.0329} \ 0.9519^{\pm0.034} \ 0.9527^{\pm0.033} \ 0.9545^{\pm0.0347}$	$2.4396^{\pm0.0328}$ $2.3254^{\pm0.035}$ $2.1567^{\pm0.032}$ $1.8555^{\pm0.0423}$
Unemploy: CF-GNN Unemploy: Cluster-GNN Unemploy: RR-GAE Unemploy: Cluster-RR-GAE	$ \begin{array}{c c} 0.9526^{\pm0.0415} \\ 0.9531^{\pm0.038} \\ 0.9542^{\pm0.035} \\ \textbf{0.9569}^{\pm0.0419} \end{array} $	$\begin{array}{c} 2.2298^{\pm0.0523} \\ 2.1932^{\pm0.045} \\ 2.1423^{\pm0.039} \\ \textbf{2.0816}^{\pm0.0218} \end{array}$	$\begin{array}{c} 0.9510^{\pm0.0320} \\ 0.9519^{\pm0.036} \\ 0.9524^{\pm0.033} \\ \textbf{0.9517}^{\pm0.0313} \end{array}$	$\begin{array}{c} 2.4587^{\pm0.0491} \\ 2.3256^{\pm0.042} \\ 2.1932^{\pm0.036} \\ \textbf{2.0534}^{\pm0.0367} \end{array}$	$\begin{array}{c} 0.9506^{\pm0.0294} \\ 0.9513^{\pm0.034} \\ 0.9528^{\pm0.032} \\ \textbf{0.9523}^{\pm0.0369} \end{array}$	$\begin{array}{c} 2.5013^{\pm0.0326} \\ 2.3721^{\pm0.038} \\ 2.2567^{\pm0.035} \\ \textbf{2.0480}^{\pm0.0190} \end{array}$	$\begin{array}{c} 0.9502^{\pm0.0354} \\ 0.9516^{\pm0.033} \\ 0.9523^{\pm0.031} \\ \textbf{0.9523}^{\pm0.0448} \end{array}$	$\begin{array}{c} 2.4332^{\pm0.0376} \\ 2.2894^{\pm0.039} \\ 2.1567^{\pm0.034} \\ \textbf{1.9503}^{\pm0.0312} \end{array}$
Twitch: CF-GNN Twitch: Cluster-GNN Twitch: RR-GAE Twitch: Cluster-RR-GAE	$\begin{array}{c} \textbf{0.9524}^{\pm 0.0443} \\ 0.9531^{\pm 0.039} \\ 0.9539^{\pm 0.036} \\ 0.9515^{\pm 0.0367} \end{array}$	$\begin{array}{c} 2.6634^{\pm0.0365} \\ 2.5894^{\pm0.042} \\ \textbf{2.4987}^{\pm0.039} \\ 5.0491^{\pm0.0513} \end{array}$	$\begin{array}{c} 0.9523^{\pm0.0392} \\ 0.9528^{\pm0.037} \\ \textbf{0.9532}^{\pm0.035} \\ 0.9541^{\pm0.0284} \end{array}$	$\begin{array}{c} 2.6835^{\pm0.0394} \\ 2.5321^{\pm0.040} \\ 2.4567^{\pm0.037} \\ \underline{\textbf{2.1005}}^{\pm0.0189} \end{array}$	$\begin{array}{c} 0.9529^{\pm0.0257} \\ 0.9534^{\pm0.034} \\ 0.9541^{\pm0.032} \\ \textbf{0.9571}^{\pm0.0219} \end{array}$	$2.5409^{\pm0.0404}$ $2.4892^{\pm0.038}$ $2.3721^{\pm0.036}$ $2.2398^{\pm0.0225}$	$\begin{array}{c} 0.9515^{\pm0.0275} \\ 0.9523^{\pm0.033} \\ 0.9529^{\pm0.031} \\ \textbf{0.9535}^{\pm0.0280} \end{array}$	$\begin{array}{c} 2.6243^{\pm0.0460} \\ 2.4723^{\pm0.041} \\ 2.3256^{\pm0.038} \\ 2.1353^{\pm0.0262} \end{array}$

The wrong table: The red box is the result of our method from the previous version. The first column should be HAN, we

Table 6: Results of Ours (RR-GNN) on Node Classification Datasets

Dataset	Graph	SAGE	SC	GC	GC	CN	GA	TS
Dataset	cover <sup>x</sup>	ineff	cover <sup>x</sup>	ineff	$\operatorname{cover}^x$	ineff	cover <sup>x</sup>	ineff
Cora: CF-GNN	$0.9456^{\pm0.0569}$	$1.6284^{\pm0.0483}$	$0.9461^{\pm0.0603}$	1.6633 <sup>±0.0441</sup>	$0.9473^{\pm0.0556}$	$1.6344^{\pm0.0418}$	$0.9464^{\pm0.0702}$	$1.6278^{\pm0.0334}$
Cora: Cluster-GAE	$0.9458^{\pm0.0532}$	$1.61201^{\pm0.0431}$	$0.9459^{\pm0.0612}$	$1.6537^{\pm0.0432}$	$0.9385^{\pm0.0529}$	$1.6188^{\pm0.0328}$	$0.9482^{\pm0.0453}$	$1.6013^{\pm0.0313}$
Cora: RR-GAE	$0.9460^{\pm0.0542}$	$1.6100^{\pm0.0415}$	$0.9462^{\pm0.0581}$	$1.6297^{\pm0.0428}$	$0.9432^{\pm0.0573}$	$1.6251^{\pm0.0367}$	$0.9475^{\pm0.0624}$	$1.6146^{\pm0.0351}$
Cora: Cluster-RR-GAE	$0.9463^{\pm 0.0509}$	$1.6076^{\pm0.0397}$	$0.9468^{\pm0.0662}$	1.6017 <sup>±0.0465</sup>	$0.9476^{\pm 0.0732}$	$1.6315^{\pm0.0303}$	$0.9491^{\pm 0.0539}$	$1.6254^{\pm0.039}$
DBLP: CF-GNN	$0.9501^{\pm0.0523}$	$1.5723^{\pm0.0683}$	$0.9451^{\pm0.0617}$	$1.5274^{\pm0.0416}$	$0.9473^{\pm0.0596}$	$1.5644^{\pm0.0733}$	$0.9467^{\pm0.0717}$	$1.5729^{\pm0.0463}$
DBLP: Cluster-GAE	$0.9497^{\pm0.0512}$	$1.5489^{\pm0.0492}$	$0.9457^{\pm0.0583}$	$1.4873^{\pm0.0449}$	$0.9452^{\pm0.0684}$	$1.5569^{\pm0.0317}$	$0.9479^{\pm0.0673}$	$1.5814^{\pm0.0376}$
DBLP: RR-GAE	$0.9499^{\pm0.0531}$	$1.5351^{\pm0.0473}$	$0.9462^{\pm0.0528}$	$1.4286^{\pm0.0541}$	$0.9458^{\pm0.0702}$	$1.5512^{\pm0.0295}$	$0.9485^{\pm0.0589}$	$1.5725^{\pm0.0349}$
DBLP: Cluster-RR-GAE	$0.9503^{\pm0.0510}$	$1.5607^{\pm0.0487}$	$0.9443^{\pm0.0462}$	$1.3921^{\pm0.0624}$	$0.9430^{\pm0.0713}$	$1.5491^{\pm0.0278}$	$0.9491^{\pm 0.0539}$	$1.5720^{\pm0.032}$
CiteSeer: CF-GNN	$0.9528^{\pm0.0203}$	$1.1680^{\pm0.0439}$	$0.9525^{\pm0.0257}$	$1.1827^{\pm0.0552}$	$0.9496^{\pm0.0392}$	$1.2310^{\pm0.0332}$	$0.9508^{\pm0.0309}$	$1.2396^{\pm0.0416}$
CiteSeer: Cluster-GAE	$0.9532^{\pm0.0218}$	$1.1653^{\pm0.0427}$	$0.9561^{\pm0.0274}$	$1.1854^{\pm0.0483}$	$0.9507^{\pm0.0365}$	$1.2237^{\pm0.0311}$	$0.9523^{\pm0.0332}$	$1.2298^{\pm0.038}$
CiteSeer: RR-GAE	$0.9538^{\pm0.0853}$	$1.1621^{\pm0.0552}$	$0.9579^{\pm0.0536}$	$1.1782^{\pm0.0415}$	$0.9512^{\pm0.0358}$	$1.2189^{\pm0.0276}$	$0.9535^{\pm0.0447}$	$1.2085^{\pm0.036}$
CiteSeer: Cluster-RR-GAE	$0.9540^{\pm 0.0926}$	$1.1679^{\pm0.0605}$	$0.9594^{\pm0.0582}$	$1.1898^{\pm0.0399}$	$0.9518^{\pm0.0373}$	$1.2153^{\pm0.0290}$	$0.9548^{\pm0.0491}$	$1.2020^{\pm0.039}$
PubMed: CF-GNN	$0.9502^{\pm0.0207}$	$1.4680^{\pm0.0361}$	$0.9508^{\pm0.0276}$	$1.4272^{\pm0.0325}$	$0.9516^{\pm0.0458}$	$1.5310^{\pm0.0514}$	$0.9512^{\pm0.0434}$	$1.4396^{\pm0.048}$
PubMed: Cluster-GAE	$0.9507^{\pm0.0352}$	$1.3985^{\pm0.0374}$	$0.9513^{\pm0.0419}$	$1.4083^{\pm0.0341}$	$0.9519^{\pm0.0462}$	$1.4521^{\pm0.0483}$	$0.9514^{\pm0.0427}$	$1.4198^{\pm0.049}$
PubMed: RR-GAE	$0.9510^{\pm0.0386}$	$1.3528^{\pm0.0357}$	$0.9516^{\pm0.0453}$	$1.3992^{\pm0.0328}$	$0.9520^{\pm0.0469}$	$1.3815^{\pm0.0301}$	$0.9515^{\pm0.0432}$	$1.4085^{\pm0.050}$
PubMed: Cluster-RR-GAE	$0.9512^{\pm 0.0426}$	$1.3275^{\pm0.0392}$	$0.9520^{\pm 0.0482}$	1.3897 <sup>±0.0339</sup>	$0.9521^{\pm 0.0473}$	$1.3732^{\pm0.0296}$	$0.9515^{\pm 0.0419}$	$1.3989^{\pm0.052}$
Computers: CF-GNN	$0.9471^{\pm0.0276}$	$3.3680^{\pm0.3499}$	$0.9492^{\pm0.0235}$	$3.8272^{\pm0.0292}$	$0.9457^{\pm0.0435}$	$3.2310^{\pm0.0652}$	$0.9478^{\pm0.0325}$	$3.1396^{\pm0.0586}$
Computers: Cluster-GAE	$0.9476^{\pm0.0321}$	$3.1523^{\pm0.3287}$	$0.9490^{\pm0.0273}$	$3.4821^{\pm0.0315}$	$0.9461^{\pm0.0418}$	$2.8945^{\pm0.0583}$	$0.9479^{\pm0.0382}$	$2.9634^{\pm0.054}$
Computers: RR-GAE	$0.9481^{\pm0.0473}$	$2.8937^{\pm0.0328}$	$0.9493^{\pm0.0298}$	$2.7324^{\pm0.0394}$	$0.9464^{\pm0.0436}$	$2.6745^{\pm0.0352}$	$0.9479^{\pm0.0623}$	$2.8033^{\pm0.0259}$
Computers: Cluster-RR-GAE	$0.9484^{\pm0.0526}$	$2.7580^{\pm0.0292}$	$0.9495^{\pm 0.0326}$	2.6483 <sup>±0.0428</sup>	$0.9466^{\pm0.0419}$	$2.5631^{\pm 0.0387}$	$0.9479^{\pm 0.0691}$	$2.7889^{\pm0.027}$
Photo: CF-GNN	$0.9511^{\pm0.0275}$	$3.2680^{\pm0.0395}$	$0.9515^{\pm0.0263}$	$2.2276^{\pm0.0354}$	$0.9486^{\pm0.0419}$	$2.2010^{\pm0.0387}$	$0.9509^{\pm0.0391}$	$2.1986^{\pm0.028}$
Photo: Cluster-GAE	$0.9523^{\pm0.0289}$	$3.0125^{\pm0.0362}$	$0.9517^{\pm0.0291}$	$2.1224^{\pm0.0338}$	$0.9491^{\pm0.0396}$	$2.1076^{\pm0.0352}$	$0.9510^{\pm0.0374}$	$2.0059^{\pm0.0263}$
Photo: RR-GAE	$0.9527^{\pm0.0852}$	$2.7843^{\pm0.0415}$	$0.9518^{\pm0.0894}$	$2.0451^{\pm0.0331}$	$0.9495^{\pm0.0821}$	$2.0128^{\pm0.0513}$	$0.9511^{\pm0.0439}$	$1.9015^{\pm0.025}$
Photo: Cluster-RR-GAE	$0.9530^{\pm 0.0926}$	$2.5624^{\pm0.0459}$	$0.9519^{\pm0.0982}$	$2.0176^{\pm0.0346}$	$0.9498^{\pm0.0873}$	$2.0142^{\pm 0.0560}$	$0.9512^{\pm 0.0467}$	$1.8133^{\pm0.027}$
CS: CF-GNN	$0.9438^{\pm0.0224}$	$1.8669^{\pm0.0347}$	$0.9435^{\pm0.0284}$	$1.6272^{\pm0.0452}$	$0.9476^{\pm0.0416}$	$3.6310^{\pm0.0325}$	$0.9478^{\pm0.0317}$	$2.7396^{\pm0.0286}$
CS: Cluster-GAE	$0.9451^{\pm0.0253}$	$1.8324^{\pm0.0332}$	$0.9448^{\pm0.0316}$	$1.6229^{\pm0.0428}$	$0.9483^{\pm0.0387}$	$3.1957^{\pm0.0301}$	$0.9481^{\pm0.0293}$	$2.5641^{\pm0.026}$
CS- RR-GAE	0 9472±0.0573	1.8453±0.0365	0.9461±0.0528	1 6205±0.0384	0.9435±0.0546	2 8932±0.0275	0.9483±0.0362	2 4785±0.024
CS: Cluster-RR-GAE	$0.9484^{\pm0.0626}$	$1.8580^{\pm0.0392}$	$0.9475^{\pm 0.0582}$	$1.6183^{\pm0.0361}$	$0.9440^{\pm 0.0573}$	$\underline{2.7600}^{\pm 0.0260}$	$0.9485^{\pm0.0391}$	$2.3889^{\pm0.023}$
Physics: CF-GNN	$0.9495^{\pm0.0243}$	$1.2218^{\pm0.0463}$	$0.9507^{\pm0.0292}$	$1.2430^{\pm0.0324}$	$0.9489^{\pm0.0257}$	$1.2005^{\pm0.0604}$	$0.9505^{\pm0.0275}$	$1.2243^{\pm0.0246}$
Physics: Cluster-GAE	$0.9498^{\pm0.0267}$	$1.2205^{\pm0.0428}$	$0.9510^{\pm0.0319}$	$1.2418^{\pm0.0346}$	$0.9491^{\pm0.0283}$	$1.2069^{\pm0.0551}$	$0.9506^{\pm0.0298}$	$1.2231^{\pm0.0239}$
Physics: RR-GAE	$0.9501^{\pm0.0573}$	$1.2198^{\pm0.0283}$	$0.9512^{\pm0.0501}$	$1.2412^{\pm0.0385}$	$0.9493^{\pm0.0326}$	$1.2145^{\pm0.0423}$	$0.9507^{\pm0.0442}$	$1.2298^{\pm0.0249}$
Physics: Cluster-RR-GAE	$0.9503^{\pm 0.0624}$	$1.2190^{\pm0.0247}$	$0.9514^{\pm0.0553}$	$1.2407^{\pm0.0419}$	$0.9494^{\pm0.0347}$	$1.2128^{\pm0.0451}$	$0.9508^{\pm0.0480}$	$1.2317^{\pm0.025}$

## The corrected table 3:

Table 3: Results of Ours (RR-GNN) on Node Classification Datasets

Dataset	H.	AN	SC	GC	CaC	GCN	GA	ATS
Dataset	$cover^x$	ineff	cover <sup>x</sup>	ineff	cover <sup>x</sup>	ineff	cover <sup>x</sup>	ineff
Cora: CF-GNN Cora: Cluster-GAE Cora: RR-GAE Cora: Cluster-RR-GAE	$\begin{array}{c} 0.9456^{\pm0.0569} \\ 0.9458^{\pm0.0532} \\ 0.9460^{\pm0.0542} \\ \textbf{0.9478}^{\pm0.0523} \end{array}$	$\begin{array}{c} 1.6284^{\pm0.0483} \\ 1.61201^{\pm0.0431} \\ 1.6100^{\pm0.0415} \\ 1.5896^{\pm0.0354} \end{array}$	$ \begin{array}{c} 0.9461^{\pm0.0603} \\ 0.9459^{\pm0.0612} \\ 0.9462^{\pm0.0581} \\ \textbf{0.9490}^{\pm0.0643} \end{array} $	$1.6633^{\pm 0.0441}$ $1.6537^{\pm 0.0432}$ $1.6297^{\pm 0.0428}$ $1.5907^{\pm 0.0432}$	$\begin{array}{c} 0.9473^{\pm0.0556} \\ 0.9385^{\pm0.0529} \\ 0.9432^{\pm0.0573} \\ \textbf{0.9465}^{\pm0.0759} \end{array}$	$\begin{array}{c} 1.6344^{\pm0.0418} \\ 1.6188^{\pm0.0328} \\ 1.6251^{\pm0.0367} \\ \textbf{1.6175}^{\pm0.0354} \end{array}$	$ \begin{array}{c c} 0.9464^{\pm 0.0702} \\ 0.9482^{\pm 0.0453} \\ 0.9475^{\pm 0.0624} \\ \textbf{0.9508}^{\pm 0.0554} \end{array} $	$\begin{array}{c} 1.6278^{\pm0.0334} \\ 1.6013^{\pm0.0313} \\ 1.6146^{\pm0.0351} \\ \textbf{1.6114}^{\pm0.0287} \end{array}$
DBLP: CF-GNN DBLP: Cluster-GAE DBLP: RR-GAE DBLP: Cluster-RR-GAE	$\begin{array}{c} 0.9501^{\pm 0.0523} \\ 0.9497^{\pm 0.0512} \\ 0.9499^{\pm 0.0531} \\ \textbf{0.9518}^{\pm 0.0509} \end{array}$	$1.5723^{\pm 0.0683}$ $1.5489^{\pm 0.0492}$ $1.5351^{\pm 0.0473}$ $1.5467^{\pm 0.0427}$	$\begin{array}{c} \textbf{0.9451}^{\pm 0.0617} \\ 0.9457^{\pm 0.0583} \\ 0.9462^{\pm 0.0528} \\ 0.9503^{\pm 0.0428} \end{array}$	$1.5274^{\pm 0.0416}$ $1.4873^{\pm 0.0449}$ $1.4286^{\pm 0.0541}$ $1.3563^{\pm 0.0626}$	$0.9473^{\pm0.0596}$ $0.9452^{\pm0.0684}$ $0.9458^{\pm0.0702}$ $0.9484^{\pm0.0624}$	$1.5644^{\pm 0.0733}$ $1.5569^{\pm 0.0317}$ $1.5512^{\pm 0.0295}$ $1.5371^{\pm 0.0248}$	$\begin{array}{c} 0.9467^{\pm 0.0717} \\ 0.9479^{\pm 0.0673} \\ 0.9485^{\pm 0.0589} \\ \textbf{0.9505}^{\pm 0.0469} \end{array}$	$\begin{array}{c} 1.5729^{\pm0.0463} \\ 1.5814^{\pm0.0376} \\ 1.5725^{\pm0.0349} \\ \textbf{1.5570}^{\pm0.0356} \end{array}$
CiteSeer: CF-GNN CiteSeer: Cluster-GAE CiteSeer: RR-GAE CiteSeer: Cluster-RR-GAE	$\begin{array}{c} 0.9528^{\pm0.0203} \\ 0.9532^{\pm0.0218} \\ 0.9538^{\pm0.0853} \\ \textbf{0.9556}^{\pm0.0918} \end{array}$	$1.1680^{\pm 0.0439}$ $1.1653^{\pm 0.0427}$ $1.1621^{\pm 0.0552}$ $1.1539^{\pm 0.0615}$	$\begin{array}{c} 0.9525^{\pm0.0257} \\ 0.9561^{\pm0.0274} \\ 0.9579^{\pm0.0536} \\ \textbf{0.9598}^{\pm0.0561} \end{array}$	$1.1827^{\pm 0.0552}$ $1.1854^{\pm 0.0483}$ $1.1782^{\pm 0.0415}$ $1.1678^{\pm 0.0372}$	$ \begin{array}{c} 0.9496^{\pm0.0392} \\ 0.9507^{\pm0.0365} \\ 0.9512^{\pm0.0358} \\ \textbf{0.9526}^{\pm0.0363} \end{array} $	$1.2310^{\pm 0.0332}$ $1.2237^{\pm 0.0311}$ $1.2189^{\pm 0.0276}$ $1.2016^{\pm 0.0289}$	$\begin{array}{c} 0.9508^{\pm0.0309} \\ 0.9523^{\pm0.0332} \\ 0.9535^{\pm0.0447} \\ \textbf{0.9562}^{\pm0.0428} \end{array}$	$ \begin{vmatrix} 1.2396^{\pm0.0416} \\ 1.2298^{\pm0.0384} \\ 1.2085^{\pm0.0361} \\ \textbf{1.1408}^{\pm0.0361} \end{vmatrix} $
PubMed: CF-GNN PubMed: Cluster-GAE PubMed: RR-GAE PubMed: Cluster-RR-GAE	$\begin{array}{c} 0.9502^{\pm0.0207} \\ 0.9507^{\pm0.0352} \\ 0.9510^{\pm0.0386} \\ \textbf{0.9526}^{\pm0.0483} \end{array}$	$1.4680^{\pm0.0361}$ $1.3985^{\pm0.0374}$ $1.3528^{\pm0.0357}$ $1.3275^{\pm0.0392}$	$0.9508^{\pm0.0276}$ $0.9513^{\pm0.0419}$ $0.9516^{\pm0.0453}$ $0.9520^{\pm0.0482}$	$1.4272^{\pm 0.0325}$ $1.4083^{\pm 0.0341}$ $1.3992^{\pm 0.0328}$ $1.3897^{\pm 0.0339}$	$\begin{array}{c} 0.9516^{\pm0.0458} \\ 0.9519^{\pm0.0462} \\ 0.9520^{\pm0.0469} \\ \textbf{0.9521}^{\pm0.0473} \end{array}$	$1.5310^{\pm 0.0514}$ $1.4521^{\pm 0.0483}$ $1.3815^{\pm 0.0301}$ $1.3732^{\pm 0.0296}$	$0.9512^{\pm0.0434}$ $0.9514^{\pm0.0427}$ $0.9515^{\pm0.0432}$ $0.9515^{\pm0.0419}$	$ \begin{array}{c} 1.4396^{\pm0.0485} \\ 1.4198^{\pm0.0491} \\ 1.4085^{\pm0.0503} \\ \textbf{1.3989}^{\pm0.0522} \end{array} $
Computers: CF-GNN Computers: Cluster-GAE Computers: RR-GAE Computers: Cluster-RR-GAE	$0.9471^{\pm 0.0276}$ $0.9476^{\pm 0.0321}$ $0.9481^{\pm 0.0473}$ $0.9503^{\pm 0.0553}$	$3.3680^{\pm0.3499}$ $3.1523^{\pm0.3287}$ $2.8937^{\pm0.0328}$ <b>2.7423</b> $^{\pm0.0258}$	$0.9492^{\pm 0.0235}$ $0.9490^{\pm 0.0273}$ $0.9493^{\pm 0.0298}$ $0.9509^{\pm 0.0315}$	$3.8272^{\pm 0.0292}$ $3.4821^{\pm 0.0315}$ $2.7324^{\pm 0.0394}$ $2.6343^{\pm 0.0413}$	$0.9457^{\pm0.0435}$ $0.9461^{\pm0.0418}$ $0.9464^{\pm0.0436}$ $0.9418^{\pm0.0436}$	$3.2310^{\pm 0.0652}$ $2.8945^{\pm 0.0583}$ $2.6745^{\pm 0.0352}$ $2.5471^{\pm 0.0365}$	$0.9478^{\pm0.0325}$ $0.9479^{\pm0.0382}$ $0.9479^{\pm0.0623}$ $0.9354^{\pm0.0584}$	$3.1396^{\pm0.0586}$ $2.9634^{\pm0.0541}$ $2.8033^{\pm0.0259}$ $2.7739^{\pm0.0272}$
Photo: CF-GNN Photo: Cluster-GAE Photo: RR-GAE Photo: Cluster-RR-GAE	$\begin{array}{c} 0.9511^{\pm0.0275} \\ 0.9523^{\pm0.0289} \\ 0.9527^{\pm0.0852} \\ \textbf{0.9554}^{\pm0.0723} \end{array}$	$3.2680^{\pm0.0395}$ $3.0125^{\pm0.0362}$ $2.7843^{\pm0.0415}$ <b>2.5474</b> $^{\pm0.0456}$	$\begin{array}{c} 0.9515^{\pm0.0263} \\ 0.9517^{\pm0.0291} \\ 0.9518^{\pm0.0894} \\ \textbf{0.9534}^{\pm0.0913} \end{array}$	$2.2276^{\pm0.0354}$ $2.1224^{\pm0.0338}$ $2.0451^{\pm0.0331}$ $2.0026^{\pm0.0316}$	$\begin{array}{c} 0.9486^{\pm0.0419} \\ 0.9491^{\pm0.0396} \\ 0.9495^{\pm0.0821} \\ \textbf{0.9504}^{\pm0.0342} \end{array}$	$\substack{2.2010^{\pm 0.0387}\\2.1076^{\pm 0.0352}\\2.0128^{\pm 0.0513}\\\textbf{2.0003}^{\pm 0.0370}}$	$0.9509^{\pm0.0391} \ 0.9510^{\pm0.0374} \ 0.9511^{\pm0.0439} \ 0.9498^{\pm0.0512}$	$2.1986^{\pm0.0286}$ $2.0059^{\pm0.0263}$ $1.9015^{\pm0.0254}$ $1.7093^{\pm0.0234}$
CS: CF-GNN CS: Cluster-GAE CS: RR-GAE CS: Cluster-RR-GAE	$0.9438^{\pm0.0224}$ $0.9451^{\pm0.0253}$ $0.9472^{\pm0.0573}$ $0.9502^{\pm0.0601}$	$1.8669^{\pm0.0347}$ $1.8324^{\pm0.0332}$ $1.8453^{\pm0.0365}$ $1.8430^{\pm0.0361}$	$0.9435^{\pm0.0284}$ $0.9448^{\pm0.0316}$ $0.9461^{\pm0.0528}$ $0.9501^{\pm0.0528}$	$1.6272^{\pm 0.0452}$ $1.6229^{\pm 0.0428}$ $1.6205^{\pm 0.0384}$ $1.6183^{\pm 0.0361}$	$0.9476^{\pm0.0416}$ $0.9483^{\pm0.0387}$ $0.9435^{\pm0.0546}$ $0.9516^{\pm0.0525}$	$3.6310^{\pm 0.0325}$ $3.1957^{\pm 0.0301}$ $2.8932^{\pm 0.0275}$ $2.5469^{\pm 0.0227}$	$ \begin{array}{c} 0.9478^{\pm 0.0317} \\ 0.9481^{\pm 0.0293} \\ 0.9483^{\pm 0.0362} \\ \textbf{0.9485}^{\pm 0.0329} \end{array} $	$ \begin{array}{c} 2.7396^{\pm0.0286} \\ 2.5641^{\pm0.0269} \\ 2.4785^{\pm0.0241} \\ \textbf{2.3889}^{\pm0.0238} \end{array}$
Physics: CF-GNN Physics: Cluster-GAE Physics: RR-GAE Physics: Cluster-RR-GAE	$0.9495^{\pm0.0243}$ $0.9498^{\pm0.0267}$ $0.9501^{\pm0.0573}$ $0.9518^{\pm0.0511}$	$1.2218^{\pm0.0463}$ $1.2205^{\pm0.0428}$ $1.2198^{\pm0.0283}$ $1.2050^{\pm0.0223}$	$0.9507^{\pm0.0292}$ $0.9510^{\pm0.0319}$ $0.9512^{\pm0.0501}$ $0.9528^{\pm0.0542}$	$1.2430^{\pm0.0324}$ $1.2418^{\pm0.0346}$ $1.2412^{\pm0.0385}$ $1.2279^{\pm0.0419}$	$0.9489^{\pm0.0257}$ $0.9491^{\pm0.0283}$ $0.9493^{\pm0.0326}$ $0.9508^{\pm0.0334}$	$1.2005^{\pm0.0604}$ $1.2069^{\pm0.0551}$ $1.2145^{\pm0.0423}$ $1.1998^{\pm0.0438}$	$0.9505^{\pm0.0275}$ $0.9506^{\pm0.0298}$ $0.9507^{\pm0.0442}$ $0.9522^{\pm0.0493}$	$egin{array}{c} 1.2243^{\pm 0.0246} \\ 1.2231^{\pm 0.0239} \\ 1.2298^{\pm 0.0249} \\ 1.2187^{\pm 0.0238} \\ \end{array}$