Alzheimer's Classification Models Report

ElasticNet + Calibration: Classification Report

Class	Precision	Recall	F1-score	Support
AD	0.562	0.614	0.587	44
CN	0.500	0.200	0.286	35
MCI	0.548	0.714	0.620	56
Accuracy			0.548	135
Macro Avg	0.537	0.509	0.498	135
Weighted Avg	0.540	0.548	0.523	135

HistGradientBoosting: Classification Report

Class	Precision	Recall	F1-score	Support
AD	0.482	0.614	0.540	44
CN	0.317	0.371	0.342	35
MCI	0.421	0.286	0.340	56
Accuracy			0.415	135
Macro Avg	0.407	0.424	0.408	135
Weighted Avg	0.414	0.415	0.406	135

Comparison of ElasticNet vs HistGB

Metric	ElasticNet	HistGB	Interpretation
Balanced Accuracy	0.509	0.424	ElasticNet generalizes slightly better
Macro F1	0.498	0.408	ElasticNet produces more balanced predictions
AD performance	Strongest	Similar	Both models detect AD relatively well
CN performance	Weak (recall=0.20)	Weak but better (recall=0.37)	Both struggle to identify healthy CN
MCI performance	Best (recall=0.71)	Weak (recall=0.29)	ElasticNet handles MCI much better