Output tables for 1xN statistical comparisons.

June 12, 2025

1 Average rankings of Friedman test

Average ranks obtained by each method in the Friedman test.

Friedman statistic (distributed according to chi-square with 15 degrees of freedom): 314.33701.
P-value computed by Friedman Test: 0.

Iman and Davenport statistic (distributed according to F-distribution with 15 and 525 degrees of freedom): 48.753211.
P-value computed by Iman and Daveport Test: 0.

Algorithm	Ranking
BestCyclicAssignment	12.1111
BestNearest	6.9028
CLARA	11.3611
CoefficientPropagation	10.1667
CyclicAssignment	14.25
Farthest-First	4.1389
KMEANS	4.5694
NearestByCustomer	6.75
NearestByDepot	11.1944
PAM	9.2222
Parallel	6.75
RandomByElement	15.9722
Simplified	6.0278
Sweep	5.9306
ThreeCriteriaClustering	4.5417
UPGMC	6.1111

Table 1: Average Rankings of the algorithms (Friedman)

2 Post hoc comparison (Friedman)

P-values obtained in by applying post hoc methods over the results of Friedman procedure.

i	algorithm	$z = (R_0 - R_i)/SE$	p	Holm Hochberg Hommel	Holland	Rom	Finner	Li
15	RandomByElement	10.545071	0	0.003333	0.003414	0.003507	0.003414	0.014755
14	CyclicAssignment	9.010343	0	0.003571	0.003657	0.003757	0.006816	0.014755
13	BestCyclicAssignment	7.104309	0	0.003846	0.003938	0.004046	0.010206	0.014755
12	CLARA	6.435959	0	0.004167	0.004265	0.004383	0.013585	0.014755
11	NearestByDepot	6.287437	0	0.004545	0.004652	0.004782	0.016952	0.014755
10	CoefficientPropagation	5.37155	0	0.005	0.005116	0.00526	0.020308	0.014755
9	PAM	4.529925	0.000006	0.005556	0.005683	0.005844	0.023653	0.014755
8	BestNearest	2.462992	0.013778	0.00625	0.006391	0.006574	0.026986	0.014755
7	NearestByCustomer	2.326847	0.019973	0.007143	0.007301	0.007513	0.030307	0.014755
6	Parallel	2.326847	0.019973	0.008333	0.008512	0.008764	0.033617	0.014755
5	UPGMC	1.757512	0.078831	0.01	0.010206	0.010515	0.036916	0.014755
4	Simplified	1.683251	0.092327	0.0125	0.012741	0.013109	0.040204	0.014755
3	Sweep	1.596613	0.110352	0.016667	0.016952	0.016667	0.043481	0.014755
2	KMEANS	0.383682	0.701214	0.025	0.025321	0.025	0.046746	0.014755
1	ThreeCriteriaClustering	0.358928	0.719649	0.05	0.05	0.05	0.05	0.05

Table 2: Post Hoc comparison Table for $\alpha = 0.05$ (FRIEDMAN)

Bonferroni-Dunn's procedure rejects those hypotheses that have an unadjusted p-value ≤ 0.003333.
Holm's procedure rejects those hypotheses that have an unadjusted p-value ≤ 0.00625.
Hochberg's procedure rejects those hypotheses that have an unadjusted p-value ≤ 0.005556.
Hommel's procedure rejects those hypotheses that have an unadjusted p-value ≤ 0.00625.
Holland's procedure rejects those hypotheses that have an unadjusted p-value ≤ 0.006391.
Rom's procedure rejects those hypotheses that have an unadjusted p-value ≤ 0.005844.
Finner's procedure rejects those hypotheses that have an unadjusted p-value ≤ 0.036916.
Li's procedure rejects those hypotheses that have an unadjusted p-value ≤ 0.014755.

3 Adjusted P-Values (Friedman)

Adjusted P-values obtained through the application of the post hoc methods (Friedman).

i	algorithm	unadjusted p	p_{Bonf}	p_{Holm}	$p_{Hochberg}$	p_{Hommel}
1	RandomByElement	0	0	0	0	0
2	CyclicAssignment	0	0	0	0	0
3	BestCyclicAssignment	0	0	0	0	0
4	CLARA	0	0	0	0	0
5	NearestByDepot	0	0	0	0	0
6	CoefficientPropagation	0	0.000001	0.000001	0.000001	0.000001
7	PAM	0.000006	0.000089	0.000053	0.000053	0.000053
8	BestNearest	0.013778	0.206674	0.110226	0.110226	0.08267
9	NearestByCustomer	0.019973	0.299601	0.139814	0.119841	0.119841
10	Parallel	0.019973	0.299601	0.139814	0.119841	0.119841
11	UPGMC	0.078831	1.182459	0.394153	0.331056	0.236492
12	Simplified	0.092327	1.384898	0.394153	0.331056	0.27698
13	Sweep	0.110352	1.65528	0.394153	0.331056	0.331056
14	KMEANS	0.701214	10.51821	1.402428	0.719649	0.719649
15	ThreeCriteriaClustering	0.719649	10.794729	1.402428	0.719649	0.719649

Table 3: Adjusted p-values (FRIEDMAN) (I)

i	algorithm	unadjusted p	$p_{Holland}$	p_{Rom}	p_{Finner}	p_{Li}
1	RandomByElement	0	0	0	0	0
2	CyclicAssignment	0	0	0	0	0
3	BestCyclicAssignment	0	0	0	0	0
4	CLARA	0	0	0	0	0
5	NearestByDepot	0	0	0	0	0
6	CoefficientPropagation	0	0.000001	0.000001	0	0
7	PAM	0.000006	0.000053	0.00005	0.000013	0.0000
8	BestNearest	0.013778	0.105055	0.104792	0.025678	0.0468
9	NearestByCustomer	0.019973	0.13171	0.113949	0.033067	0.0665
10	Parallel	0.019973	0.13171	0.113949	0.033067	0.0665
11	UPGMC	0.078831	0.336719	0.331056	0.105929	0.2194
12	Simplified	0.092327	0.336719	0.331056	0.114044	0.2477
13	Sweep	0.110352	0.336719	0.331056	0.126213	0.2824
14	KMEANS	0.701214	0.910727	0.719649	0.725915	0.7143
15	ThreeCriteriaClustering	0.719649	0.910727	0.719649	0.725915	0.7196

Table 4: Adjusted p-values (FRIEDMAN) (II)