

Will your cardholder default on their credit card next month?

A Classification Problem Solved



Default Definition

A cardholder failed to make the **required minimum payment** before his/her bill was due.



If you can
predict who
will likely
default...

You (the credit card
company) can
intervene to reduce
the likelihood of
defaulting.



Interventions: Letters, phone calls, text messages, emails



- Remind client to pay his/her required minimum payment by the due date
- Ensure he/she is aware of the different ways of paying (website, app, in person at bank)
- Gently explain ramifications of defaulting

Data set:

Default of Credit Card Clients

<https://archive.ics.uci.edu/ml/datasets/default+of+credit+card+clients>

- Exploratory Data - Data Set Includes:
 - 30,000 credit card clients
 - Paid: 23,364 (78%)
 - Defaulted: 6636 (22%)



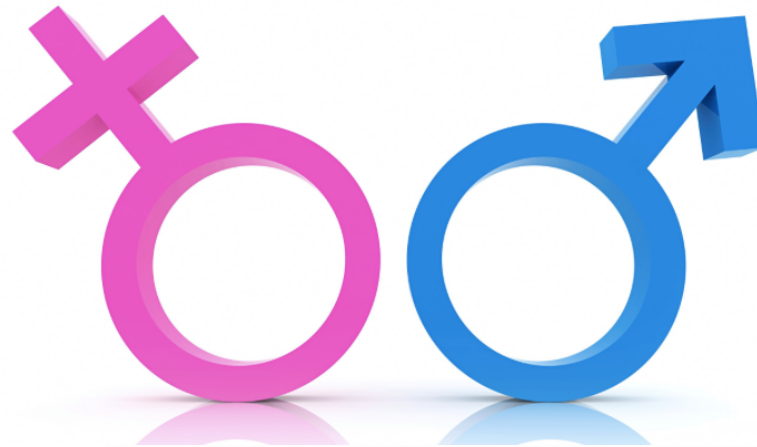
78%
Paid



22%
Defaulted

Features Selected

- Limit Balance
- Gender
- Education
- Marriage
- Age
- Percent paid 1-6 months prior:
 - payment amount/bill amount



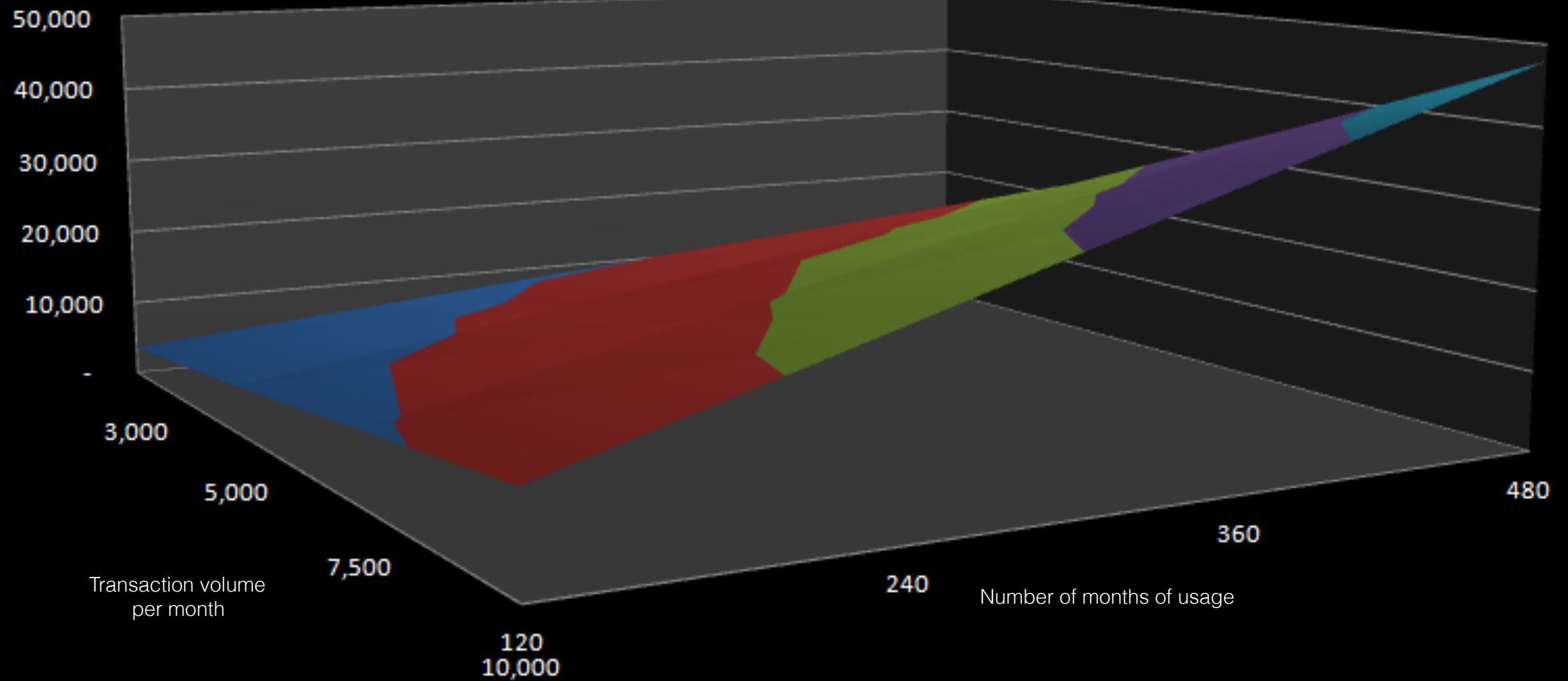
Classification Models Compared

Models	Accuracy Score	Recall Score	Precision Score
KNN	0.738	0.142	0.293
Logistic Regression	0.782	0	0
Naive Bayes	0.234	0.985	0.22
Decision Tree	0.681	0.312	0.287
Random Forest	0.757	0.282	0.416
Gradient Boosting	0.782	0.09	0.501

Life Time Value of a Visa / Master Card Customer.

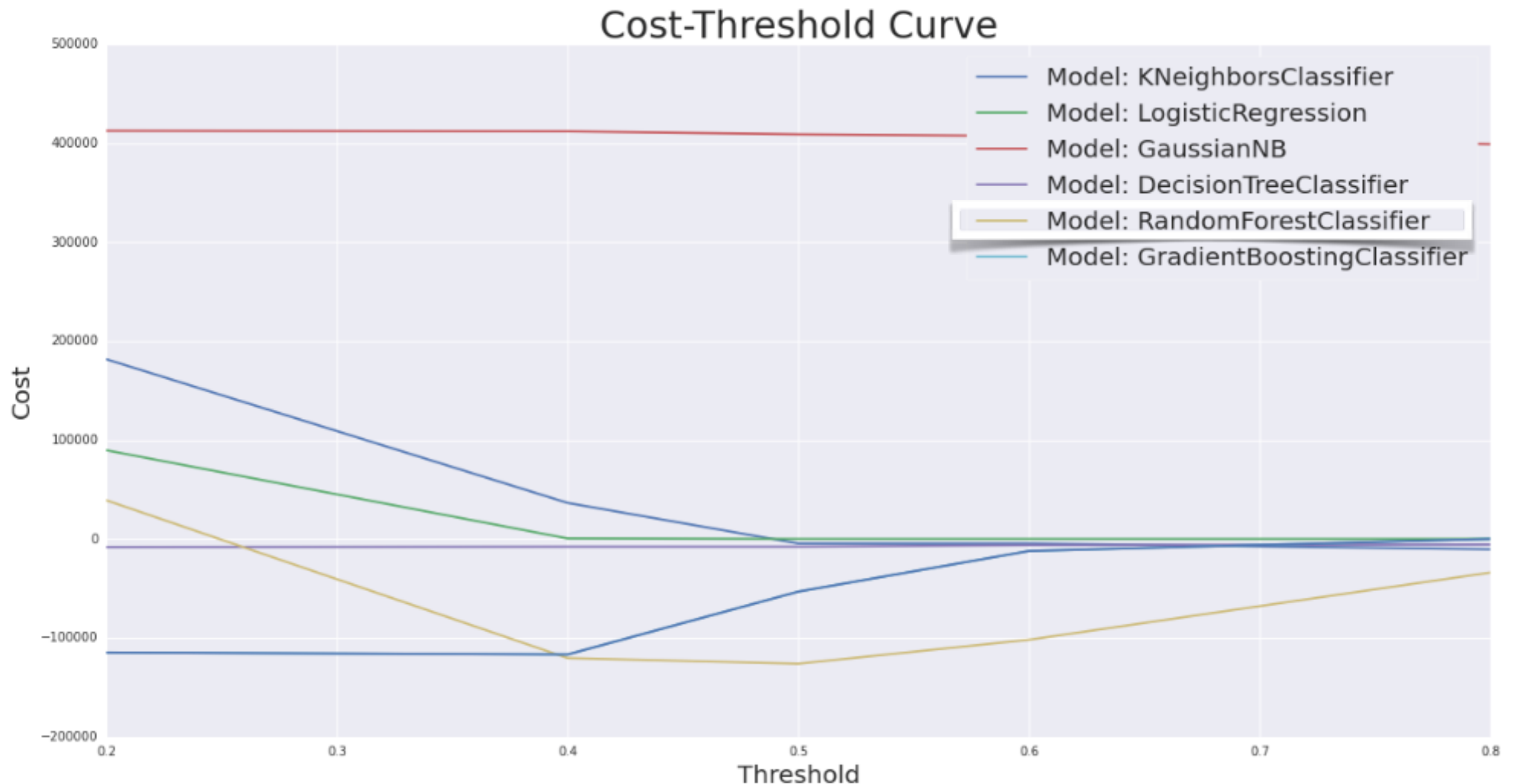
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■ - - 10,000 ■ 10,000 - 20,000 ■ 20,000 - 30,000 ■ 30,000 - 40,000 ■ 40,000 - 50,000



Source: Jawwad Farid [via Quora](#)

Cost to Credit Card Company vs. Classification Model



Our Flask Webpage

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Demographic Data

Limit Balance:

Gender

Education

Marriage

Age:

Credit Card Payment History

Percent Paid 1 Month Ago:

Percent Paid 2 Months Ago:

Percent Paid 3 Months Ago:

Percent Paid 4 Months Ago:

Percent Paid 5 Months Ago:

Percent Paid 6 Months Ago:



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Next month's prediction: Default



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Demographic Data

Limit Balance:

2000

Gender

Female

Education

Graduate school

Marriage

Married

Age:

50

Credit Card Payment History

Percent Paid 1 Month Ago:

.6

Percent Paid 2 Months Ago:

.6

Percent Paid 3 Months Ago:

.6

Percent Paid 4 Months Ago:

.6

Percent Paid 5 Months Ago:

.6

Percent Paid 6 Months Ago:

.6



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Next month's prediction: Paid

