

Predicting Credit Card Payment Default

Lauren Gray

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Problem: credit card defaulters

- Credit card = flexible tool to use bank's money for a period
- Charge-off results in significant financial losses
- Thus, risk prediction is essential to reduce damage and uncertainty
- Goal: predict and prevent credit defaulters to improve bottom line



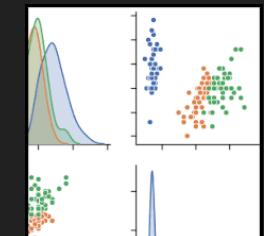
How do we prevent defaulters?

- Observe, learn, and adapt
- Our purpose: Learn
 Use data to train a model to predict whether people
 are likely to default on their credit card payments

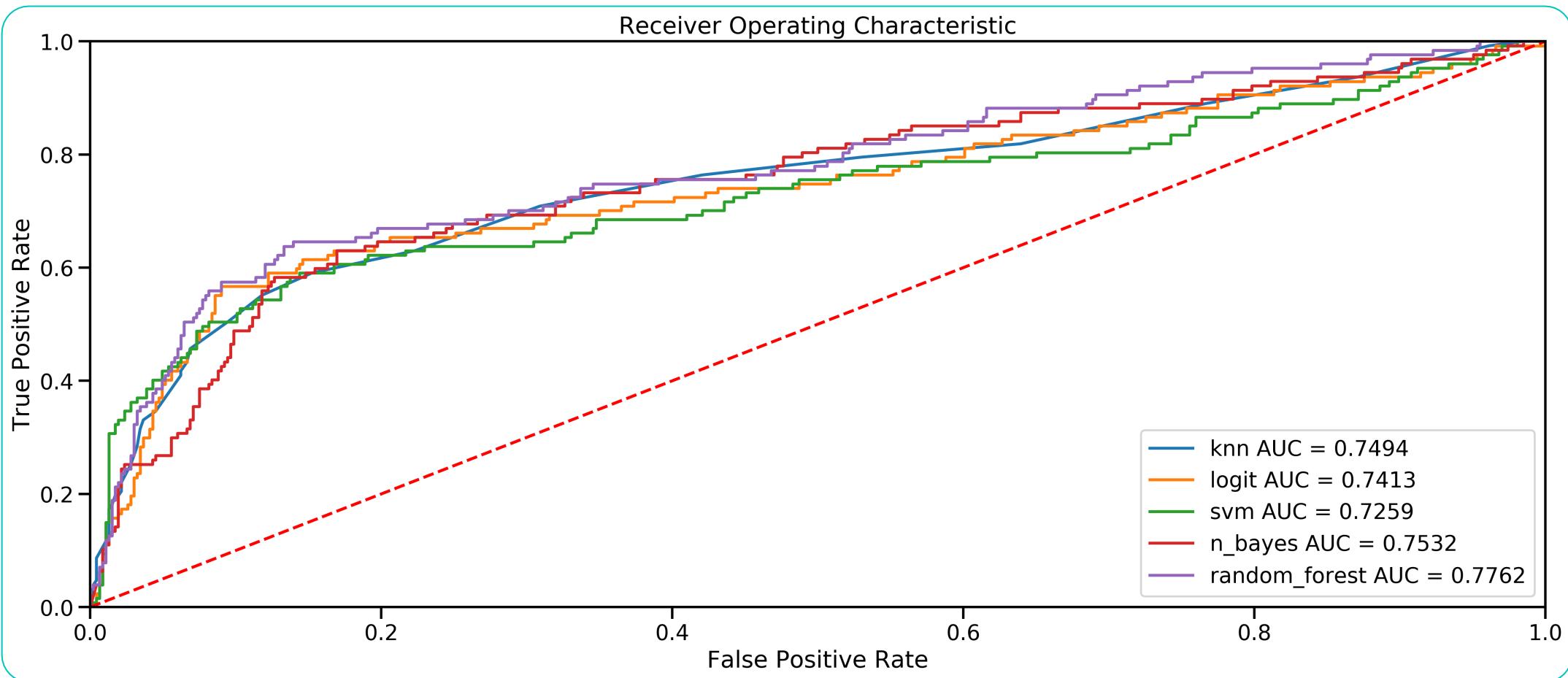


Our approach

- Data Source: Google Cloud Platform public data
- Target: credit card default
- Key Features:
 - bill amounts, payment amounts, repayment status
 - credit limit
 - age, gender, marital status, education level

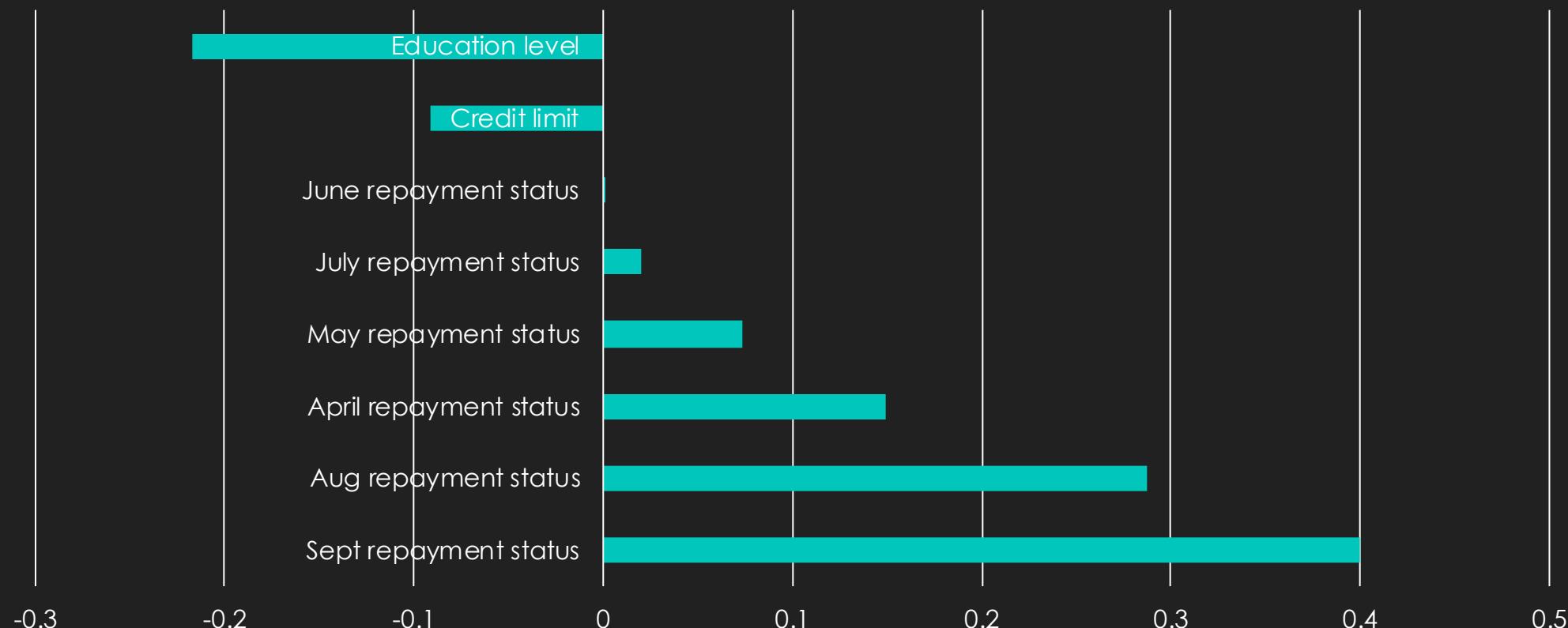


Choosing the right model using ROC-AUC scores



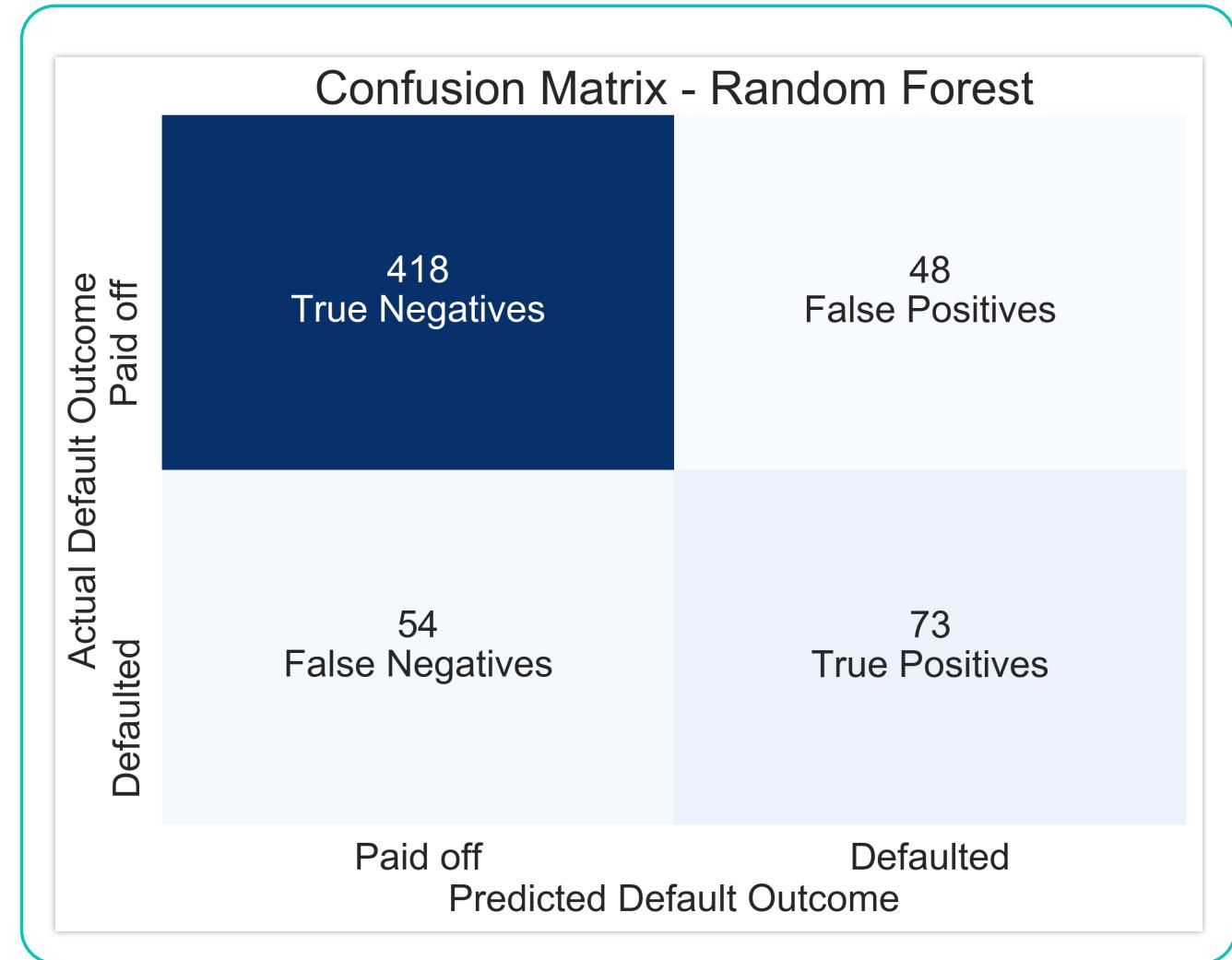
Which features are most important?

Logistic regression top features



Credit Card Default Predictor, Scored on F1

- $F1 = 0.59$
- Threshold = 0.3
- Recall = 0.57, Precision = 0.61
- 42% of actual defaults are False Negatives



Credit Card Default Predictor, Scored on CBA

- $F1 = 0.50$
- Threshold = 0.2
- Recall = 0.71, Precision = 0.37
- 30% of actual defaults are False Negatives

		Confusion Matrix - Random Forest	
		Paid off	Defaulted
Actual Default Outcome	Paid off	323 True Negatives	143 False Positives
	Defaulted	38 False Negatives	89 True Positives
		Paid off	Defaulted
		Predicted Default Outcome	

Future Work

- Cost Benefit Analysis using data on the cost of a false negative vs. a false positive
 - Clear explanation of business implications
- Interactive app that can be used by a bank

How will this be used?

- Easy-to-interpret mitigation program to the client bank
- Help the bank identify and act on customers with a high probability of defaulting to improve their bottom line
 - Repayment history
 - Credit Limit
 - Education Level



Thank You!