

# Auto Loan Default Study

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# Auto Loan Debt Reaches a Record-High \$1.43 Trillion

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## THE BUSINESS PROBLEM

Auto loan delinquencies are a concern as they hit the highest level since 2007, says Bankrate.com's McBride (Source CNBC)

- Stake Holder

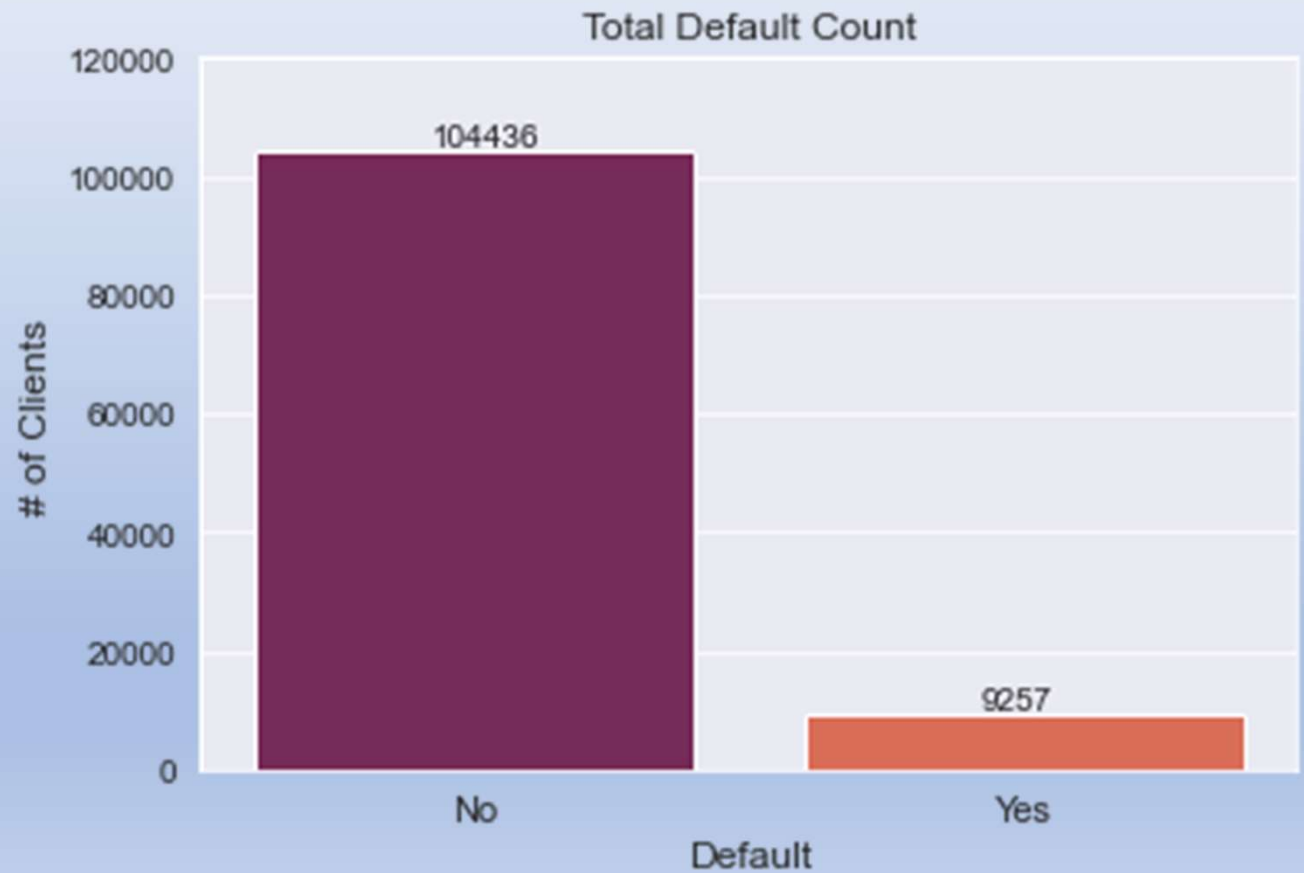
A bank manager who wants to minimize the number of defaulted loans in his position

- The Task

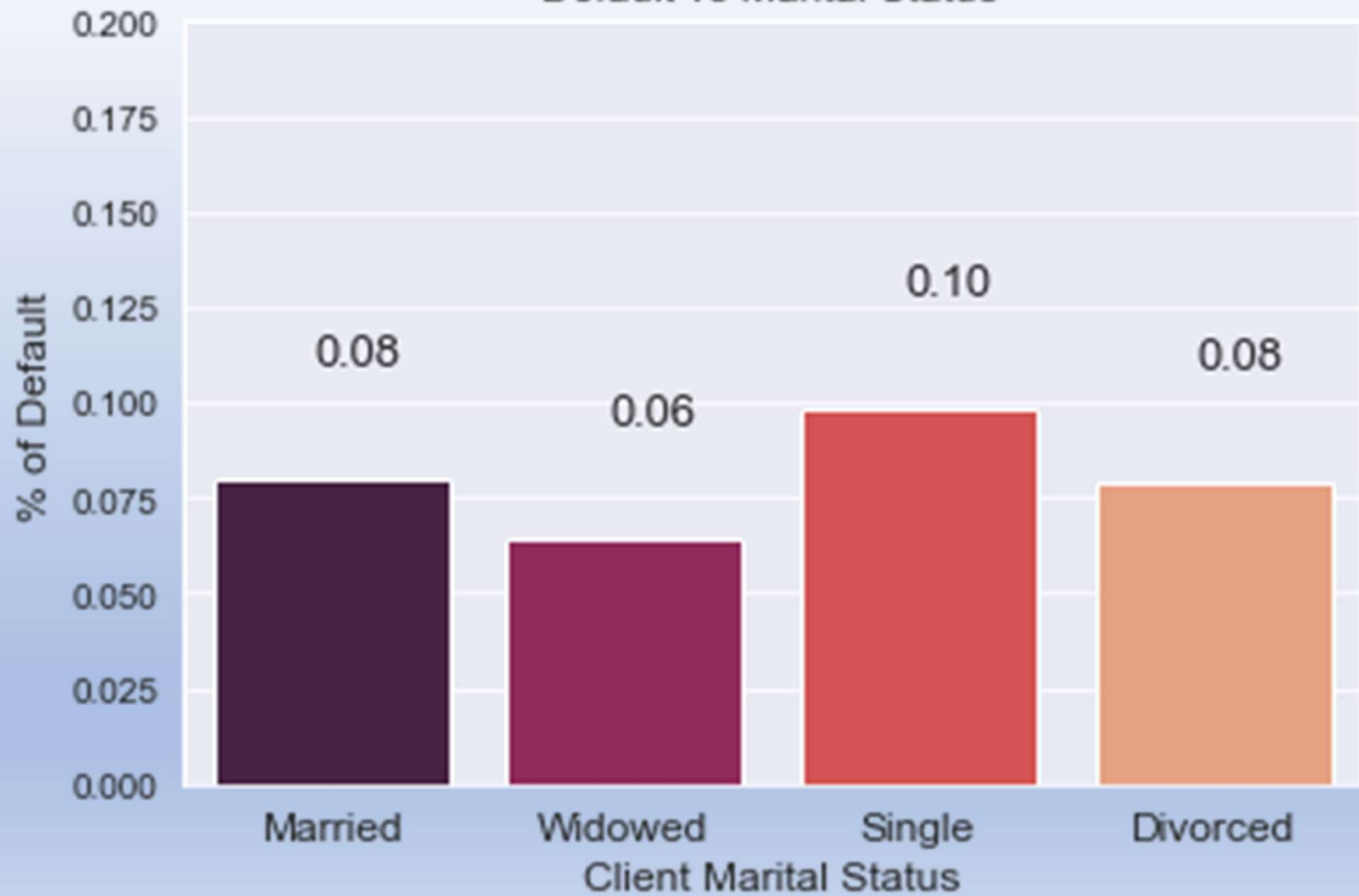
Create a machine learning model to identify the auto loan that's likely to default

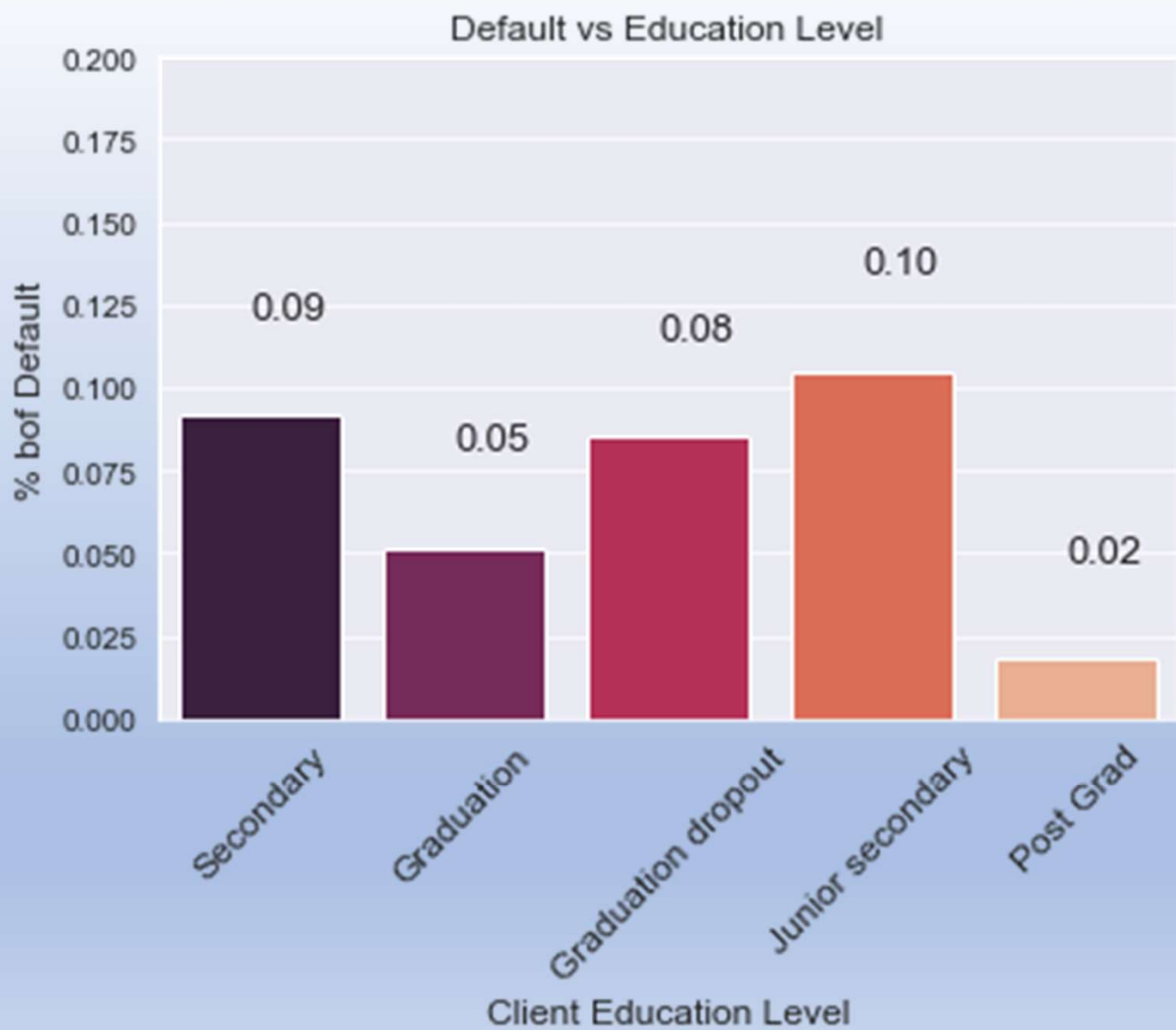
## THE AUTOLOAN DATASET

- 39 Features
- Target: Default
- Hackathon Dataset via Kaggle

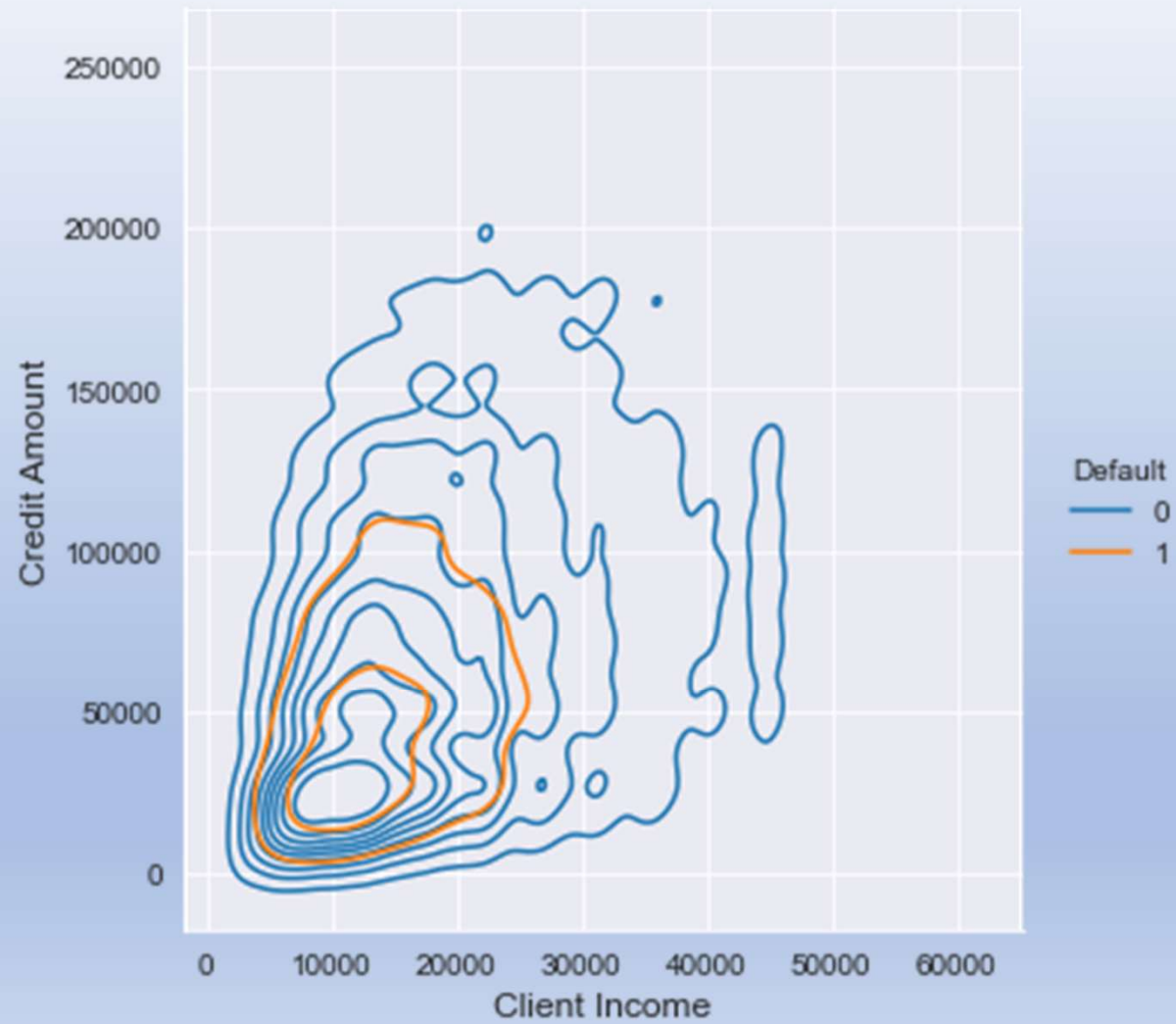


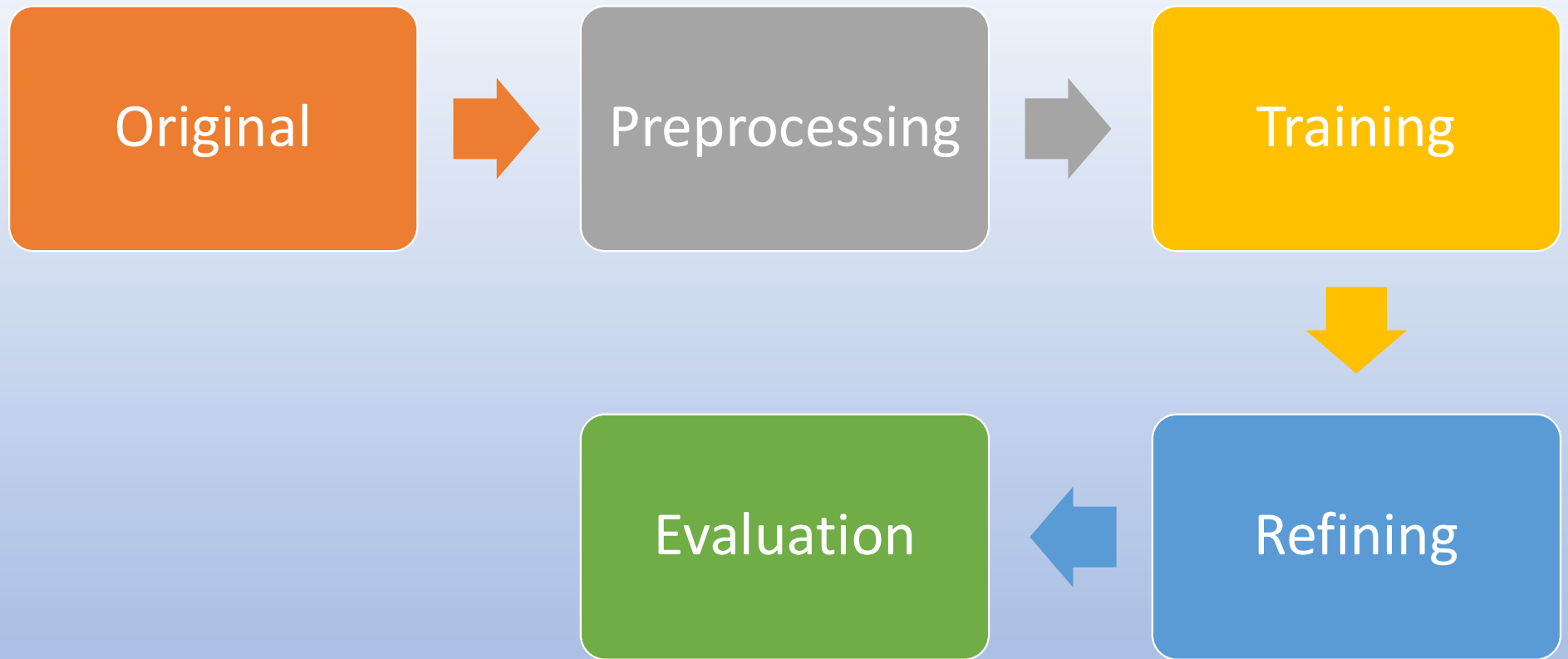
Default vs Marital Status





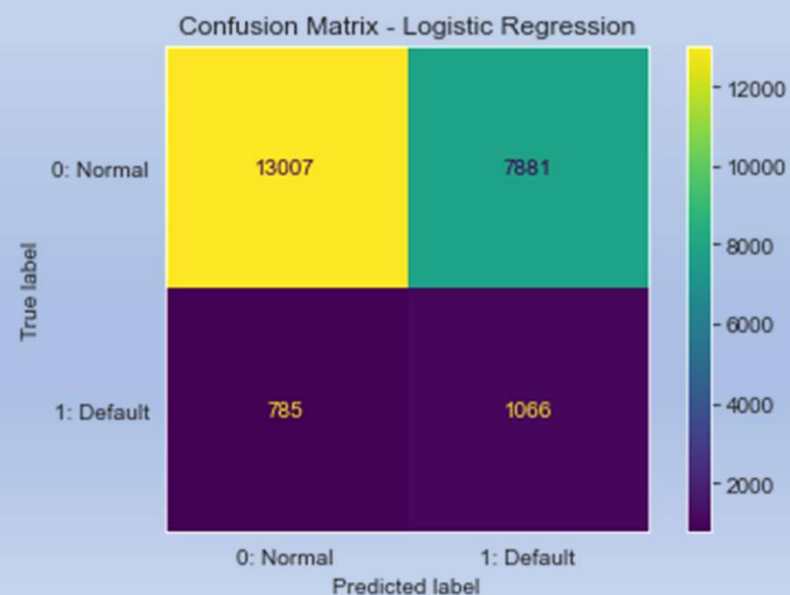
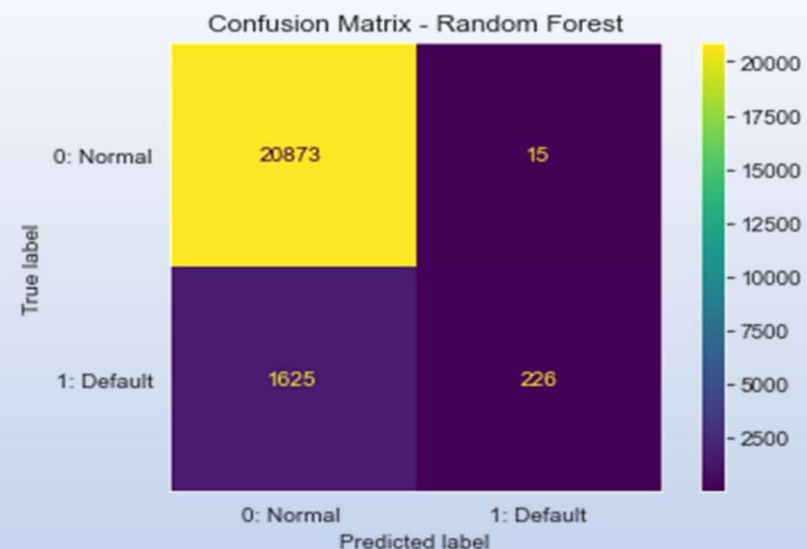
## Bivariate Variable Density of Default





## Summary of the Model Performance

	Model	Accuracy	Precision	Recall	F1 Score	ROC
0	Baseline	0.918598	0.000000	0.000000	0.000000	0.500000
1	Logistic Regression	0.618893	0.119146	0.575905	0.197444	0.599303
2	Logistic Regression GS	0.618893	0.119146	0.575905	0.197444	0.599303
3	Decision Tree	0.859976	0.199097	0.238250	0.216921	0.576660
4	Decision Tree GS	0.863714	0.151786	0.146948	0.149327	0.537089
5	Random Forrest	0.927877	0.937759	0.122096	0.216061	0.560689
6	Ada Boost	0.858085	0.194494	0.236629	0.213502	0.574892
7	Ada Boost GS	0.858085	0.194494	0.236629	0.213502	0.574892
8	NN Base	0.224020	0.070908	0.705024	0.128857	0.443210
9	NN L1	0.203351	0.071233	0.729876	0.129798	0.443284





Weights in Logistic Regression Model



# Recommendation, Future work



Consult with market insiders

Improvement for feature selection



Investigation on loan type

Excessive risk on cash loan or loan from retirement group



Examine with payment history

Detect default loan with payment history



# Thank you

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