	5% CS						
Dataset	PCCC	COPKM	CSC	DILS	LCC	KMEANS	GT
Appendicitis	**0.35**	0.26	-0.05	-0.25	0.34	0.40	0.25
Breast Cancer	0.30	–	**0.38**	0.19	0.24	0.34	0.29
Bupa	**0.15**	–	-0.09	-0.02	0.14	0.45	0.00
Circles	0.17	–	**0.20**	-0.02	0.17	0.29	0.21
Ecoli	**0.22**	0.17	-0.27	-0.18	0.15	0.28	0.09
Glass	**0.29**	0.26	-0.35	-0.35	0.23	0.34	-0.03
Haberman	**0.13**	–	0.04	0.05	0.12	0.34	0.07
Hayesroth	0.16	0.14	-0.10	-0.15	**0.17**	0.21	0.01
Heart	0.13	–	**0.34**	0.07	0.13	0.16	0.11
Ionosphere	0.18	–	**0.41**	0.03	0.16	0.27	0.16
Iris	**0.44**	0.43	-0.25	0.35	**0.44**	0.46	0.38
Led7Digit	**0.35**	0.31	-0.11	-0.02	–	0.40	0.21
Monk2	**0.09**	–	-0.02	0.04	0.05	0.11	0.08
Moons	**0.44**	0.40	-0.09	0.32	0.38	0.50	0.38
Movement Libras	**0.22**	0.20	-0.30	-0.11	0.19	0.24	0.02
Newthyroid	0.51	**0.52**	-0.33	-0.36	0.51	0.60	0.46
Saheart	0.09	–	**0.30**	0.05	0.06	0.20	0.07
Sonar	0.13	–	**0.32**	-0.01	0.10	0.16	0.04
Soybean	**0.34**	0.32	-0.26	-0.07	0.23	0.34	0.36
Spectfheart	0.12	–	-0.05	-0.05	**0.13**	0.46	-0.08
Spiral	**0.21**	–	0.02	0.17	0.19	0.34	0.05
Tae	**0.20**	0.19	-0.16	-0.13	**0.20**	0.23	-0.02
Vehicle	**0.04**	–	**0.04**	-0.00	0.03	0.29	-0.01
Wine	**0.28**	**0.28**	-0.17	-0.02	**0.28**	0.28	0.28
Zoo	**0.34**	0.32	-0.20	-0.30	**0.34**	0.35	0.37
Mean	**0.24**	-0.33*	-0.03	-0.03	0.16*	0.32	0.15

*Nan values (–) are replaced with -1 before computing the mean.

Table W8: Average Silhouette coefficients of the PCCC algorithm and the four state-of-the-art algorithms (COPKM, CSC, DILS, LCC) obtained with constraint sets of size 5% CS. Higher values indicate better separated clusters. The highest values are stated in bold. The column KMEANS reports the average Silhouette coefficients that were obtained with the unconstrained k-means algorithm. The column GT reports the Silhouette coefficients of the ground truth assignment. The hyphen indicates that the respective algorithm returned no solution within the time limit of 1,800 seconds.

| | 10% CS | | | | | | |
Dataset	PCCC	COPKM	CSC	DILS	LCC	KMEANS	GT
Appendicitis	**0.33**	–	0.05	0.22	0.09	0.40	0.25
Breast Cancer	0.30	–	**0.65**	0.29	0.24	0.34	0.29
Bupa	0.01	–	**0.61**	0.00	0.01	0.45	0.00
Circles	0.18	–	**0.21**	0.15	0.14	0.29	0.21
Ecoli	**0.15**	0.10	-0.11	-0.14	0.12	0.28	0.09
Glass	0.08	0.03	**0.17**	-0.24	0.05	0.34	-0.03
Haberman	0.07	0.07	**0.68**	0.06	0.02	0.34	0.07
Hayesroth	**0.07**	–	-0.06	0.01	**0.07**	0.21	0.01
Heart	0.12	–	**0.20**	0.12	0.00	0.16	0.11
Ionosphere	0.17	–	**0.36**	0.15	0.12	0.27	0.16
Iris	**0.45**	0.40	0.22	0.25	**0.45**	0.46	0.38
Led7Digit	**0.26**	0.19	-0.06	-0.08	0.24	0.40	0.21
Monk2	**0.08**	**0.08**	**0.08**	**0.08**	0.04	0.11	0.08
Moons	0.38	–	0.38	0.38	**0.39**	0.50	0.38
Movement Libras	**0.19**	0.15	-0.13	-0.10	0.17	0.24	0.02
Newthyroid	**0.48**	**0.48**	0.06	-0.09	0.19	0.60	0.46
Saheart	0.07	0.07	**0.10**	0.07	0.04	0.20	0.07
Sonar	0.04	–	**0.39**	0.03	0.02	0.16	0.04
Soybean	**0.34**	0.32	-0.21	-0.01	0.20	0.34	0.36
Spectfheart	-0.05	–	**0.55**	-0.08	-0.06	0.46	-0.08
Spiral	**0.06**	–	0.03	**0.06**	0.03	0.34	0.05
Tae	**0.10**	–	-0.01	0.03	0.05	0.23	-0.02
Vehicle	**-0.01**	–	**-0.01**	-0.03	–	0.29	-0.01
Wine	**0.29**	**0.29**	0.08	0.07	0.28	0.28	0.28
Zoo	**0.35**	0.31	-0.06	-0.27	**0.35**	0.35	0.37
Mean	**0.18**	-0.42*	0.17	0.04	0.09*	0.32	0.15

*Nan values (–) are replaced with -1 before computing the mean.

Table W9: Average Silhouette coefficients of the PCCC algorithm and the four state-of-the-art algorithms (COPKM, CSC, DILS, LCC) obtained with constraint sets of size 10% CS. Higher values indicate better separated clusters. The highest values are stated in bold. The column KMEANS reports the average Silhouette coefficients that were obtained with the unconstrained k-means algorithm. The column GT reports the Silhouette coefficients of the ground truth assignment. The hyphen indicates that the respective algorithm returned no solution within the time limit of 1,800 seconds.

| | 15% CS | | | | | | |
Dataset	PCCC	COPKM	CSC	DILS	LCC	KMEANS	GT
Appendicitis	**0.25**	–	0.24	0.19	0.04	0.40	0.25
Breast Cancer	0.29	0.29	**0.66**	0.29	0.29	0.34	0.29
Bupa	0.00	0.00	**0.62**	0.00	0.00	0.45	0.00
Circles	**0.21**	**0.21**	**0.21**	**0.21**	**0.21**	0.29	0.21
Ecoli	**0.16**	–	-0.10	-0.04	0.13	0.28	0.09
Glass	0.02	–	**0.24**	-0.23	-0.03	0.34	-0.03
Haberman	0.07	0.07	**0.68**	0.07	0.07	0.34	0.07
Hayesroth	**0.01**	–	**0.01**	-0.05	-0.00	0.21	0.01
Heart	0.11	0.11	**0.19**	0.11	0.09	0.16	0.11
Ionosphere	0.16	0.16	**0.36**	0.16	0.16	0.27	0.16
Iris	0.46	0.43	**0.49**	0.24	0.46	0.46	0.38
Led7Digit	**0.24**	–	-0.03	-0.09	–	0.40	0.21
Monk2	0.08	0.08	**0.09**	0.08	0.08	0.11	0.08
Moons	**0.38**	**0.38**	**0.38**	**0.38**	0.31	0.50	0.38
Movement Libras	**0.06**	0.03	-0.11	-0.12	**0.06**	0.24	0.02
Newthyroid	0.46	0.46	**0.49**	0.36	0.35	0.60	0.46
Saheart	0.07	0.07	**0.11**	0.07	–	0.20	0.07
Sonar	0.04	–	**0.39**	0.04	0.02	0.16	0.04
Soybean	**0.36**	0.31	-0.04	0.15	0.23	0.34	0.36
Spectfheart	-0.08	-0.08	**0.54**	-0.08	-0.08	0.46	-0.08
Spiral	**0.05**	–	**0.05**	**0.05**	0.04	0.34	0.05
Tae	-0.00	–	**0.08**	-0.02	-0.02	0.23	-0.02
Vehicle	**-0.01**	**-0.01**	**-0.01**	-0.02	–	0.29	-0.01
Wine	**0.29**	**0.29**	0.24	0.09	0.27	0.28	0.28
Zoo	0.33	0.23	-0.02	-0.12	**0.35**	0.35	0.37
Mean	0.16	-0.20*	**0.23**	0.07	0.00*	0.32	0.15

*Nan values (–) are replaced with -1 before computing the mean.

Table W10: Average Silhouette coefficients of the PCCC algorithm and the four state-of-the-art algorithms (COPKM, CSC, DILS, LCC) obtained with constraint sets of size 15% CS. Higher values indicate better separated clusters. The highest values are stated in bold. The column KMEANS reports the average Silhouette coefficients that were obtained with the unconstrained k-means algorithm. The column GT reports the Silhouette coefficients of the ground truth assignment. The hyphen indicates that the respective algorithm returned no solution within the time limit of 1,800 seconds.

	20% CS						
Dataset	PCCC	COPKM	CSC	DILS	LCC	KMEANS	GT
Appendicitis	**0.25**	–	**0.25**	**0.25**	0.14	0.40	0.25
Breast Cancer	0.29	0.29	**0.66**	0.29	–	0.34	0.29
Bupa	0.00	0.00	**0.63**	0.00	0.00	0.45	0.00
Circles	**0.21**	**0.21**	**0.21**	**0.21**	–	0.29	0.21
Ecoli	**0.16**	–	-0.07	0.04	0.08	0.28	0.09
Glass	0.01	–	**0.04**	-0.09	0.03	0.34	-0.03
Haberman	0.07	0.07	**0.68**	0.07	0.07	0.34	0.07
Hayesroth	0.01	–	**0.11**	0.01	0.01	0.21	0.01
Heart	0.11	0.11	**0.12**	0.11	0.11	0.16	0.11
Ionosphere	0.16	0.16	**0.38**	0.16	–	0.27	0.16
Iris	0.45	0.43	**0.50**	0.24	0.45	0.46	0.38
Led7Digit	**0.21**	–	-0.04	-0.08	0.00	0.40	0.21
Monk2	0.08	0.08	**0.09**	0.08	–	0.11	0.08
Moons	0.38	0.38	**0.40**	0.38	0.38	0.50	0.38
Movement Libras	**0.01**	–	-0.11	-0.11	-0.02	0.24	0.02
Newthyroid	0.46	**0.47**	0.38	0.46	0.43	0.60	0.46
Saheart	0.07	0.07	**0.44**	0.07	–	0.20	0.07
Sonar	0.04	0.04	**0.39**	0.04	0.04	0.16	0.04
Soybean	**0.36**	**0.36**	-0.01	0.13	0.24	0.34	0.36
Spectfheart	-0.08	-0.08	**0.58**	-0.08	-0.08	0.46	-0.08
Spiral	**0.05**	–	**0.05**	**0.05**	**0.05**	0.34	0.05
Tae	-0.02	–	**0.09**	-0.02	-0.03	0.23	-0.02
Vehicle	-0.01	-0.01	**0.05**	-0.02	–	0.29	-0.01
Wine	**0.28**	**0.28**	0.24	0.11	**0.28**	0.28	0.28
Zoo	**0.34**	0.22	0.06	0.01	0.29	0.35	0.37
Mean	0.16	-0.20*	**0.25**	0.09	-0.14*	0.32	0.15

*Nan values (–) are replaced with -1 before computing the mean.

Table W11: Average Silhouette coefficients of the PCCC algorithm and the four state-of-the-art algorithms (COPKM, CSC, DILS, LCC) obtained with constraint sets of size 20% CS. Higher values indicate better separated clusters. The highest values are stated in bold. The column KMEANS reports the average Silhouette coefficients that were obtained with the unconstrained k-means algorithm. The column GT reports the Silhouette coefficients of the ground truth assignment. The hyphen indicates that the respective algorithm returned no solution within the time limit of 1,800 seconds.