# Marketing Campaign Response Prediction Report

## Model Performance

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The Random Forest model achieved an accuracy of ~85% and an AUC of ~0.88–0.90.

This indicates strong separation between responders and non-responders. Recall values show that the model captured

most responders, though precision was lower, meaning many predicted responders did not actually respond.

This trade-off can be adjusted depending on campaign goals.

## Feature Importance

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The most important features in predicting campaign response were:

* Income: Higher-income customers showed higher response likelihood.
* Customer recency (days since joining): Recent customers responded more often.
* Purchase activity: Higher spending (e.g., wine, gold products) correlated with higher response rates.
* Campaign history / complaints: Past behavior influenced future response.

## Recommendations for Improving Retention

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* Target high-income and recently acquired customers with campaigns for maximum effectiveness.
* Personalize offers based on purchase behavior (e.g., premium product buyers).
* Re-engage customers with complaints or low past response with specialized offers.
* Further improvements can be achieved with Gradient Boosting models (XGBoost/LightGBM),

class balancing techniques (SMOTE, class weights), and RFM feature engineering.