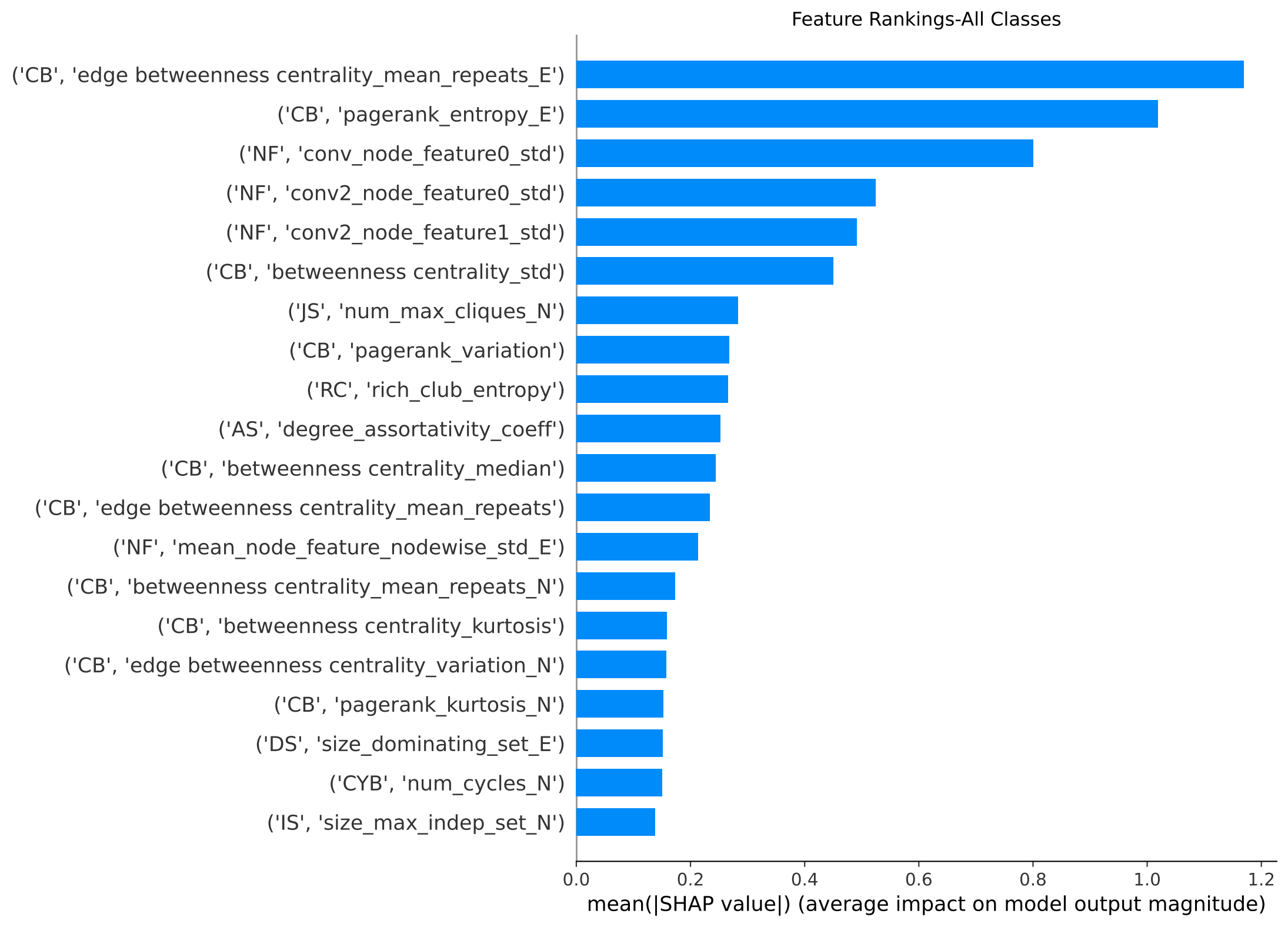
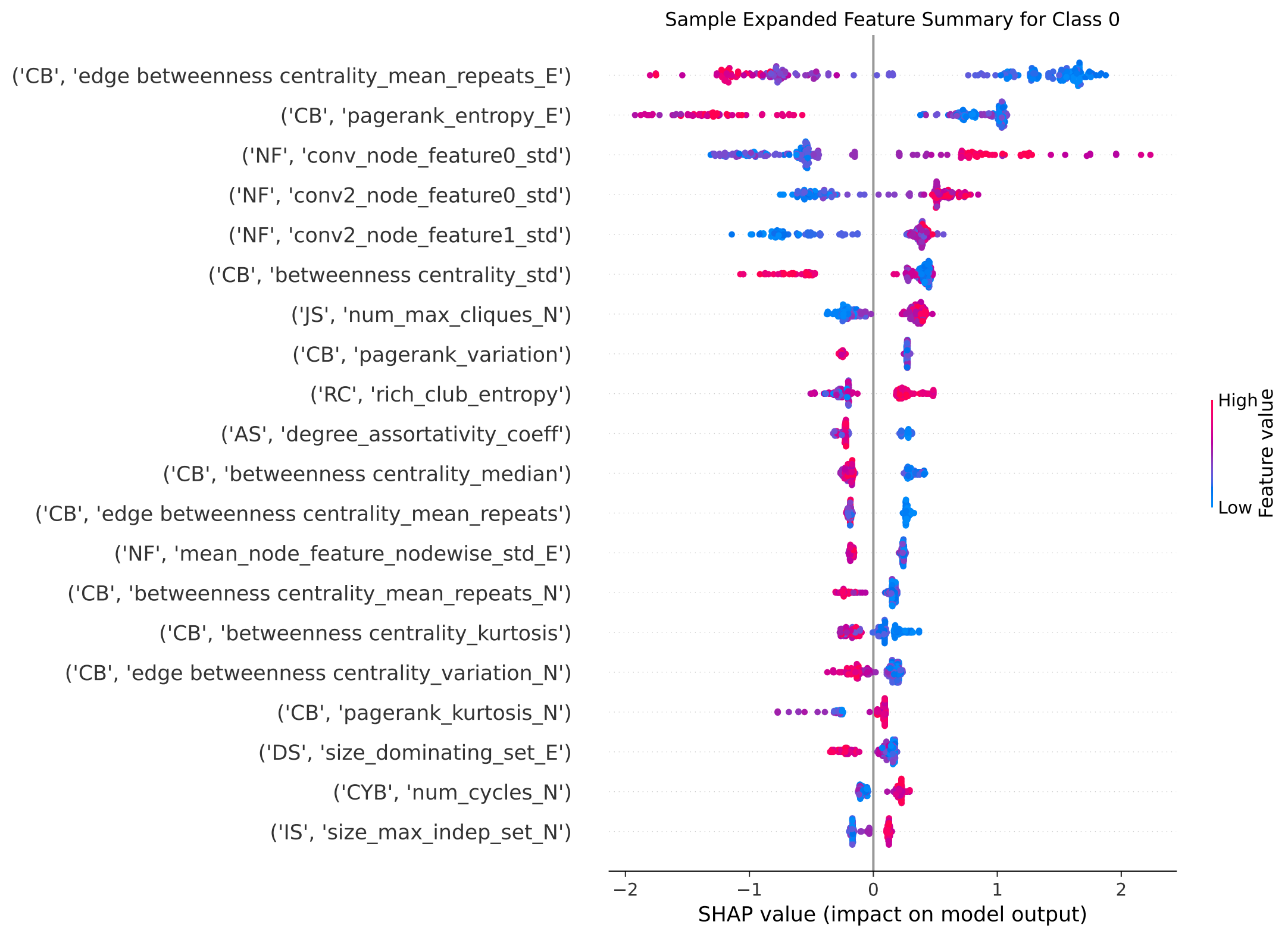

Feature Rankings-All Classes
('CB', 'edge betweenness centrality_mean_repeats_E')
('CB', 'pagerank_entropy_E')
('NF', 'conv_node_feature0_std')
('NF', 'conv2_node_feature0_std')
('NF', 'conv2_node_feature1_std')
('CB', 'betweenness centrality_std')
('JS', 'num_max_cliques_N')
('CB', 'pagerank_variation')
('RC', 'rich_club_entropy')
('AS', 'degree_assortativity_coeff')
('CB', 'betweenness centrality_median')
('CB', 'edge betweenness centrality_mean_repeats')
('NF', 'mean_node_feature_nodewise_std_E')
('CB', 'betweenness centrality_mean_repeats_N')
('CB', 'betweenness centrality_kurtosis')
('CB', 'edge betweenness centrality_variation_N')
('CB', 'pagerank_kurtosis_N')
('DS', 'size_dominating_set_E')
('CYB', 'num_cycles_N')
('IS', 'size_max_indep_set_N')
0.0
0.2
0.4
0.6
0.8
1.0
1.2
mean(|SHAP value|) (average impact on model output magnitude)


Sample Expanded Feature Summary for Class 0
('CB', 'edge betweenness centrality_mean_repeats_E')
('CB', 'pagerank_entropy_E')
('NF', 'conv_node_feature0_std')
('NF', 'conv2_node_feature0_std')
('NF', 'conv2_node_feature1_std')
('CB', 'betweenness centrality_std')
('JS', 'num_max_cliques_N')
('CB', 'pagerank_variation')
('RC', 'rich_club_entropy')
('AS', 'degree_assortativity_coeff')
('CB', 'betweenness centrality_median')
('CB', 'edge betweenness centrality_mean_repeats')
('NF', 'mean_node_feature_nodewise_std_E')
('CB', 'betweenness centrality_mean_repeats_N')
('CB', 'betweenness centrality_kurtosis')
('CB', 'edge betweenness centrality_variation_N')
('CB', 'pagerank_kurtosis_N')
('DS', 'size_dominating_set_E')
('CYB', 'num_cycles_N')
('IS', 'size_max_indep_set_N')
−2
−1
0
1
2
SHAP value (impact on model output)
High
Low
Feature value

feature_class-feature_name

AS-degree_assortativity_coeff
CB-betweenness centrality_kstat_E
CB-betweenness centrality_kstatvar_N
CB-betweenness centrality_kurtosis_N
CB-betweenness centrality_max_E
CB-betweenness centrality_mean_N
CB-betweenness centrality_mean_repeats_N
CB-betweenness centrality_median_E
CB-betweenness centrality_sum_E
CB-betweenness centrality_variation_E
CB-closeness centrality_kstatvar
CB-closeness centrality_max
CB-closeness centrality_median
CB-closeness centrality_mode_E
CB-edge betweenness centrality_gmean
CB-edge betweenness centrality_kurtosis
CB-edge betweenness centrality_mean_repeats
CB-edge betweenness centrality_mean_repeats_N
CB-edge betweenness centrality_variation
CB-harmonic centrality_kstatvar
CB-harmonic centrality_kurtosis
CB-harmonic centrality_mean
CB-harmonic centrality_std_E
CB-pagerank_entropy_E
CB-pagerank_mode
CB-subgraph centrality_gmean
CB-subgraph centrality_kstat_E
CB-subgraph centrality_max
CB-subgraph centrality_mode_E
CB-subgraph centrality_tsem
CM-communities_modularity_E
CM-communities_performance_E
CM-num_communities_N
CYB-num_cycles_N
DS-size_dominating_set_N
IS-size_max_indep_set_N
JS-num_max_cliques_E
JS-transitivity
NF-conv2_node_feature0_std
NF-conv2_node_feature1_std
NF-conv2_node_feature1_std_N
NF-conv_node_feature0_std
NF-conv_node_feature1_mean
NF-conv_node_feature1_std_N
NF-max_node_feature_nodewise_variation_N
NF-mean_node_feature_nodewise_hmean_E
NF-mean_node_feature_nodewise_kurtosis_E
NF-mean_node_feature_nodewise_std_E
NF-sum_node_feature_nodewise_std
RC-rich_club_maxminratio
CM-ratio_commsize_maxmin
RC-rich_club_maxminratio_N
NF-conv2_node_feature2_median_N
NF-conv_node_feature2_std
NF-mean_node_features_featurewise_tmean_E
JS-global_efficiency_N
NF-conv_node_feature1_median_N
DS-size_min_dominating_set_N
NF-conv_node_feature1_sum
CB-betweenness centrality_variation
CB-closeness centrality_kurtosis
NF-mean_node_features_featurewise_kstat
CB-closeness centrality_mean_repeats_N
NF-conv2_node_feature0_std_N
CB-betweenness centrality_hmean_N
CV-min_edge_cover_N
JS-num_connected_components_N
NF-conv_node_feature2_mean_N
NF-node_feature0_median_N
NF-conv2_node_feature2_std
CB-subgraph centrality_kurtosis
IS-size_max_indep_set
CB-degree centrality_mode

|pearson|
1.0
0.8
0.6
0.4
0.2

Top 100 features heatmap and dendogram

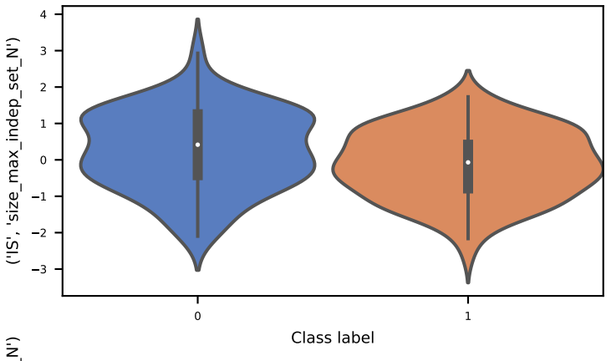
Euclidean Distance

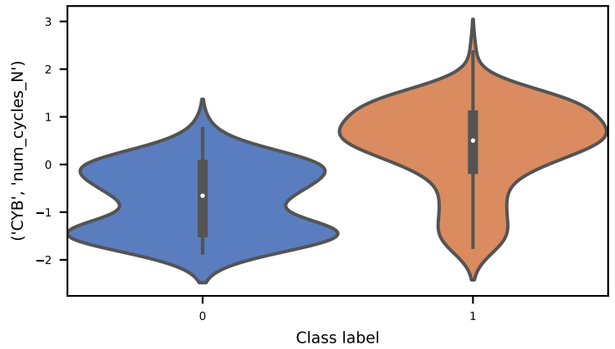
|pearson|

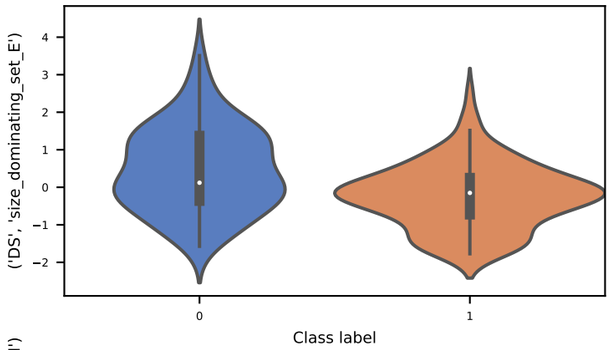
feature_class-feature_name

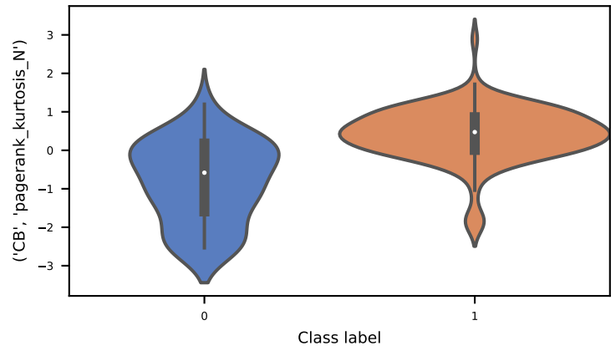
NF-conv_node_feature0_std
NF-mean_node_feature_nodewise_kstat_N
NF-mean_node_feature_nodewise_kurtosis_E
CB-closeness centrality_variation
CB-edge betweenness centrality_mean_repeats
CB-edge betweenness centrality_kurtosis
CB-edge betweenness centrality_kstatvar
CM-ratio_commsize_maxmin
CB-edge betweenness centrality_variation
CB-degree centrality_mode
CM-communities_performance
CB-closeness centrality_kurtosis
CB-subgraph centrality_median
IS-size_max_indep_set_N
NF-mean_node_feature_nodewise_mean_repeats
RC-rich_club_entropy
RC-rich_club_variation
NF-node_feature5_mean
DS-size_dominating_set_N
CB-subgraph centrality_mode
CM-communities_modularity_E
CM-communities_performance_E
CB-betweenness centrality_mean_E
CB-betweenness centrality_mean_N
CB-betweenness centrality_variation_E
CB-betweenness centrality_kstat_E
NF-sum_node_feature_nodewise_std
CB-harmonic centrality_variation_E
CB-closeness centrality_max
CB-edge betweenness centrality_variation_N
CB-betweenness centrality_kstatvar_N
DS-size_min_dominating_set
NF-mean_node_feature_nodewise_hmean_E
CB-closeness centrality_entropy
CB-subgraph centrality_mode_N
NF-conv2_node_feature1_std_E
NF-conv_node_feature1_std_N
NF-max_node_feature_nodewise_variation_E
NF-mean_node_feature_nodewise_mean_repeats_N
CB-closeness centrality_median
NF-conv2_node_feature0_std_N
CB-edge betweenness centrality_mean_repeats_E
CB-betweenness centrality_mean_repeats_N
CB-edge betweenness centrality_min
NF-conv_node_feature2_mean_N
CM-num_communities_N
CB-harmonic centrality_kurtosis_N
CB-harmonic centrality_std_E
CB-subgraph centrality_tsem
CB-subgraph centrality_hmean
CT-estrada_index_E
CB-betweenness centrality_kstat
CB-betweenness centrality_sum_E
JS-num_max_cliques_N
NF-conv2_node_feature2_mean
CB-harmonic centrality_kurtosis
NF-conv_node_feature1_std
NF-conv_node_feature1_median_N
NF-conv2_node_feature0_median
NF-conv_node_feature0_sum_E
CB-pagerank_variation
MM-maximal_matching_N
CB-betweenness centrality_variation
RC-rich_club_variation_N
CB-subgraph centrality_max
JS-number_of_edges_E
NF-mean_node_features_featurewise_kurtosis_N
RC-rich_club_maxminratio_N
CB-closeness centrality_kurtosis_N
NF-mean_node_feature_nodewise_std_E
IS-size_max_indep_set
NF-node_feature0_median_N
JS-global_efficiency_N

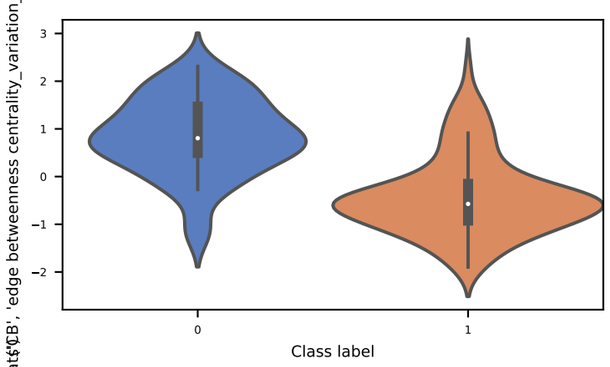
feature_class-feature_name

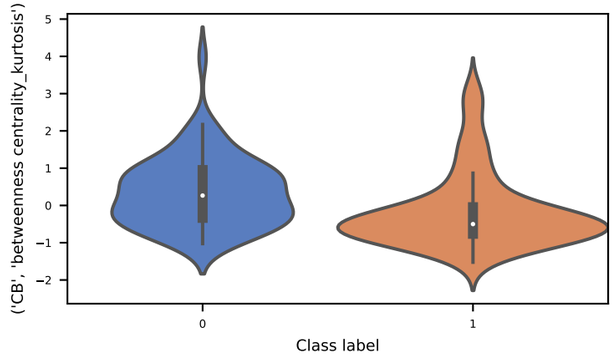

('IS', 'size_max_indep_set_N')
Class label

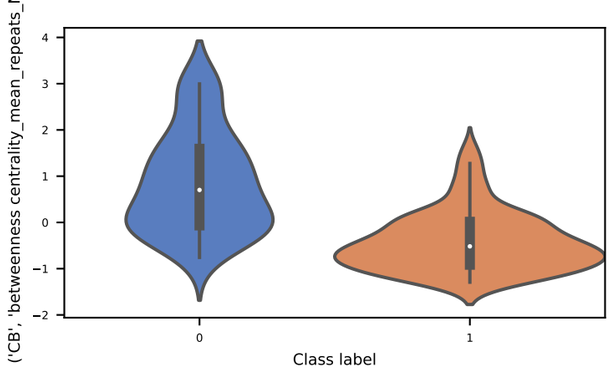

('CYB', 'num_cycles_N')
Class label

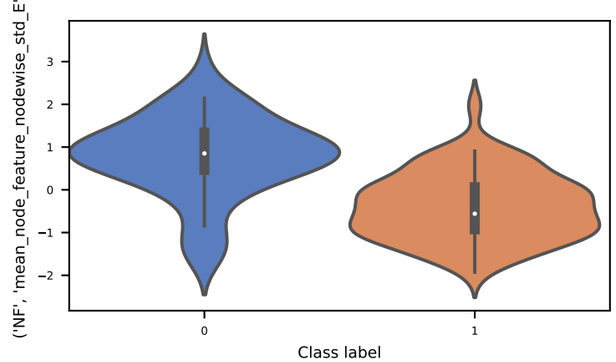

('DS', 'size_dominating_set_E')
Class label

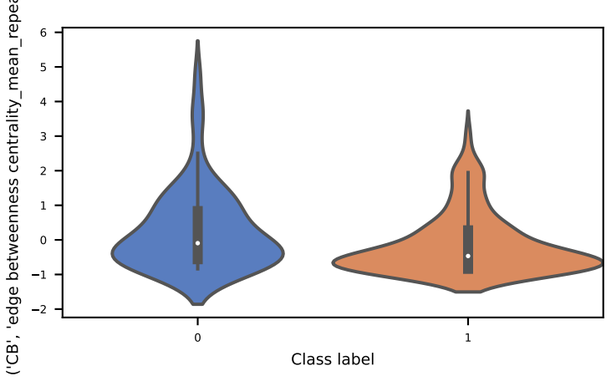

('CB', 'pagerank_kurtosis_N')
Class label

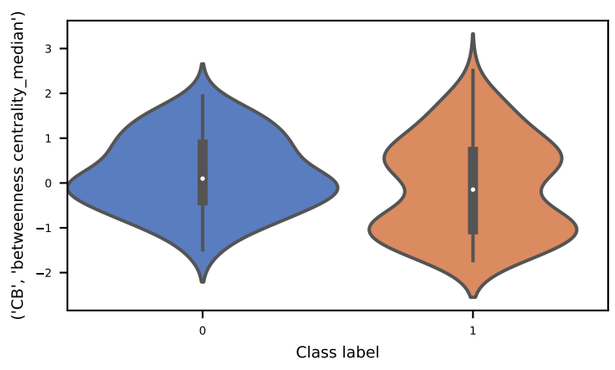

('CB', 'edge betweenness centrality_variation_N')
Class label

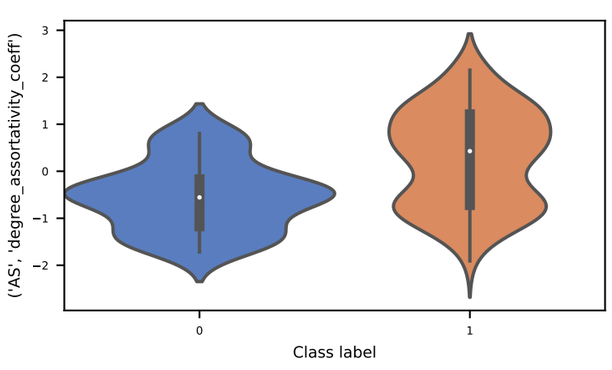

('CB', 'betweenness centrality_kurtosis')
Class label

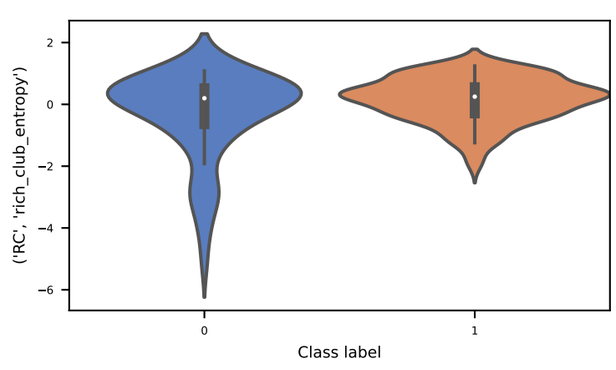

('CB', 'betweenness centrality_mean_repeats_N')
Class label

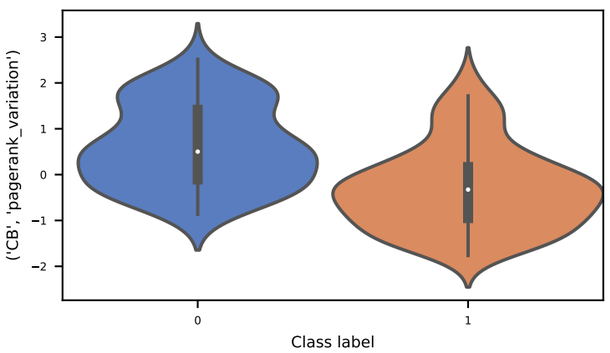

('NF', 'mean_node_feature_nodewise_std_E')
Class label

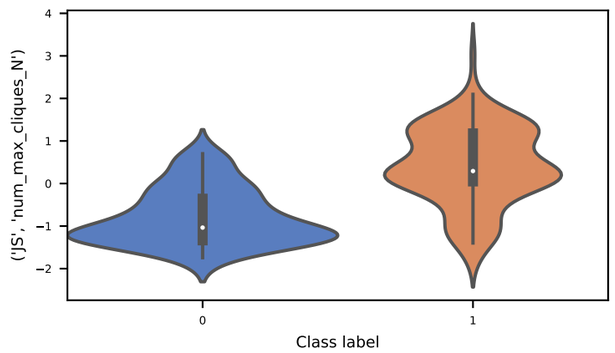

('CB', 'edge betweenness centrality_mean_repeats_E')
Class label

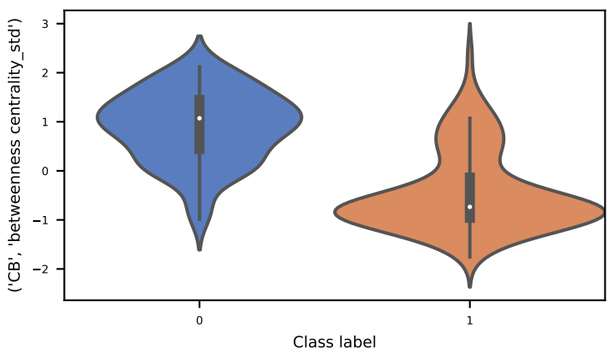

('CB', 'betweenness centrality_median')
Class label

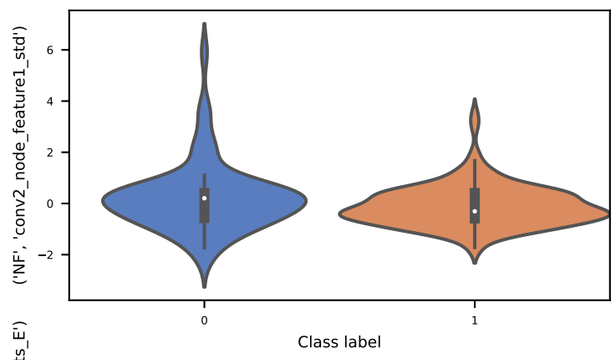

('AS', 'degree_assortativity_coeff')
Class label

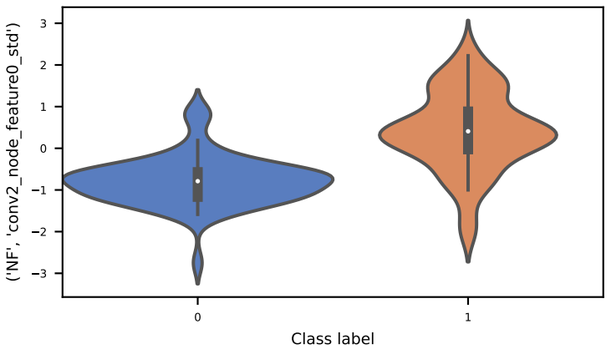

('RC', 'rich_club_entropy')
Class label

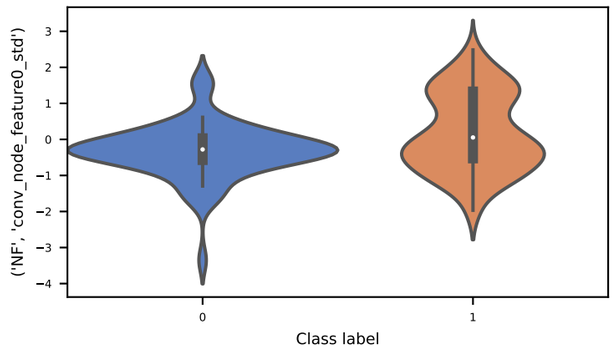

('CB', 'pagerank_variation')
Class label

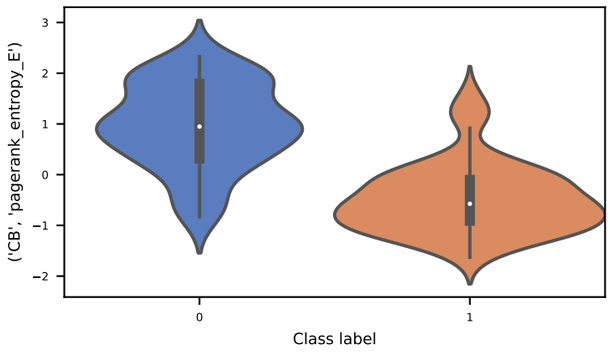

('JS', 'num_max_cliques_N')
Class label

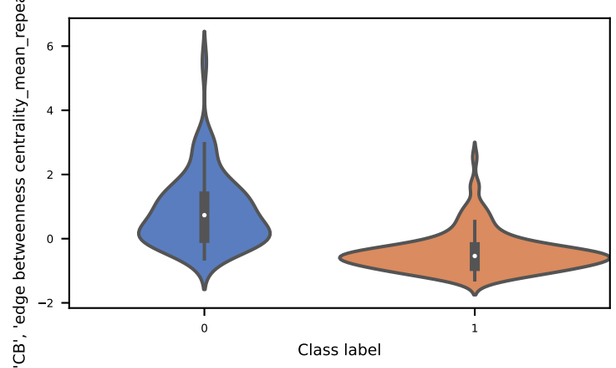

('CB', 'betweenness centrality_std')
Class label

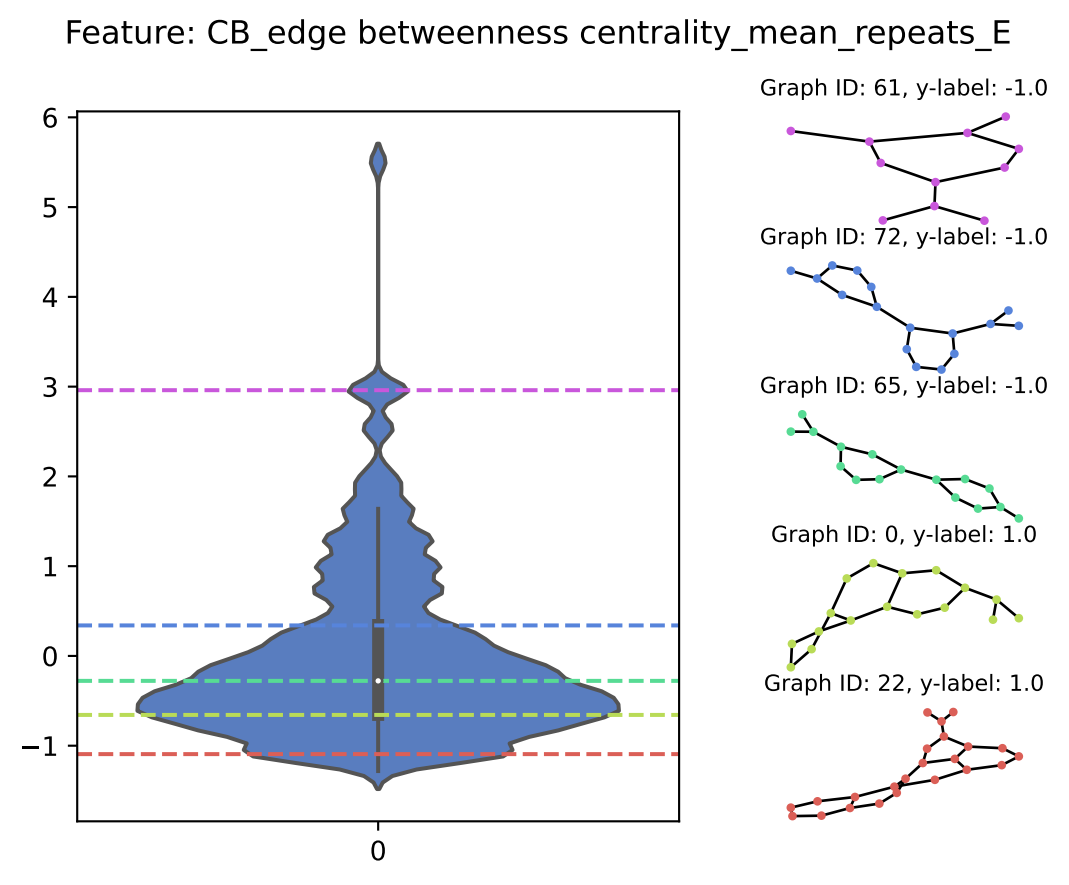

('NF', 'conv2_node_feature1_std')
Class label


('NF', 'conv2_node_feature0_std')
Class label


('NF', 'conv_node_feature0_std')
Class label


('CB', 'pagerank_entropy_E')
Class label


('CB', 'edge betweenness centrality_mean_repeats_E')
Class label


Feature: CB_edge betweenness centrality_mean_repeats_E
6
5
4
3
2
1
0
−1
0
Graph ID: 61, y-label: -1.0
Graph ID: 72, y-label: -1.0
Graph ID: 65, y-label: -1.0
Graph ID: 0, y-label: 1.0
Graph ID: 22, y-label: 1.0