



Credit One Solutions

Finding Answers to the Current Credit Scoring Dilemma

GOALS

- ▶ Better predict which customers are fit to receive a loan.
- ▶ Improve credit scoring algorithm predictions of probability for default.
- ▶ Protect current Credit One partner relationships.
- ▶ Build stronger business model to promote growth for Credit One.

Data Science Process

Frame the Question

- How can we improve Credit One's overall process?

Collect & Extract Data

- Retrieve dataset from provided database

Process & Clean Data

- Re-label, sort, remove errant or duplicate data

Explore the Data

- Use statistics, charts, and graphs to see trends

In-Depth Analysis

- Build predictive models

Visualize, Communicate, & Take Action

- Present & discuss relevant findings

Frame the Question

Relevant Questions

- ▶ What is the best method of determining how to score a client's credit?
- ▶ Is there a better way to assess for loan approvals?
- ▶ How should we determine the loan amount approved for each client?

Collect & Extract Data

Data Source

- ▶ Customer Demographics, Loan History & Payment Data from “Deep Analytics” database
- ▶ 30,204 customer encounters initially recorded
- ▶ 25 variables measured for each customer
 - ▶ Amount of given credit
 - ▶ Gender
 - ▶ Education
 - ▶ Marital Status
 - ▶ Age
 - ▶ Payment & Statement History (April-September 2005)
 - ▶ Client Default Behavior

Process & Clean Data

Organize Dataset

- ▶ Re-label Columns
 - ▶ Make dataset easier to read
- ▶ Sort Data
 - ▶ Initially sorted by age for reference
- ▶ Remove
 - ▶ 239 encounters removed as duplicate and/or missing values

Explore the Data

Statistics & Graphs

- ▶ General
 - ▶ Correlation Heat Map
- ▶ Scatterplots
 - ▶ Demographic Variable X vs. Default Status
- ▶ Stacked Bar Charts
 - ▶ Loan Amount vs. Default Status
 - ▶ Compare 4 demographic categories to assess for trends
- ▶ Histograms
 - ▶ Demographics vs. Loan/Payment/Statement amounts
- ▶ Box Plots



In-Depth Analysis

Modeling

- ▶ Decision Trees
 - ▶ If...
 - ▶ Male/Female
 - ▶ Higher/Lower educated
 - ▶ Married/Single/Divorced
 - ▶ Older/Younger
 - ▶ Paid in Full vs. Payment Delayed for 1-9+ months
 - ▶ Does this predict how much remains on their statement?
 - ▶ OR, if they defaulted on their loan?

Visualization, Communication, & Action

Predictions & Recommendations

- ▶ Develop improved methods...
 - ▶ to anticipate which clients are safer/riskier to approve for loans.
 - ▶ of scoring client's credit for interested partners.
 - ▶ to decide how much money to loan a client.

Questions?

- ▶ What else can we do for Credit One to improve this strategic plan?

