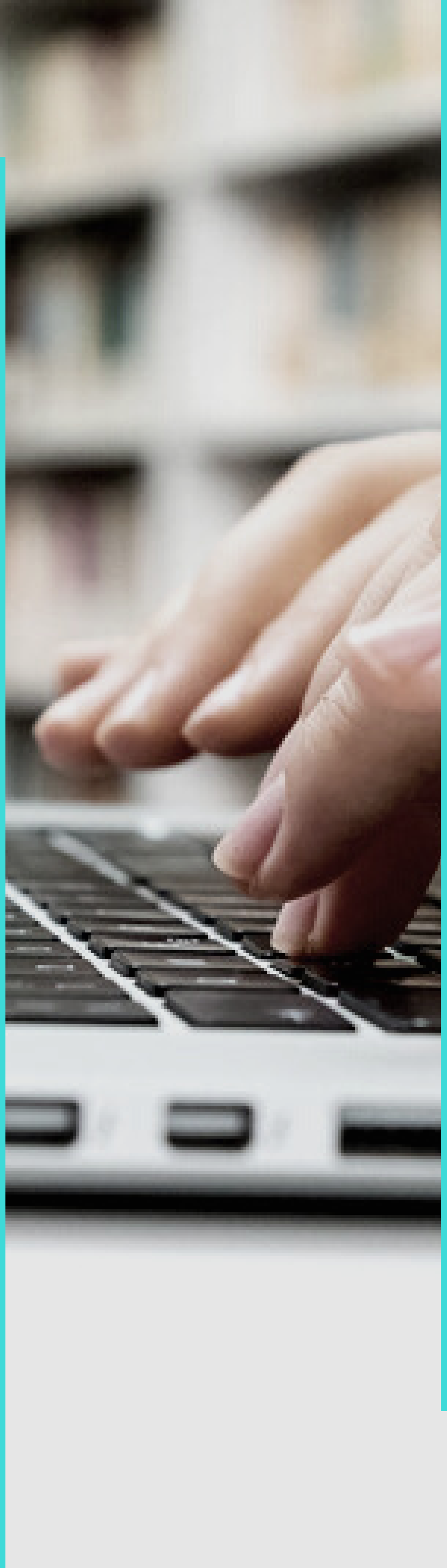
THE COMPARISON OF MACHINE LEARNING MODEL FOR CREDIT CARD DEFAULT PREDICTION



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INTRODUCTION

The use of **credit cards** today is increasingly widespread. One of the main reasons is **the ease of transactions.** However, banks as credit service providers often experience **problems related to losses** due to many **users** who **do not pay** off their **credit** on time. **Machine learning** can be used to **predict** potentially **default users** based on existing variables. So, it is hoped that it can be used as a **consideration** in order to **minimize the losses** that can be experienced.

OBJECTIVE

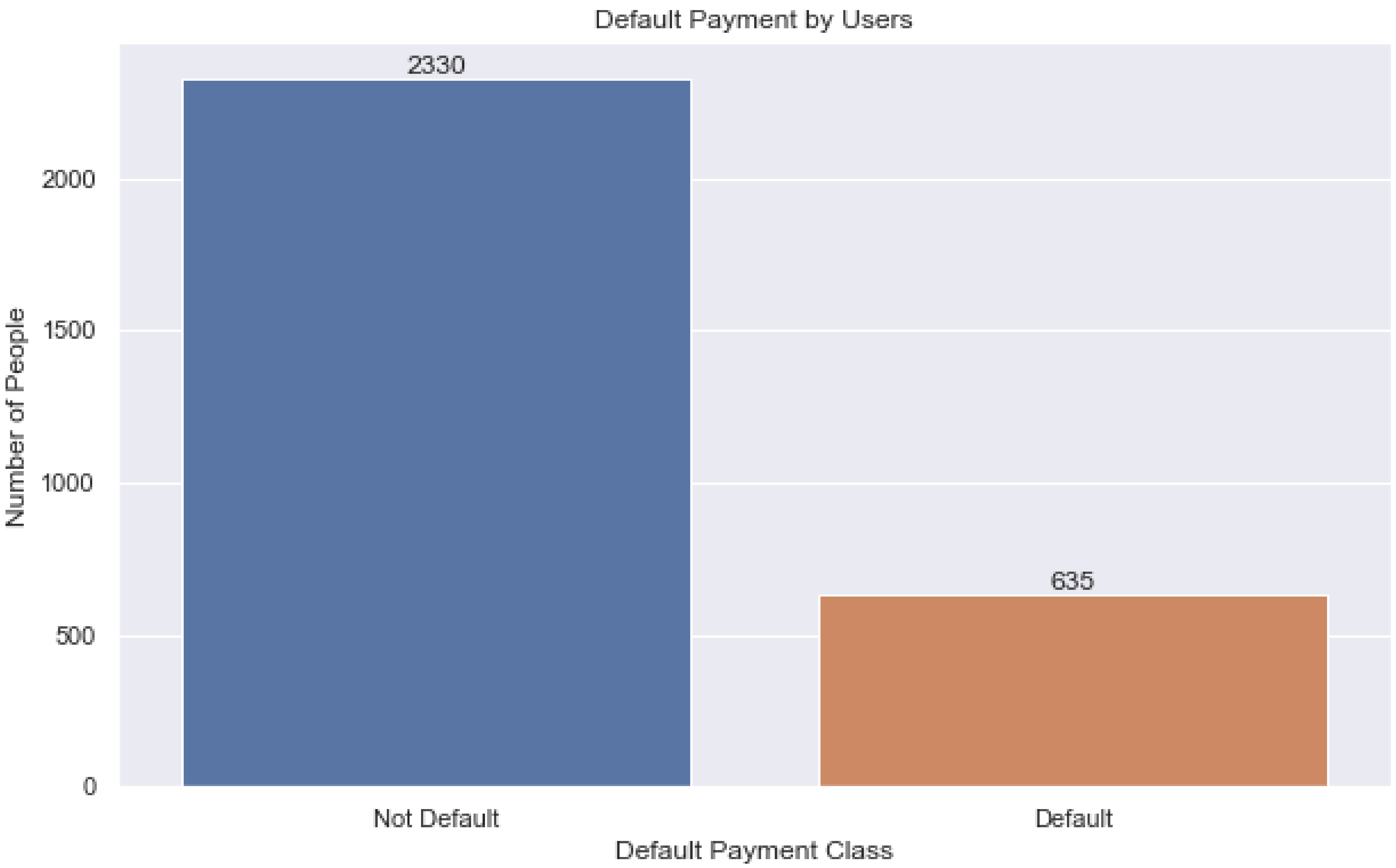
Create a machine learning **logistic regression** model, **support vector machine** (svm), **decision trees** model, **random forests** model, **k-nearest neighbors** (knn) model, **naive bayes** model, and **gradient boosting** model to predict default users on credit cards.

Compare machine learning models built to **predict user defaults** on credit cards and **determine the best model.**

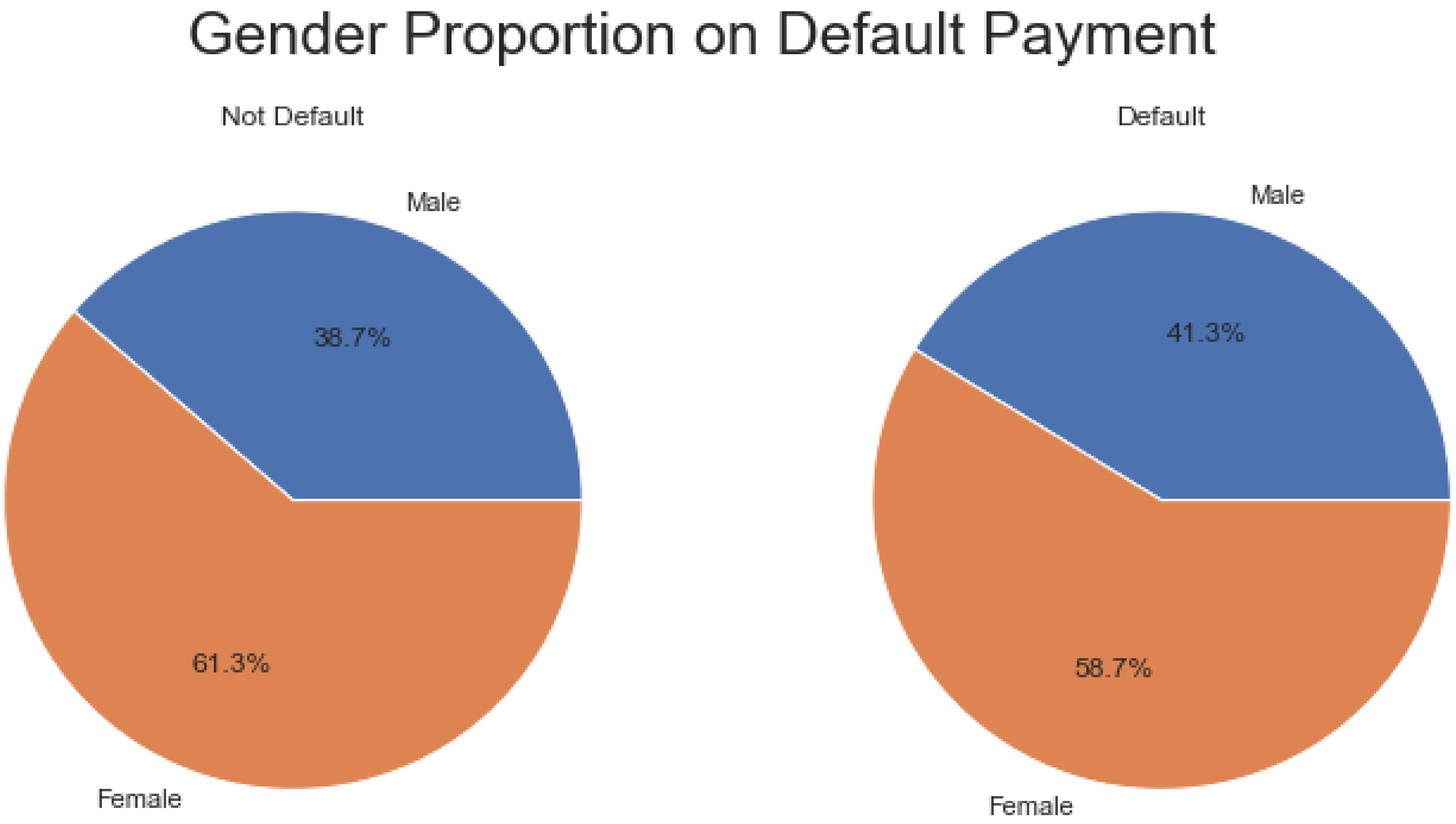
Perform **hyperparameter tuning** for **the best prediction model**.

EXPLORATORY ANALYSIS

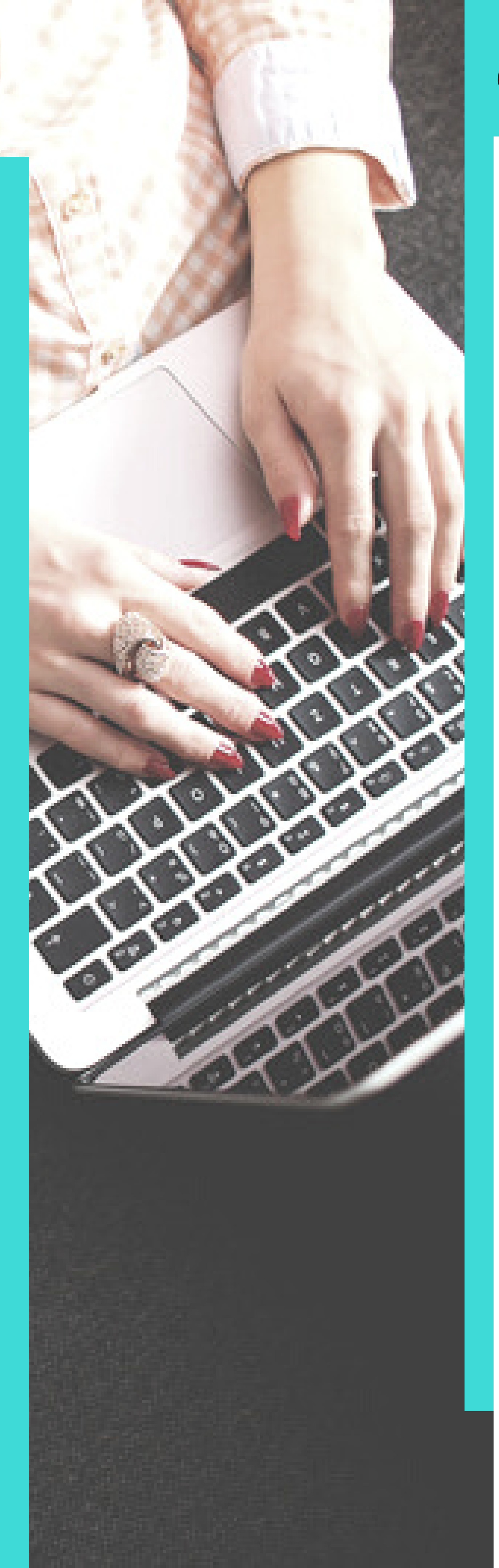
Default Users

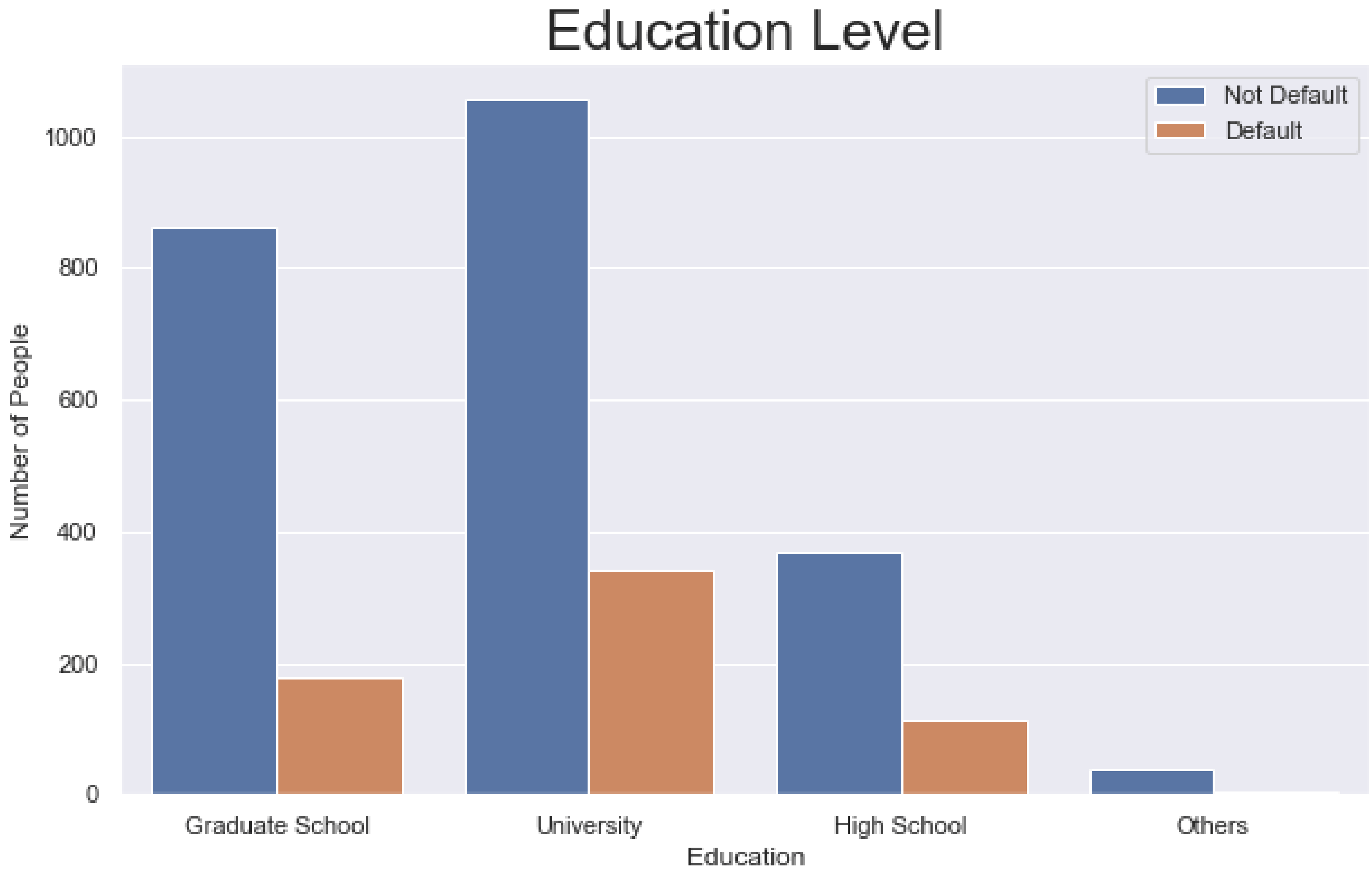


User's Gender

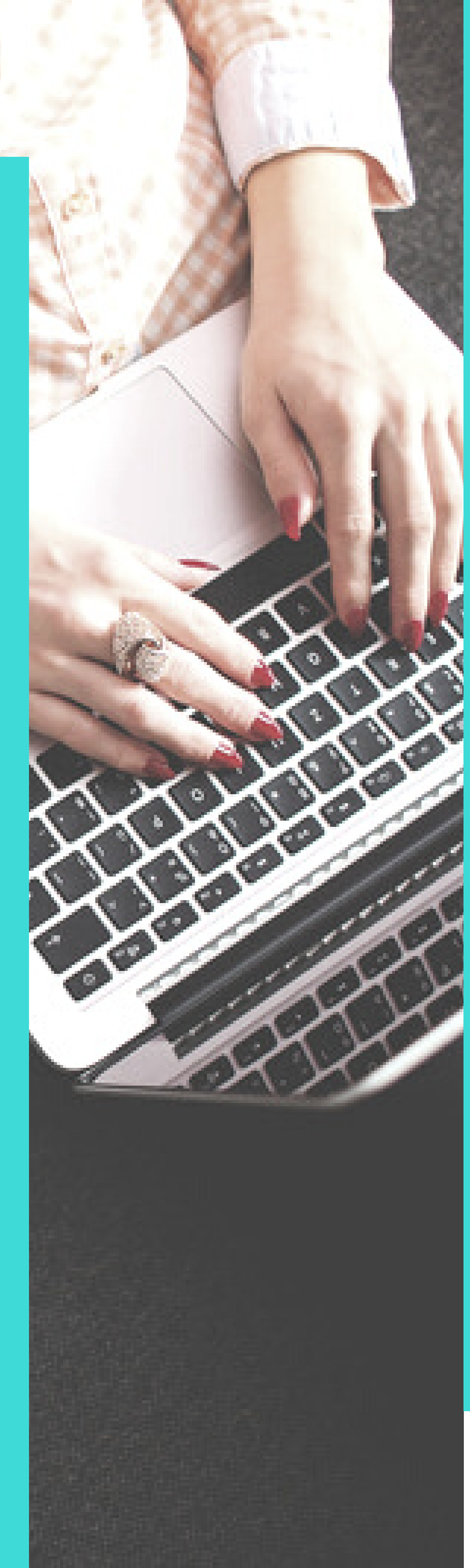


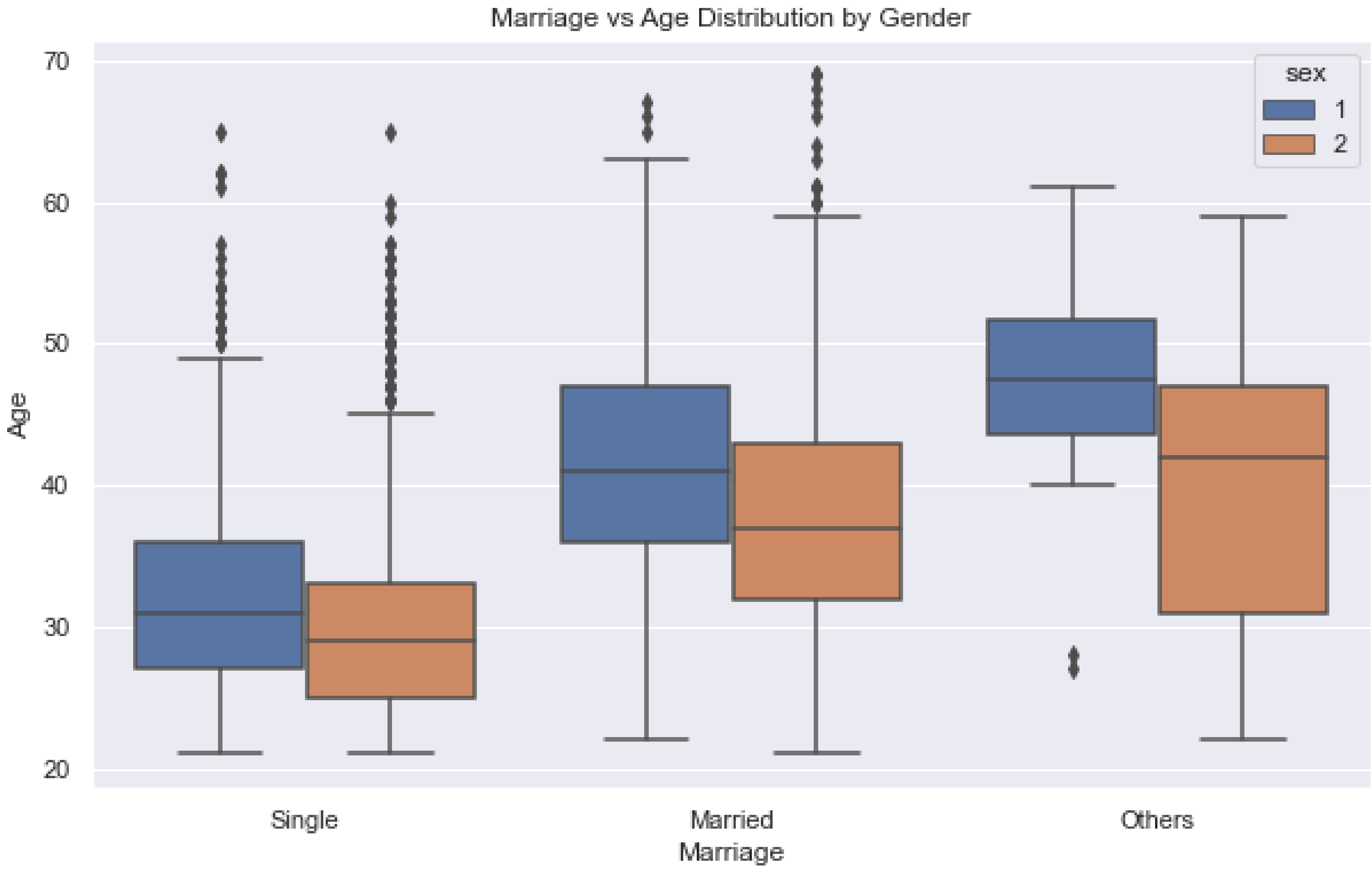
User's Eductaion



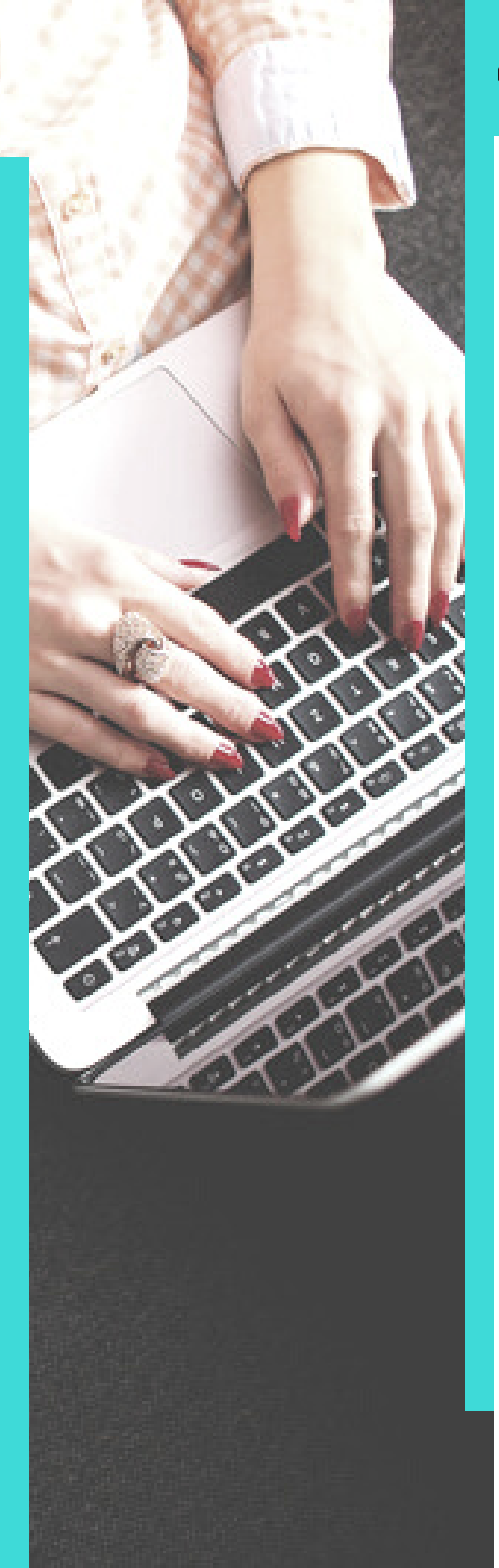


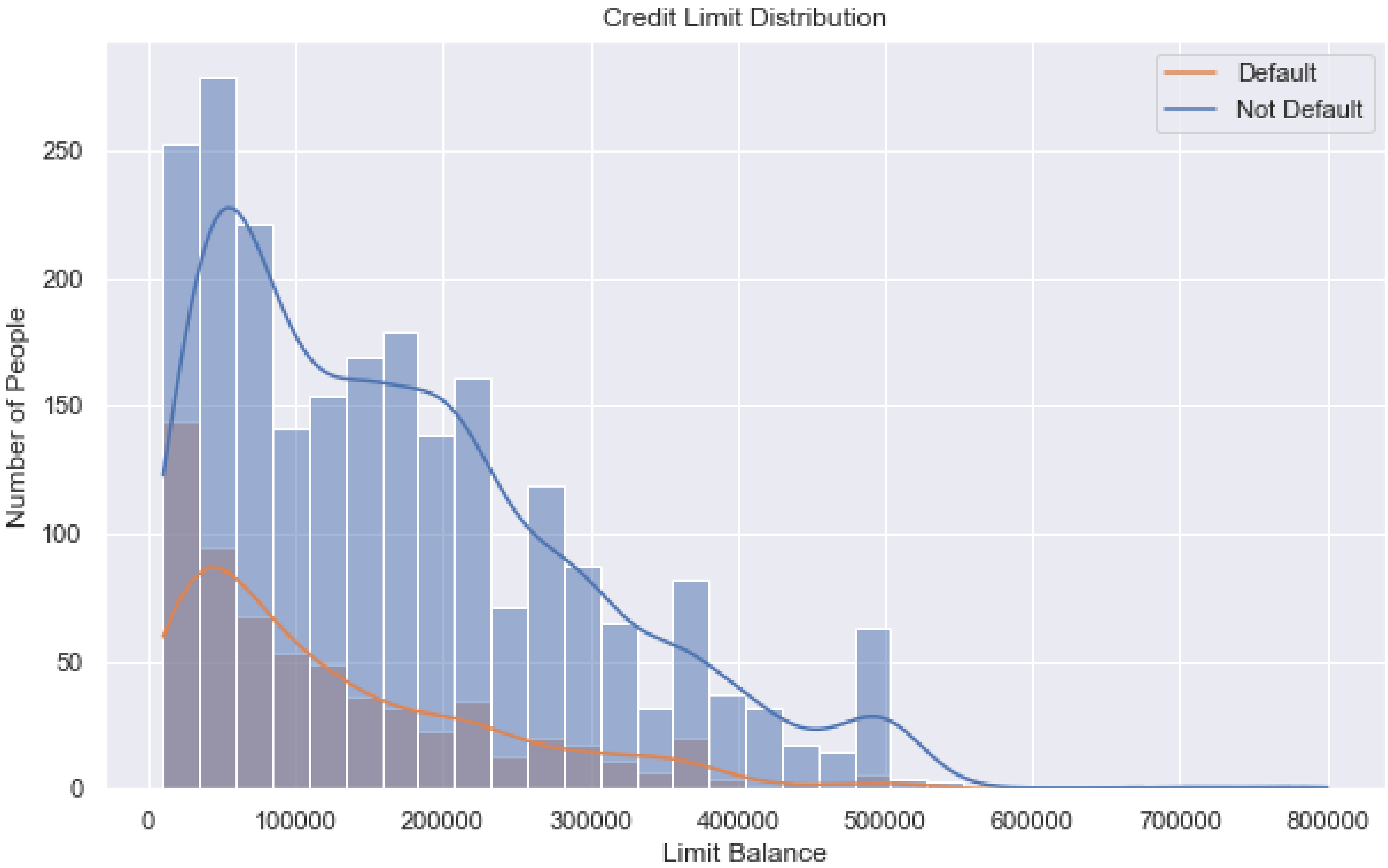
Marriage Vs Age





Credit Limit





MODEL REPORT SUMMARIES

Training Model

Metric	Logistic Regression	Support Vector Machine	Decision Tree	Random Forests	KNN	NAIVE BAYES	GRADIENT BOOSTING
Accuracy Score	0.83	0.84	0.98	0.98	0.85	0.81	0.84
Recall Label 1	0.38	0.44	0.91	0.93	0.50	0.44	0.39

Testing Model

Metric	Logistic Regression	Support Vector Machine	Decision Tree	Random Forests	KNN	NAIVE BAYES	GRADIENT BOOSTING
Accuracy Score	0.86	0.86	0.77	0.83	0.84	0.82 (0.84)	0.86
Recall Label 1	0.43	0.49	0.47	0.46	0.47	0.51 (0.40)	0.45

CONCLUSIONS

Some algorithms are not good in modeling (DT and RF) and experience overfitting caused by unbalanced data.

The best models in the modeling are KNN, SVM, and NB.

Hyperparameter tuning yang dilakukan pada model NB meningkan overall akurasi pada testing model NB, akan tetapi recall label 1 mengalami penurunan.