

Unscaled data yielded an accuracy of 0.93, with good precision (healthy: 1.00, heart disease: 0.89) but recall needing improvement for healthy patients (0.83). MinMaxScaler showed virtually identical results. StandardScaler significantly improved accuracy to 0.97, exhibiting high precision and recall for both classes (heart disease precision/recall: 0.94/1.00; healthy: 1.00/0.92), and the best F1-score (0.96). Conversely, Normalizer drastically reduced accuracy (0.66) and recall, particularly for healthy patients (0.17), indicating its ineffectiveness for this dataset. StandardScaler emerged as the optimal scaling method.