


# Credit Card Approval Prediction

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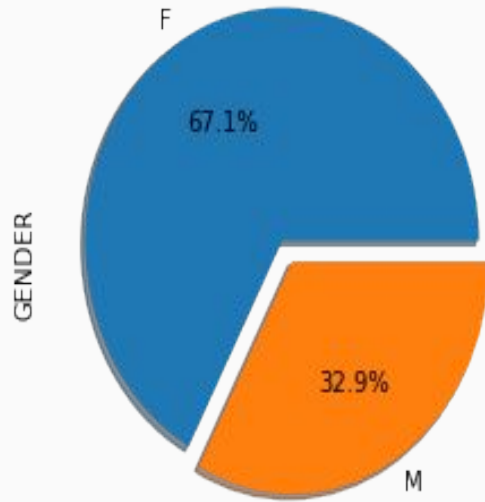
# Background

Credit score cards are commonly used in the financial industry by taking personal information and data submitted by credit card applicants. Score cards are based on historical data. The information is then used to predict the probability of future defaults and borrowings. Vintage analysis is a method used for managing credit risk. It illustrates the behavior after an account was opened and identifies if accounts opened are riskier than others. Data is grouped into segments based on the original month.

# Objective

- Build a machine learning model that predicts if an applicant is 'Good' or 'Bad'
- 'Good' and 'Bad' need to be defined as there is no current definition
- Use vintage analysis
- Use EDA for recommendations and findings

## Visualualization



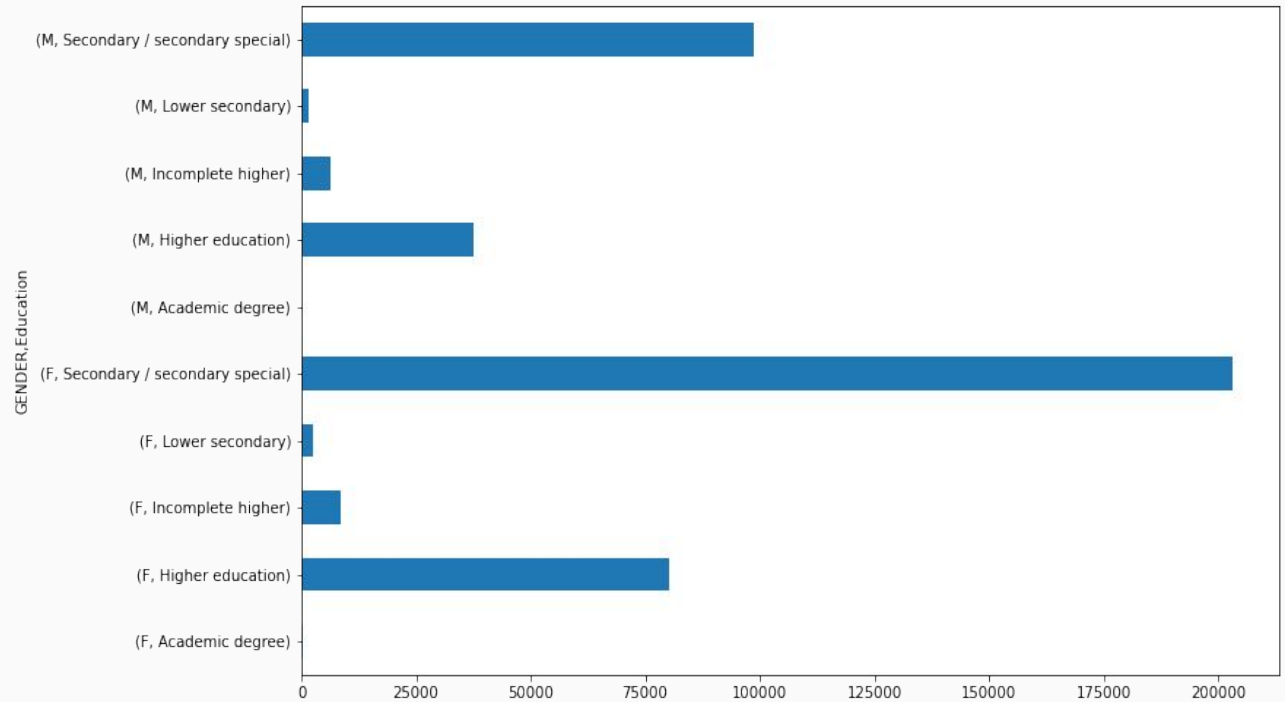
→ 438,000 total applicants

→ 67% female

→ 33% male

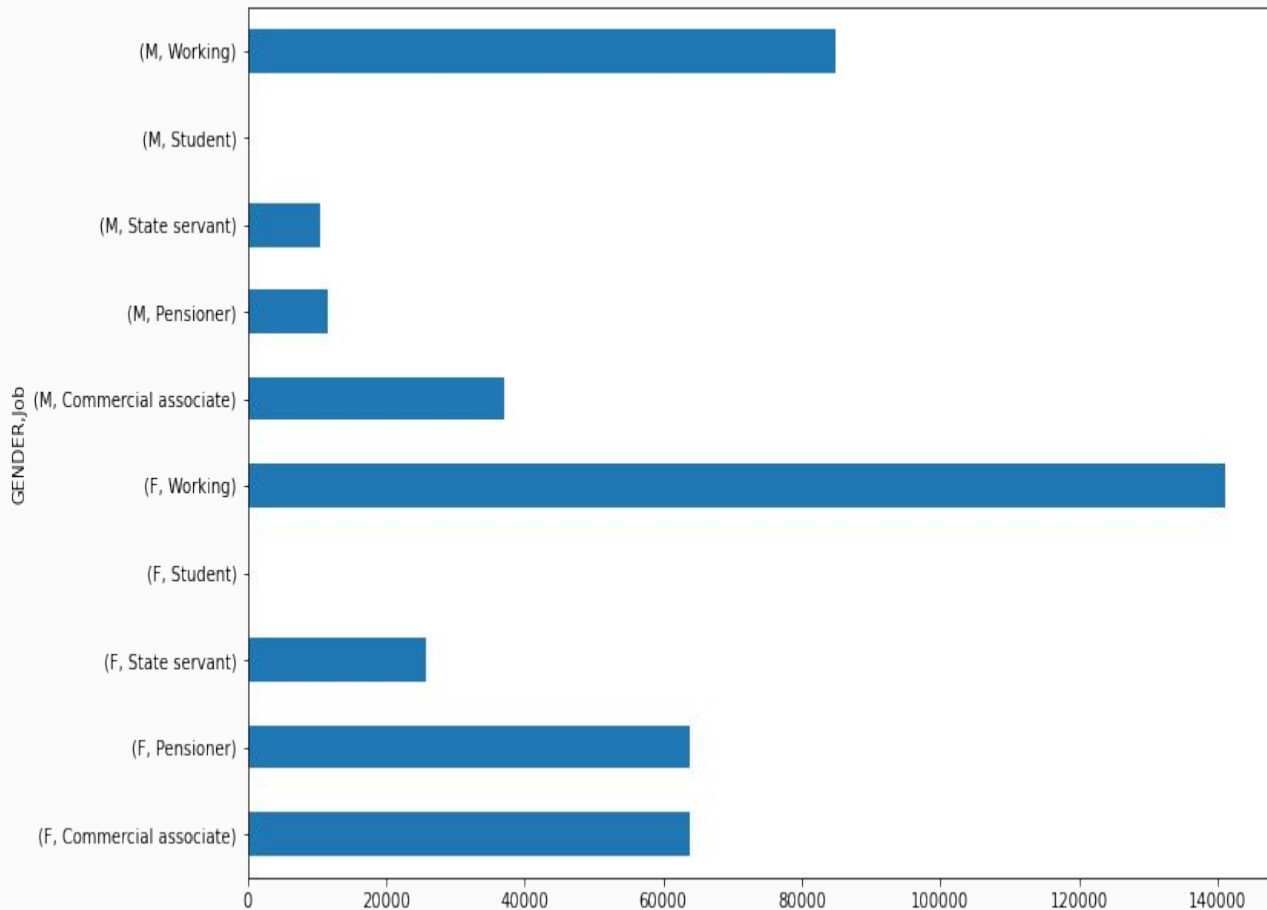
## Education

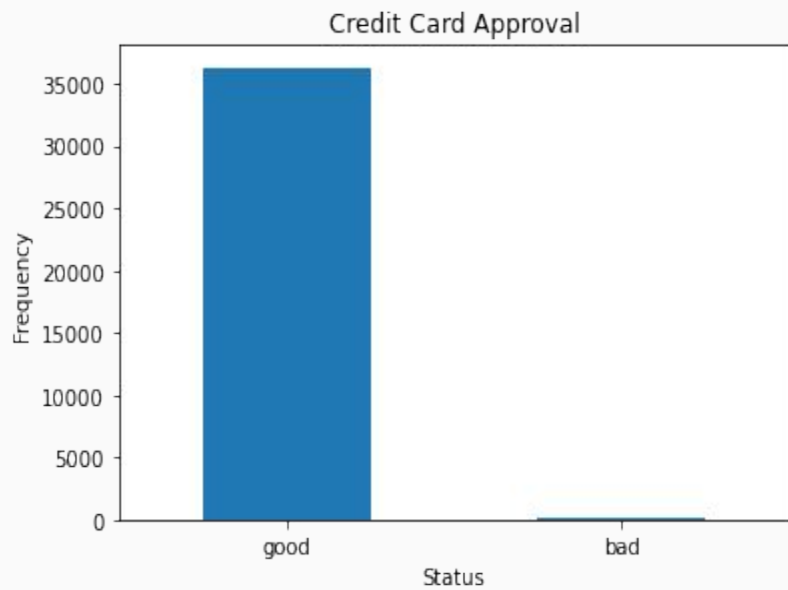
- 200,000+ female applicants with 2+ years of college (not graduated)
- 100,000+ males with 2+ years of college
- Less than 5% of male and female applicants graduated college



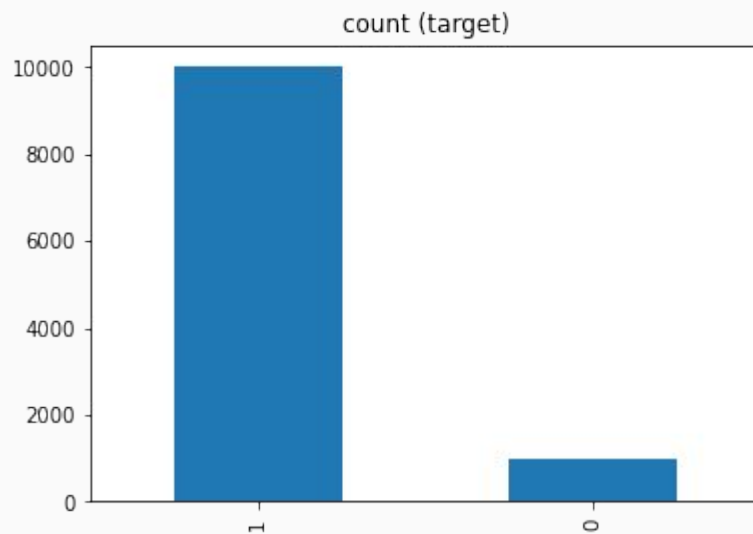
## Jobs by Gender

- Working = undefined job
- Overwhelming majority of applicants are working
- Around 60,000 applicants are government workers



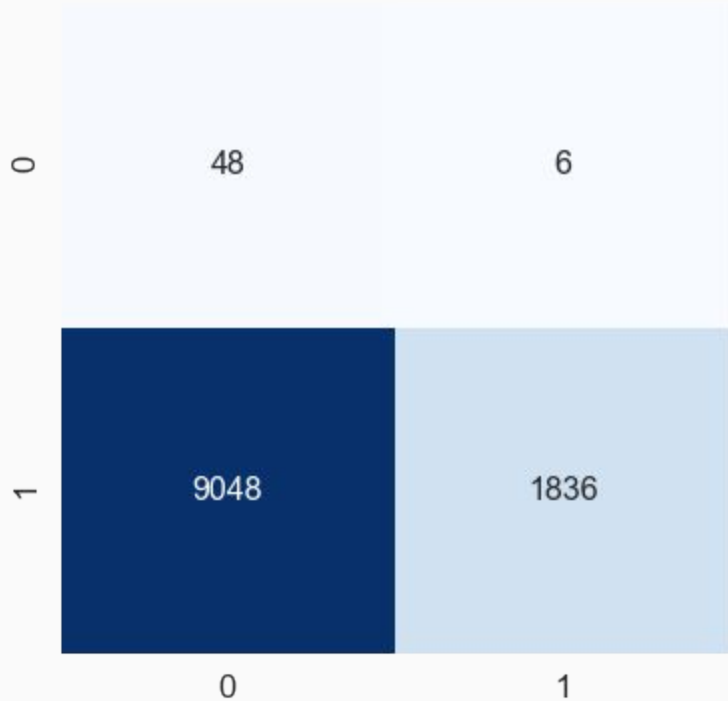


Extremely Imbalanced

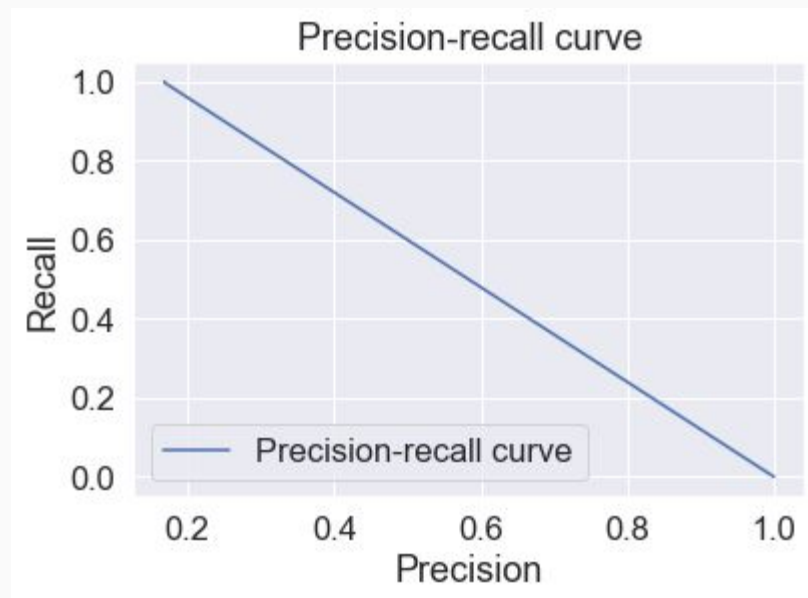


After resampling Data

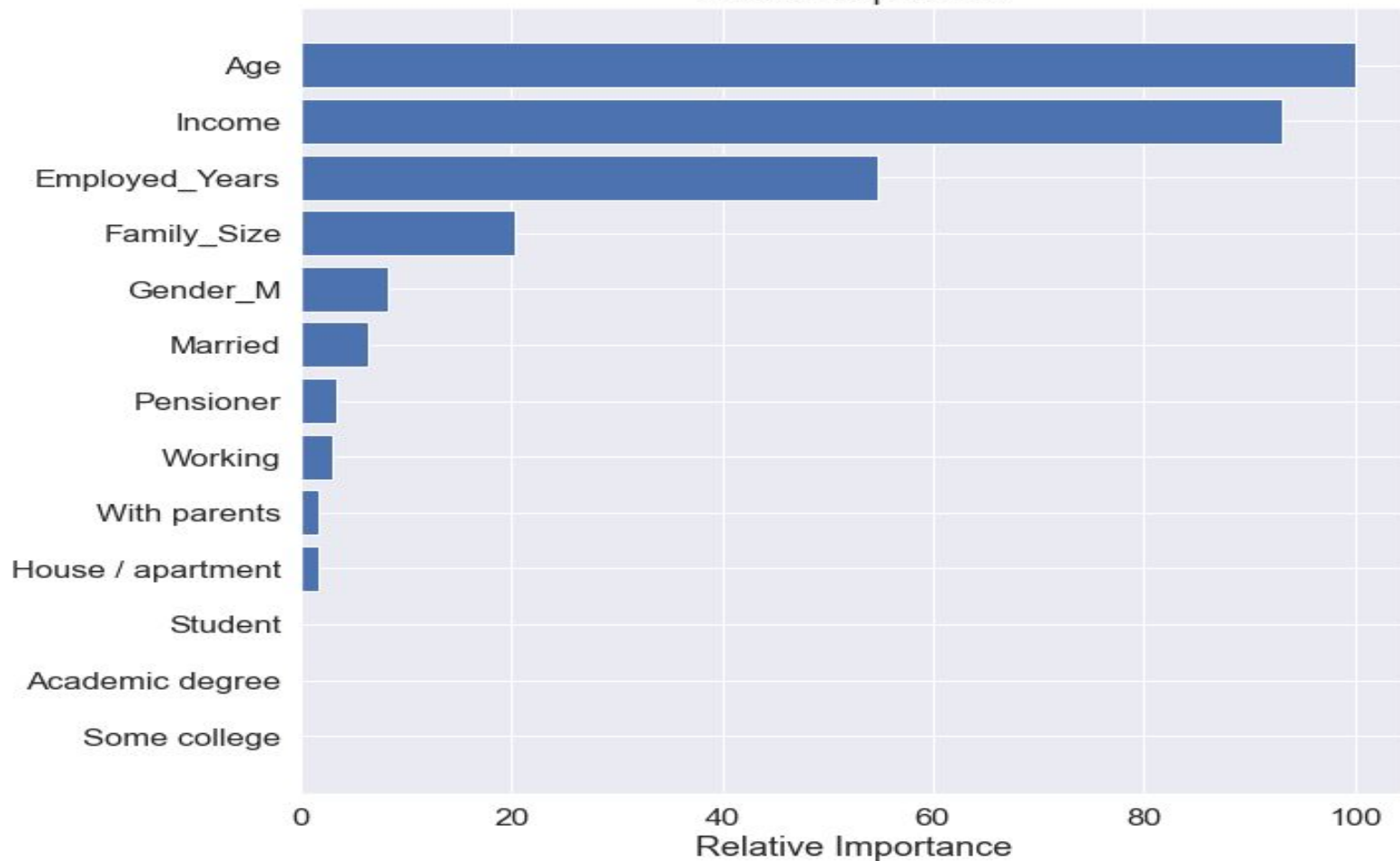




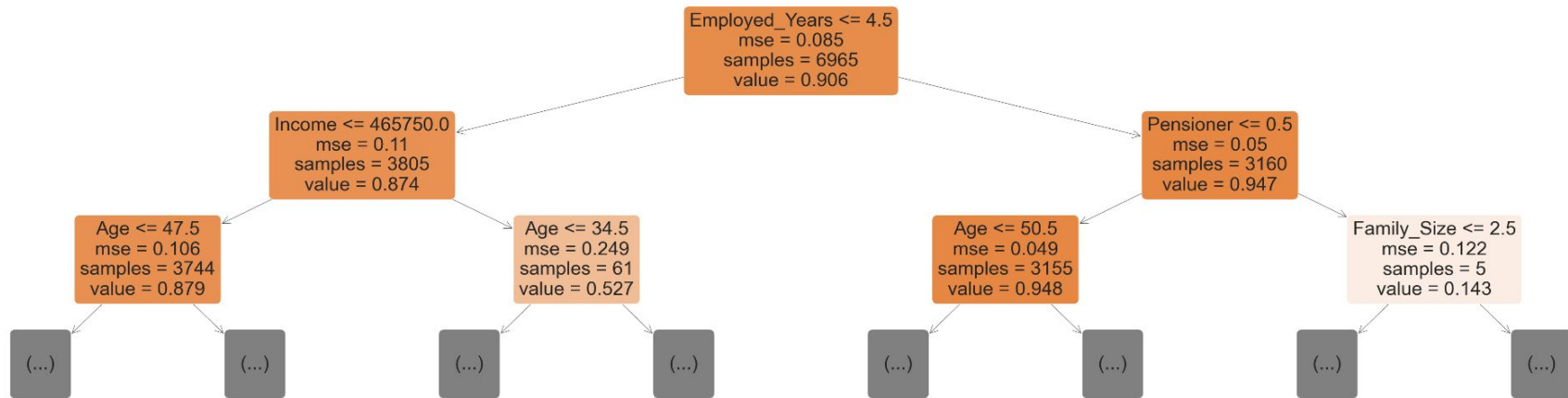
F1 Score



Variable Importance



# Random Forest Regressor



# Recommendations

From exploring the data of the applicants, I have the following 3 recommendations

- ★ **Age:** will offer different cost savings and card perks depending on age. For example: an applicant in their 20s can be offered a card that will round up their purchases and put the difference in a reserve account. At the end of 30 days, 90 days, 6 months etc, the reserve account can be converted into crypto.
- ★ **Income:** an applicant can be offered cards with annual fees and exclusive membership perks like earning airline miles and hotel points
- ★ **Family Size:** applicants can be offered cards based off family type. For example, a young growing family can be offered cards with college savings account options

# Conclusion

During this capstone, I faced a few bumps along each step. Whenever I was overwhelmed, my mentor was there to calm me down, and break down the problem so I understand it better. Looking back on this capstone, I enjoy wrangling the data, and exploring it afterwards to see what the dataset contains. Mentorship, Google, Kaggle, and Medium were my go-to for questions and research. This capstone taught me about the financial technologies tools and processes they use for banking needs.

## Contact:

- ❖ Link to full notebook:

<https://github.com/bravotango87/capStone>  
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