

Figure S1. Determination of optimal cut-off values for independent prognostic factors using maximally selected rank statistics, including NSE, neuron-specific enolase; TC, total cholesterol; PNI, prognostic nutritional index; Hb, hemoglobin.

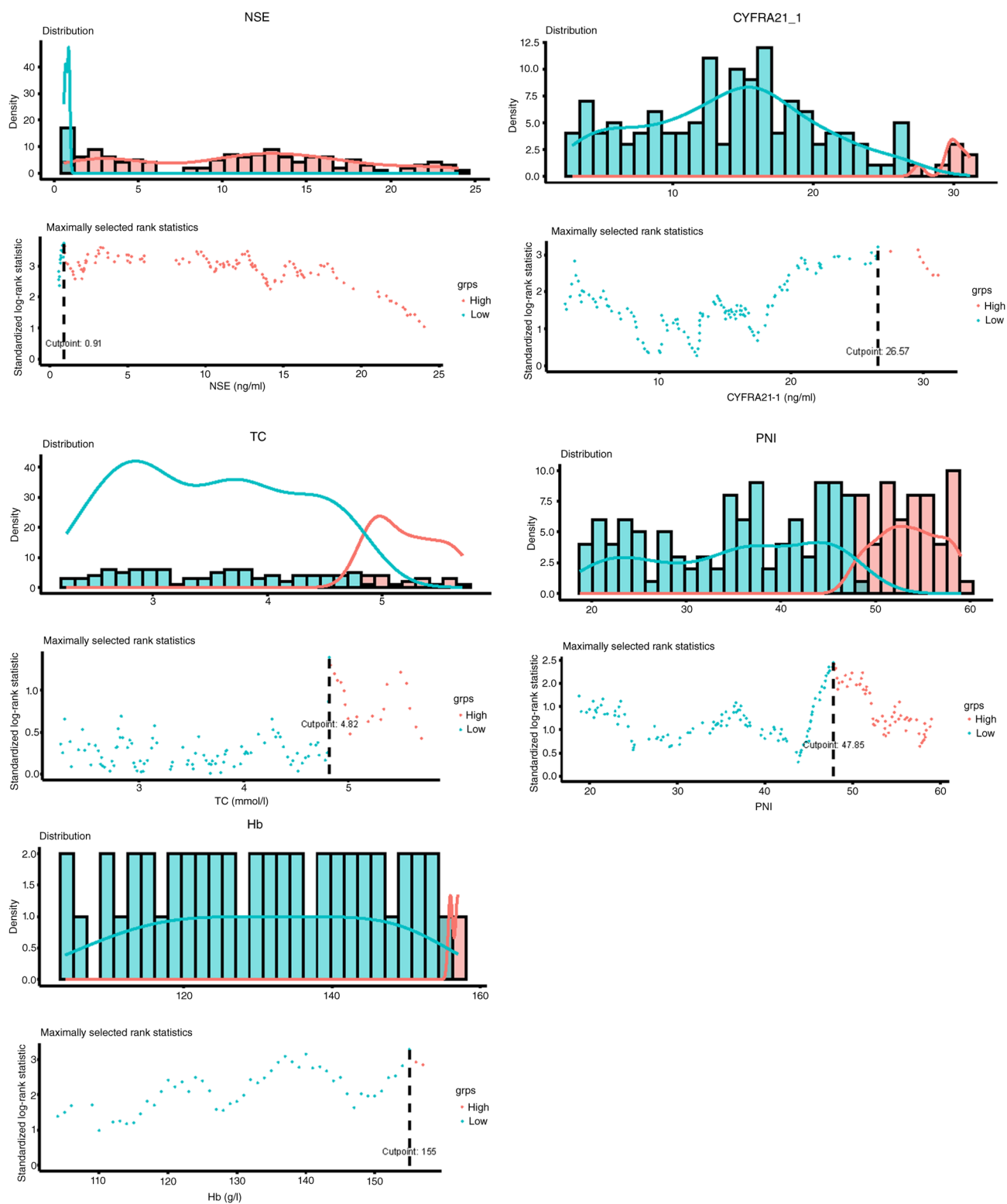


Figure S2. Predictive performance of individual nutritional and inflammatory markers for overall survival in patients with NSCLC with bone metastasis. (A) Mean C-index values ($\pm$ standard error) of each marker. (B) Heatmap of subgroup-specific C-index values across clinical strata. (C) Time-dependent AUC curves illustrating changes in predictive performance over time. NSCLC, non-small cell lung cancer; C-index, concordance index; AUC, area under the curve; SII, systemic immune-inflammation index; CLR, C-reactive protein-to-lymphocyte ratio; NLR, neutrophil-to-lymphocyte ratio; CAR, C-reactive protein-to-albumin ratio; HALP, hemoglobin, albumin, lymphocyte and platelet score; PLR, platelet-to-lymphocyte ratio; NLDA, neutrophil-to-lymphocyte x D-dimer-to-albumin ratio; BMI, body mass index; ALI, advanced lung cancer inflammation index.

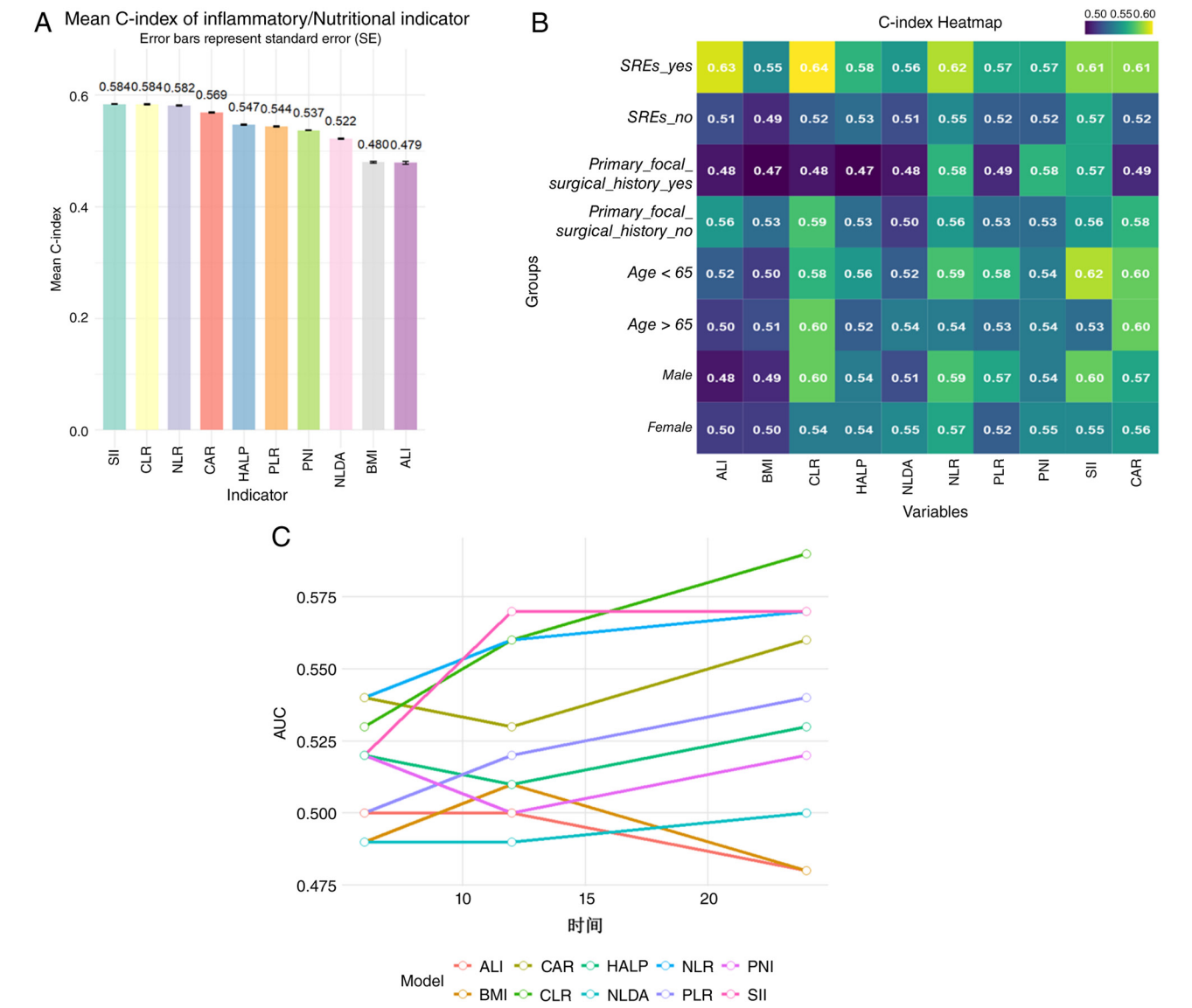


Figure S3. Variance inflation factor analysis of selected variables. (A) LASSO model; (B) Random forest model; (C) XG-Boost model. LASSO, Least Absolute Shrinkage and Selection Operator; XGBoost, extreme gradient boosting; WBC, white blood cell count; SII, systemic immune-inflammation index; RBC, red blood cell count; PNI, prognostic nutritional index; NSE, neuron-specific enolase; LDH, lactate dehydrogenase; Hb, hemoglobin; CAR, C-reactive protein-to-albumin ratio; ALP, alkaline phosphatase; ALI, advanced lung cancer inflammation index; SCC, squamous cell carcinoma antigen; CLR, C-reactive protein-to-lymphocyte ratio; CEA, carcinoembryonic antigen.

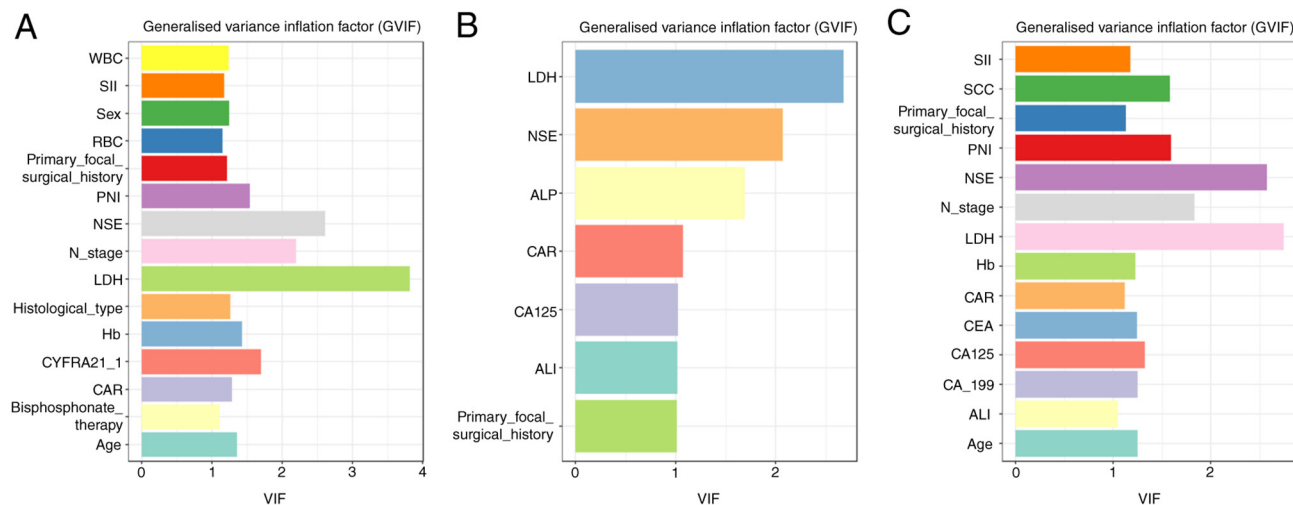


Figure S4. Distribution of risk scores and their association with overall survival status across six prognostic models in patients with NSCLC with bone metastasis. NSCLC, non-small cell lung cancer; LASSO, Least Absolute Shrinkage and Selection Operator; RF, Random Forest; XGBoost, extreme gradient boosting.

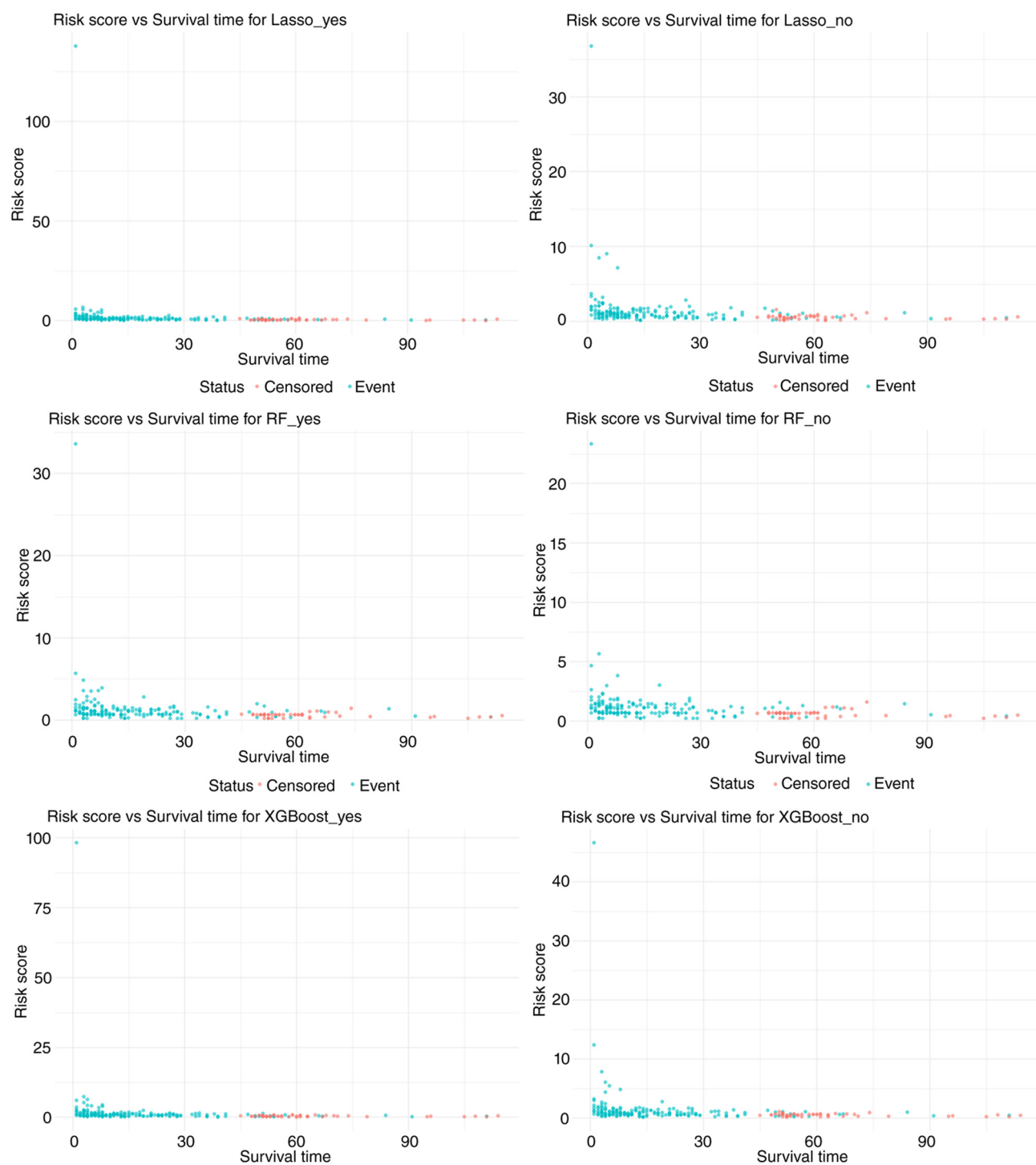


Figure S5. Comparison of time-dependent Brier scores among six prognostic models for predicting overall survival at 6, 12, and 24 months in patients with NSCLC with bone metastasis. NSCLC, non-small cell lung cancer; LASSO, Least Absolute Shrinkage and Selection Operator; RF, Random Forest; XGBoost, extreme gradient boosting.

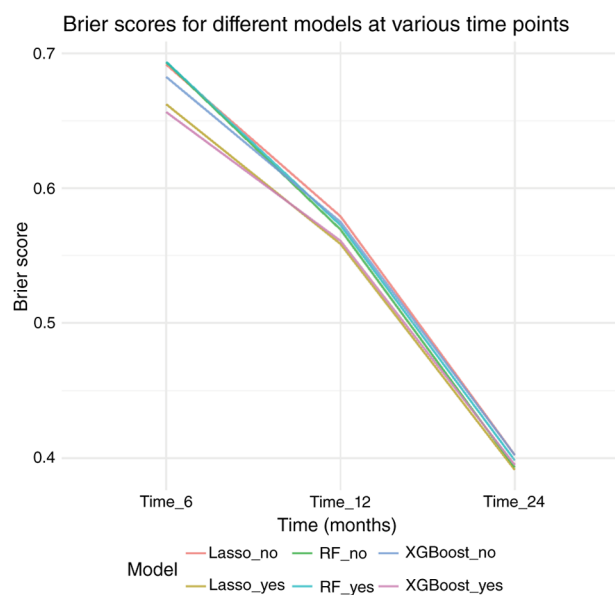


Figure S6. Comparison of AIC values among six prognostic models for predicting overall survival in patients with NSCLC with bone metastasis. AIC, Akaike information criterion; NSCLC, non-small cell lung cancer; LASSO, Least Absolute Shrinkage and Selection Operator; RF, Random Forest; XG-Boost, extreme gradient boosting.

