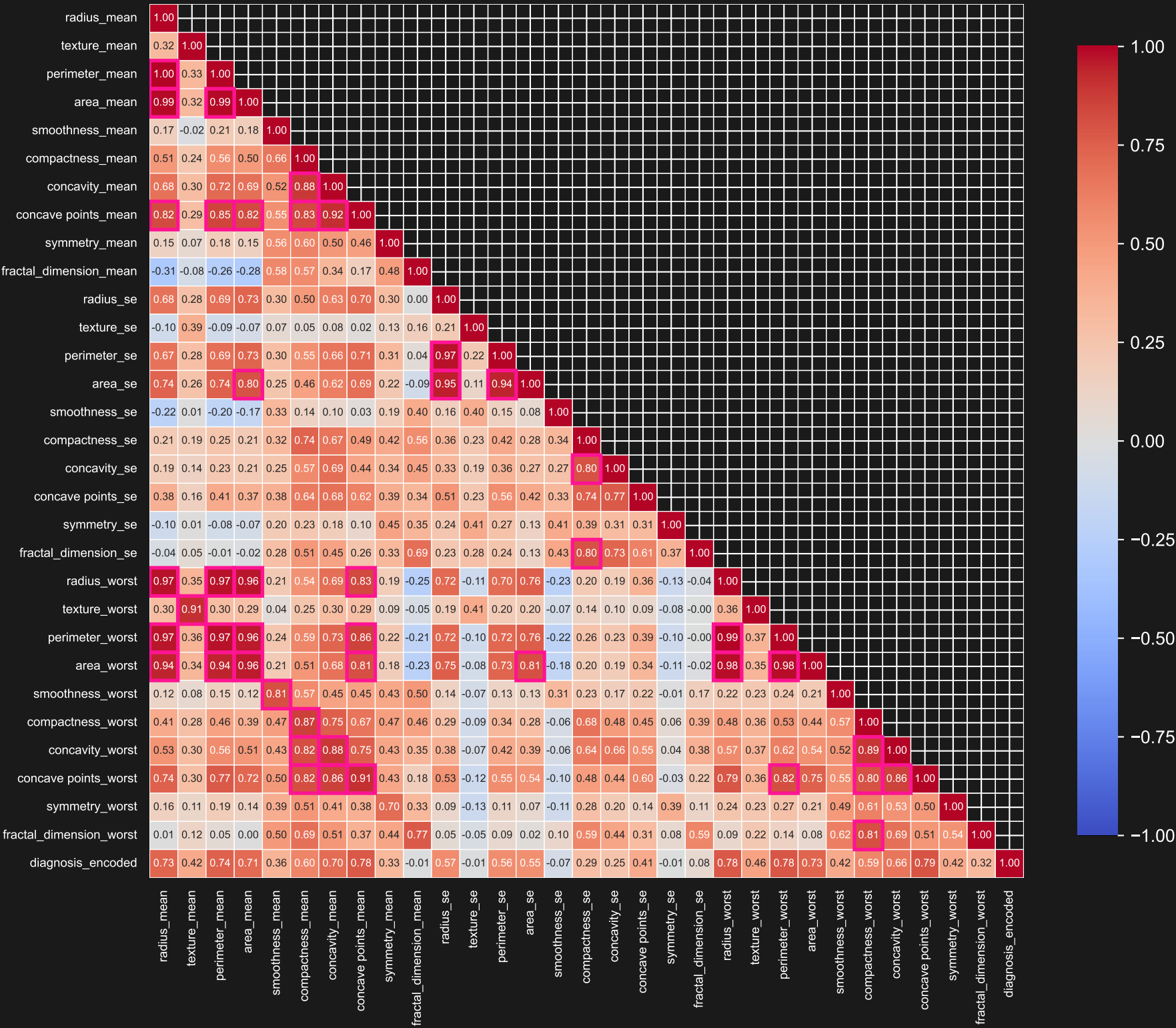


BREAST CANCER DATASET

BIVARIATE ANALYSIS

Risk Stratification Model

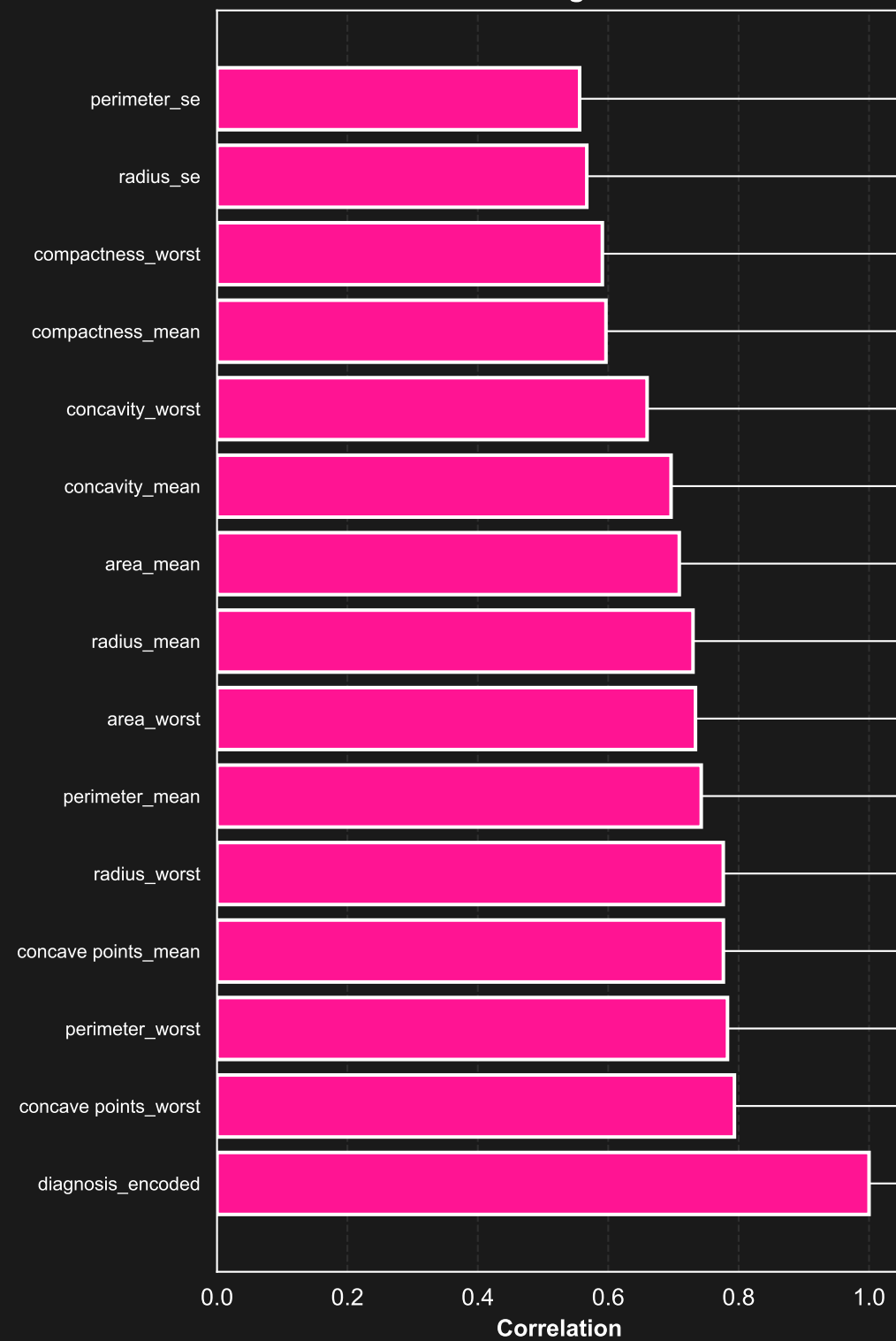
Correlation Matrix Heatmap



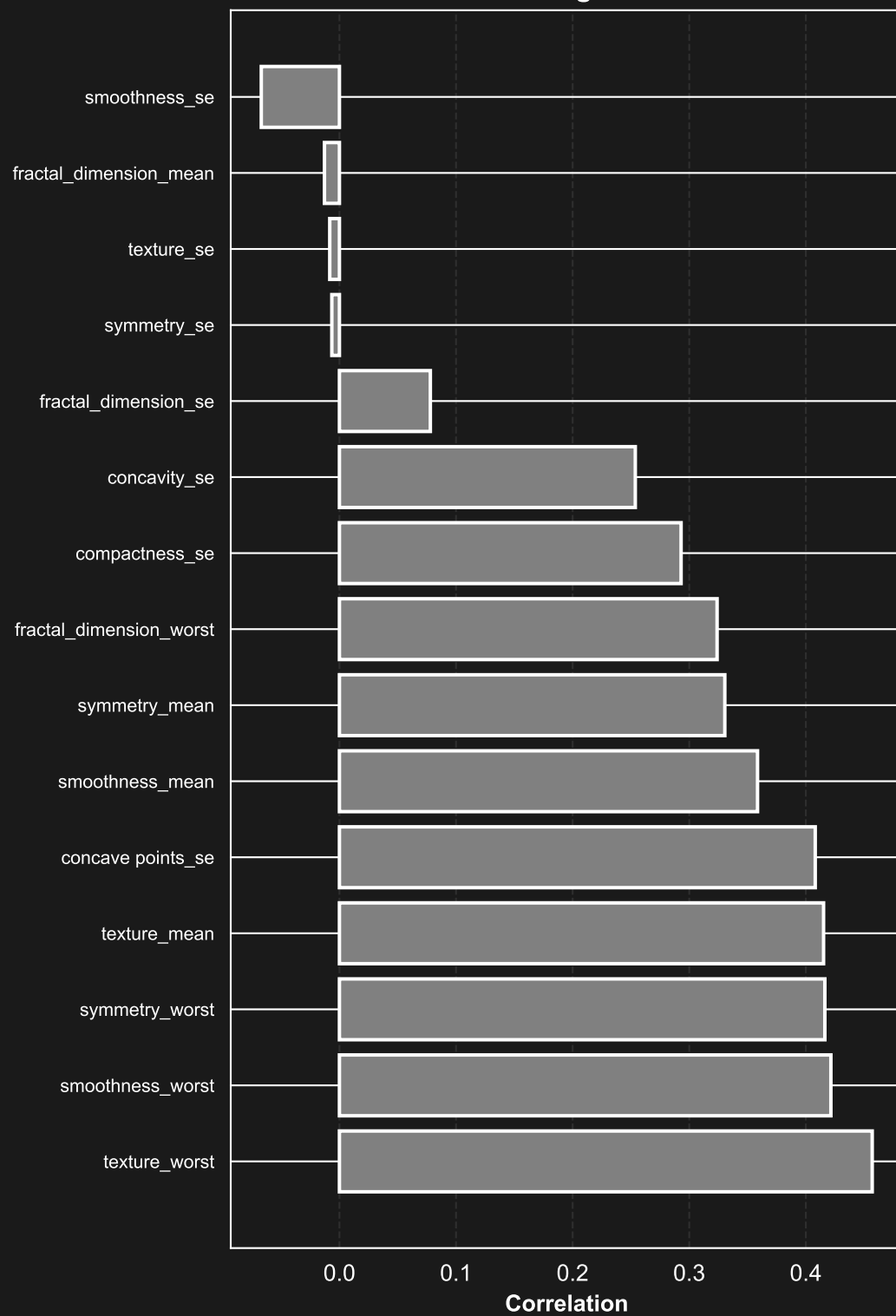
Top 20 Feature Correlations



**Top 15 Positive Correlations
with Diagnosis**



**Top 15 Negative Correlations
with Diagnosis**

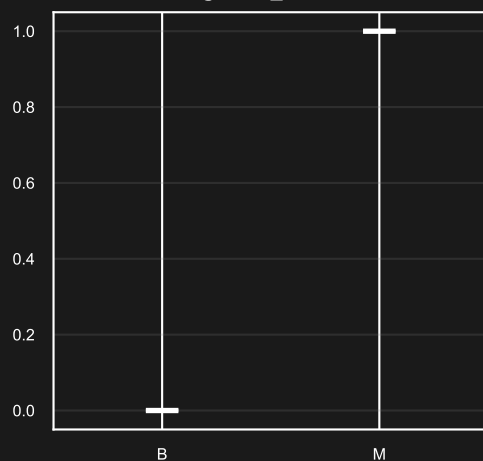


Feature Relationships with Target

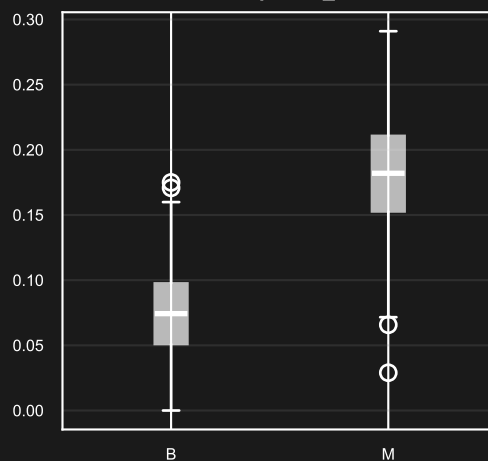


Feature Distribution by Diagnosis

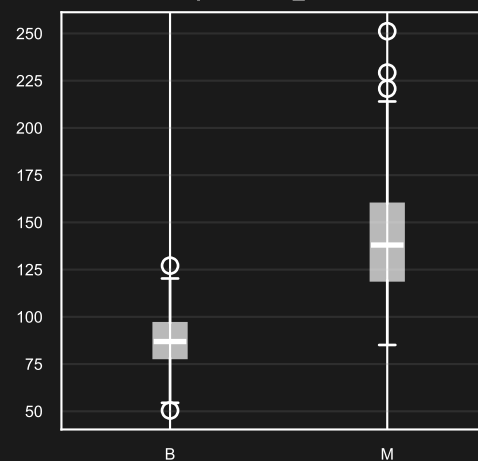
diagnosis_encoded



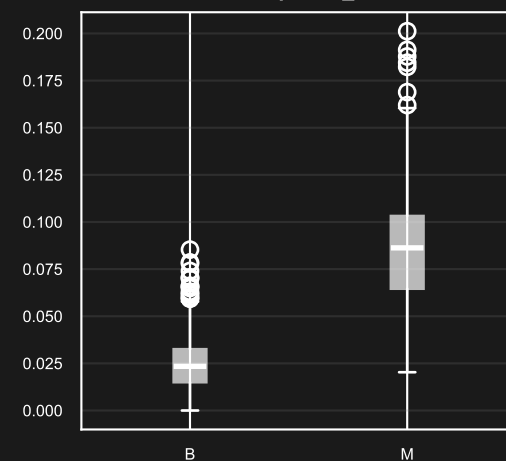
concave points_worst



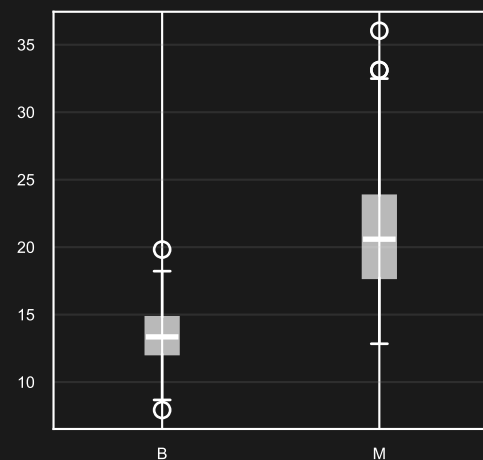
perimeter_worst



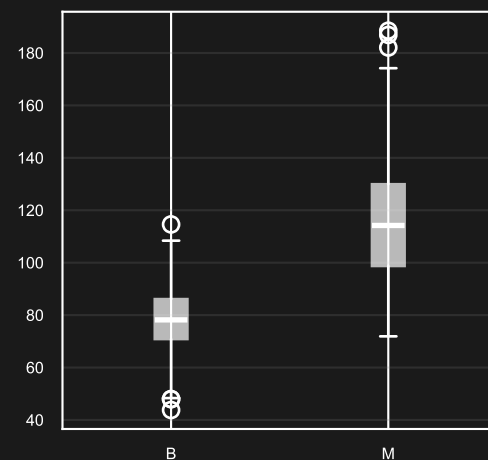
concave points_mean



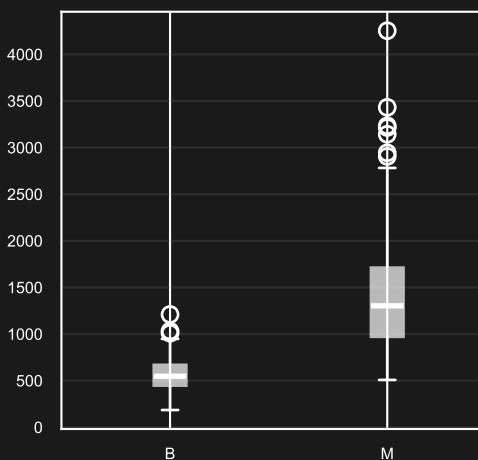
radius_worst



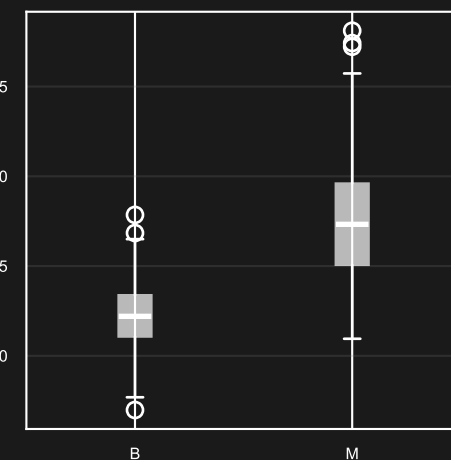
perimeter_mean



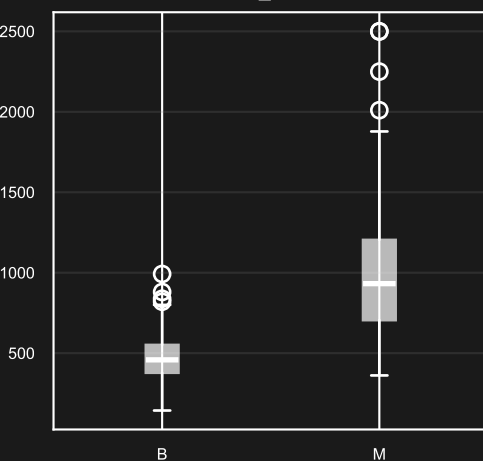
area_worst



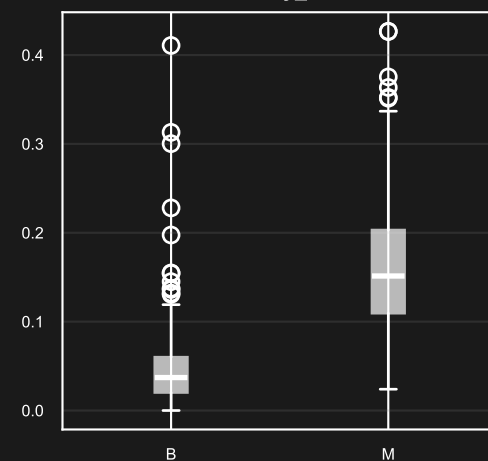
radius_mean



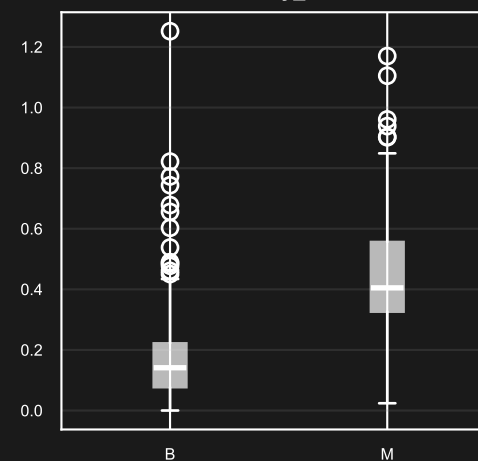
area_mean



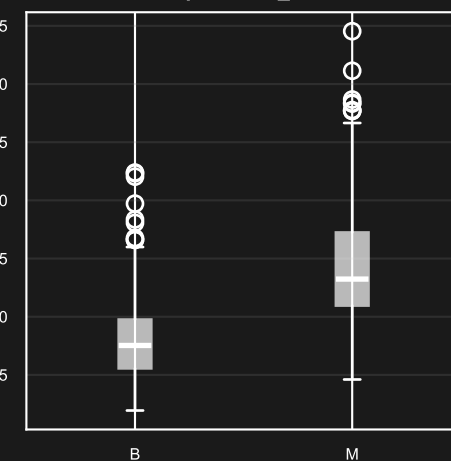
concavity_mean



concavity_worst



compactness_mean



MULTICOLLINEARITY ANALYSIS

Highly Correlated Pairs ($|\text{corr}| > 0.8$)

Feature 1	Feature 2	Correlation
radius_mean	perimeter_mean	0.9979
radius_worst	perimeter_worst	0.9937
radius_mean	area_mean	0.9874
perimeter_mean	area_mean	0.9865
radius_worst	area_worst	0.9840
perimeter_worst	area_worst	0.9776
radius_se	perimeter_se	0.9728
perimeter_mean	perimeter_worst	0.9704
radius_mean	radius_worst	0.9695
perimeter_mean	radius_worst	0.9695
radius_mean	perimeter_worst	0.9651
area_mean	radius_worst	0.9627
area_mean	area_worst	0.9592
area_mean	perimeter_worst	0.9591
radius_se	area_se	0.9518
perimeter_mean	area_worst	0.9415
radius_mean	area_worst	0.9411
perimeter_se	area_se	0.9377
concavity_mean	concave_points_mean	0.9214
texture_mean	texture_worst	0.9120
concave_points_mean	concave_points_worst	0.9102
compactness_worst	concavity_worst	0.8923
concavity_mean	concavity_worst	0.8841
compactness_mean	concavity_mean	0.8831
compactness_mean	compactness_worst	0.8658
concavity_mean	concave_points_worst	0.8613
concave_points_mean	perimeter_worst	0.8559
concavity_worst	concave_points_worst	0.8554
perimeter_mean	concave_points_mean	0.8510
compactness_mean	concave_points_mean	0.8311
concave_points_mean	radius_worst	0.8303
area_mean	concave_points_mean	0.8233
radius_mean	concave_points_mean	0.8225
perimeter_worst	concave_points_worst	0.8163
compactness_mean	concavity_worst	0.8163
compactness_mean	concave_points_worst	0.8156
area_se	area_worst	0.8114
compactness_worst	fractal_dimension_worst	0.8105
concave_points_mean	area_worst	0.8096
smoothness_mean	smoothness_worst	0.8053
compactness_se	fractal_dimension_se	0.8033
compactness_se	concavity_se	0.8013
compactness_worst	concave_points_worst	0.8011
area_mean	area_se	0.8001

Variance Inflation Factor (VIF)

Pink: VIF>10, Grey: VIF>5, Green: VIF<5

