



Credit Card Approval Predictors

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Introduction

The project aims to analyze the "Credit Card Approval - With Target" dataset and identify the **factors that affect credit card payment.**



Data cleaning

Several steps were conducted to ensure consistency and better analysis:

- Imported libraries such as Pandas to work with the data.
- Reduced the original dataset from 537,667 rows and 19 columns to 50,000 rows and 12 columns, focusing on a subset of the data.
- Removed columns irrelevant for the analysis, including ID, FLAG_EMAIL, FLAG_PHONE, etc., using the `df.drop` function.
- Replaced similar rows with more meaningful labels using the `df.replace` function.
- Renamed columns to provide a more recognizable and descriptive set of labels for better understanding and analysis.
- Checked for missing values in the dataset to identify any incomplete or null data points.

The analysis is conducted on a sample of 50,000 from the original dataset of around 537,667 rows



Removed columns irrelevant for analysis



Replaced similar rows with meaningful labels



Renamed columns with recognisable and descriptive set



Checked for missing values

Factors that may impact credit card payment

Research questions



Does age or gender have an influence on the credit card loan payment?



Does owning a car or a house influence credit card payments?



Does having children have an influence of credit card payment?



Does being employed have an influence of credit card payment?



Does annual income or job type have an influence on credit card payment?

Does Age influence credit card payment?

Age

The dataset analysed four different age groups:

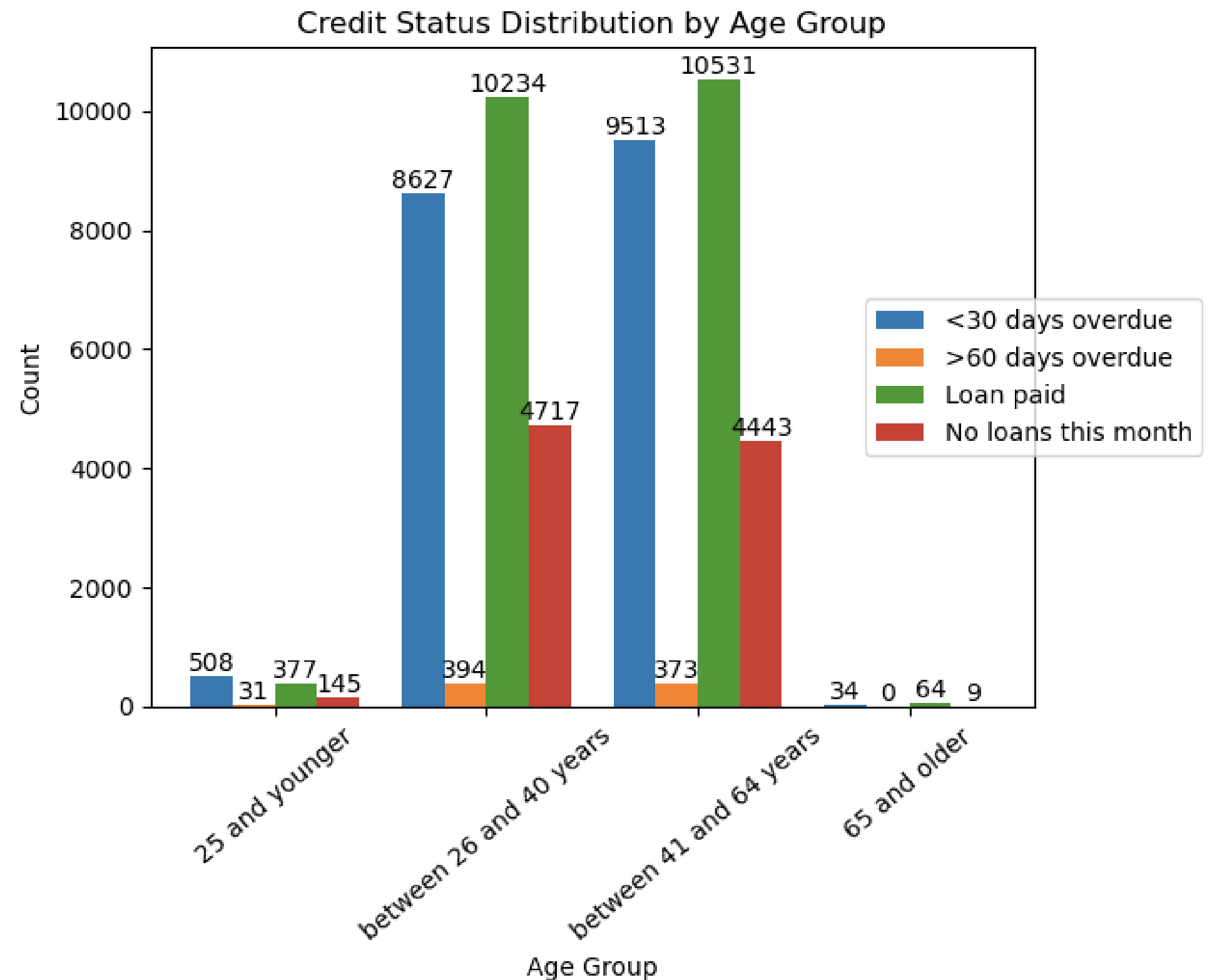
- 25 and younger
- Between 26 and 40 years
- Between 41 and 64 years
- 65 and older

Conducted chi-square test to test the following hypothesis:

Null hypothesis: There is no relationship between age and credit card payment status

Alternative hypothesis: There is a relationship between age and credit card payment status

Result: Reject the Null Hypothesis (p value is less than 0.05 for all age groups)



Does *Gender* influence credit card payment?

Gender

The dataset analysed between:

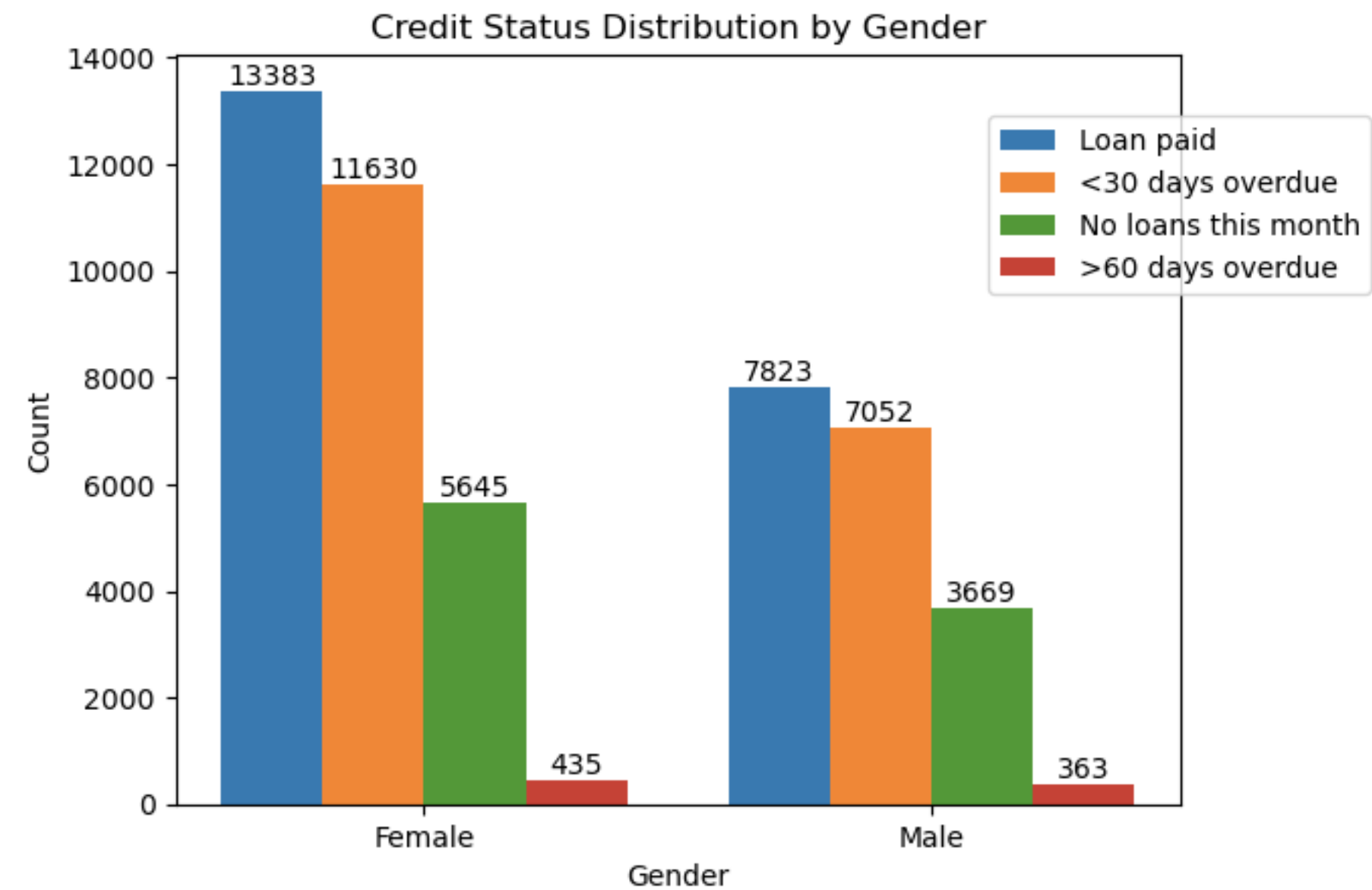
- Female
- Male

Conducted chi-square test to test the following hypothesis:

Null hypothesis: There is no relationship between gender and credit card payment status

Alternative hypothesis: There is a relationship between gender and credit card payment status

Result: Reject the Null Hypothesis (p value is less than 0.05 for all gender)



Does *owning a house* influence credit card payment?

Homeowners

The dataset analysed between:

- People who own house(s)
- People who do not own house(s)

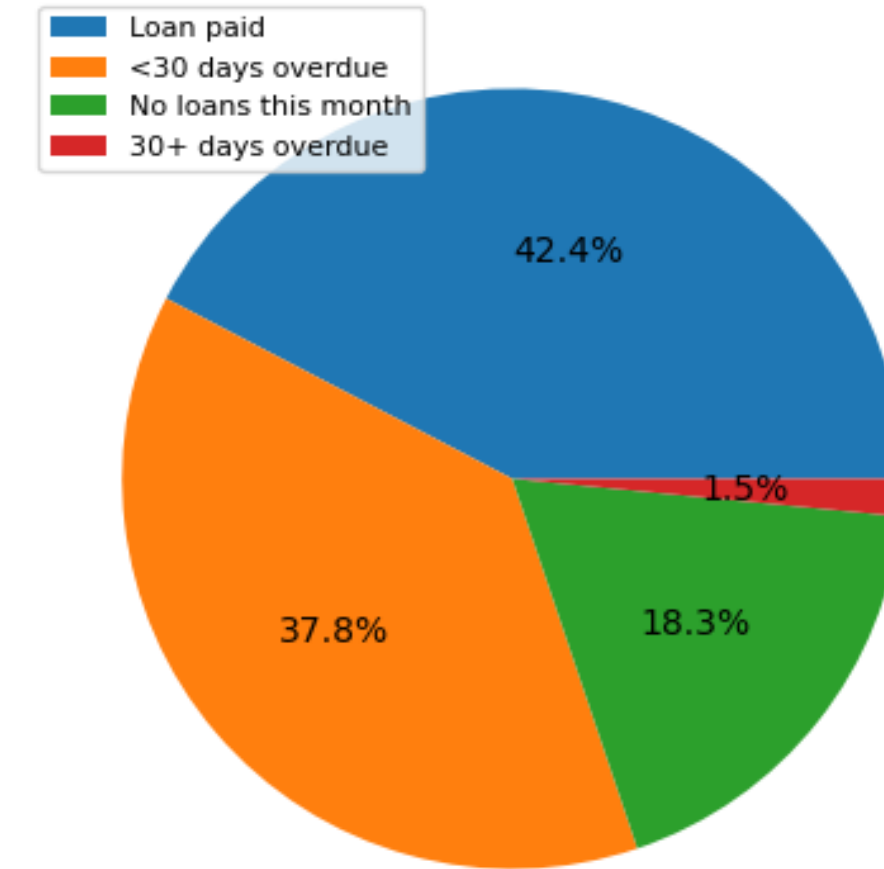
Conducted Chi-squared test on the proportion of Credit Status of homeowners and non-homeowners to test the following hypothesis:

Null hypothesis: There is no relation in Credit Status of homeowners and non-homeowners

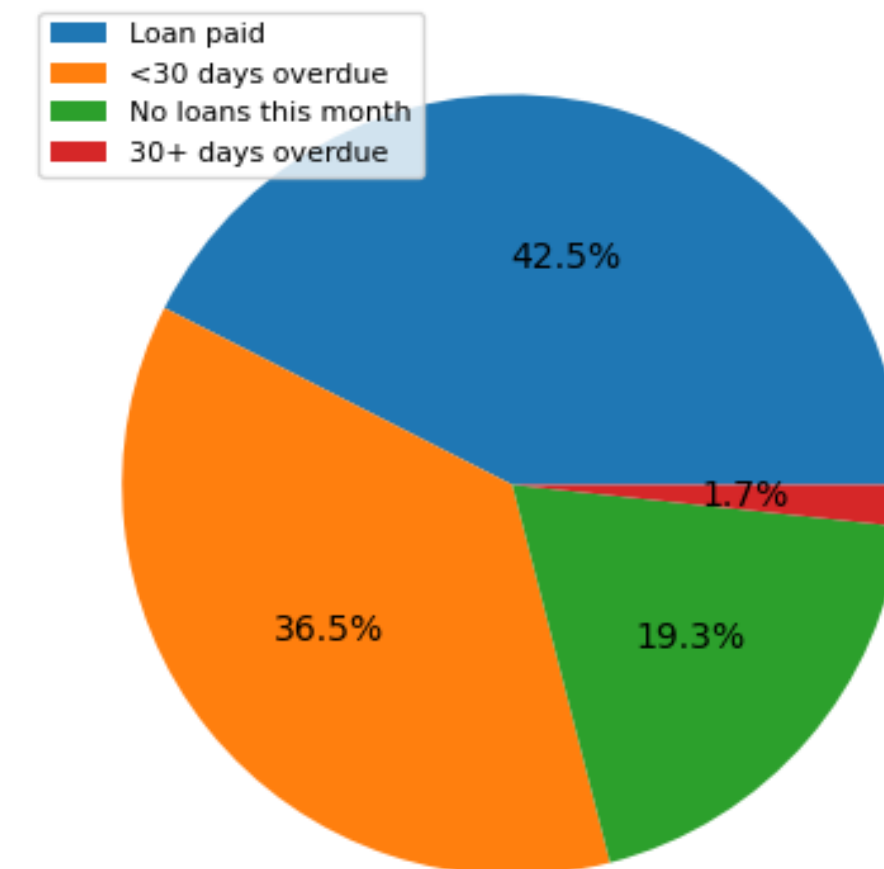
Alternative hypothesis: There is a relation in Credit Status of homeowners and non-homeowners

Result: Accept the Null Hypothesis (Critical value > Chi-square statistic and p-value close to 1)

Credit Status of people who own a house



Credit Status of people who do NOT own a house



Does *owning a car* influence credit card payment?

Car owners

The dataset analysed between:

- People who own car(s)
- People who do not own car(s)

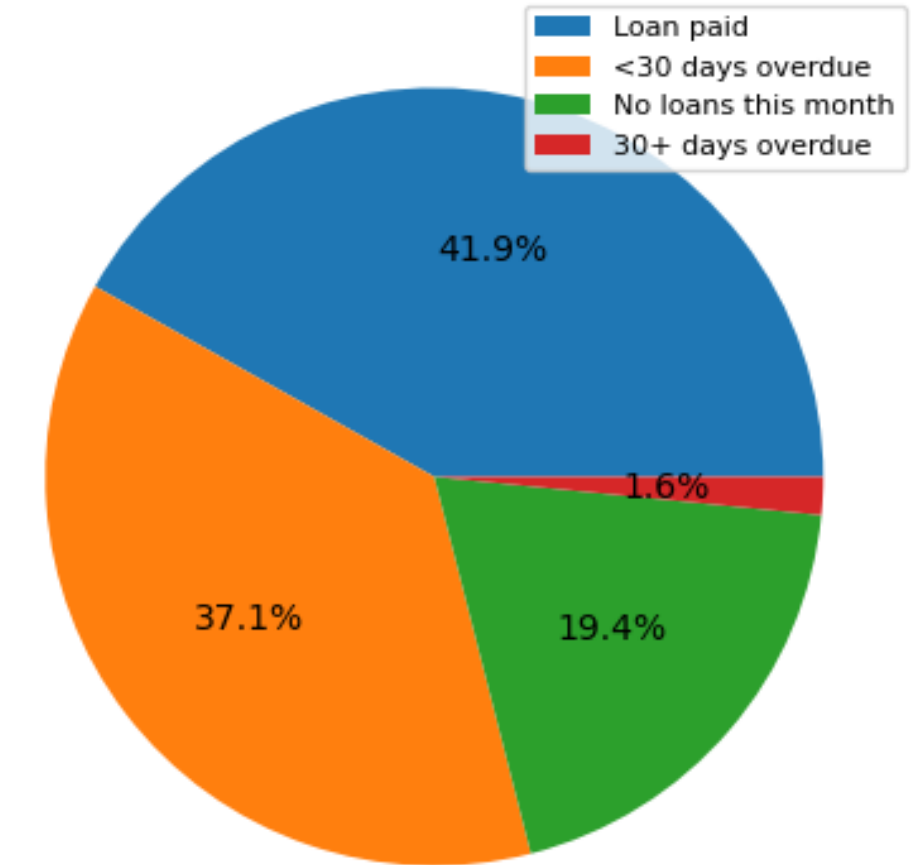
Conducted Chi-squared test on the percentage of Credit Status of car owners and non-car owners to test the following hypothesis:

Null hypothesis: There is no relation in Credit Status of car and non car owners

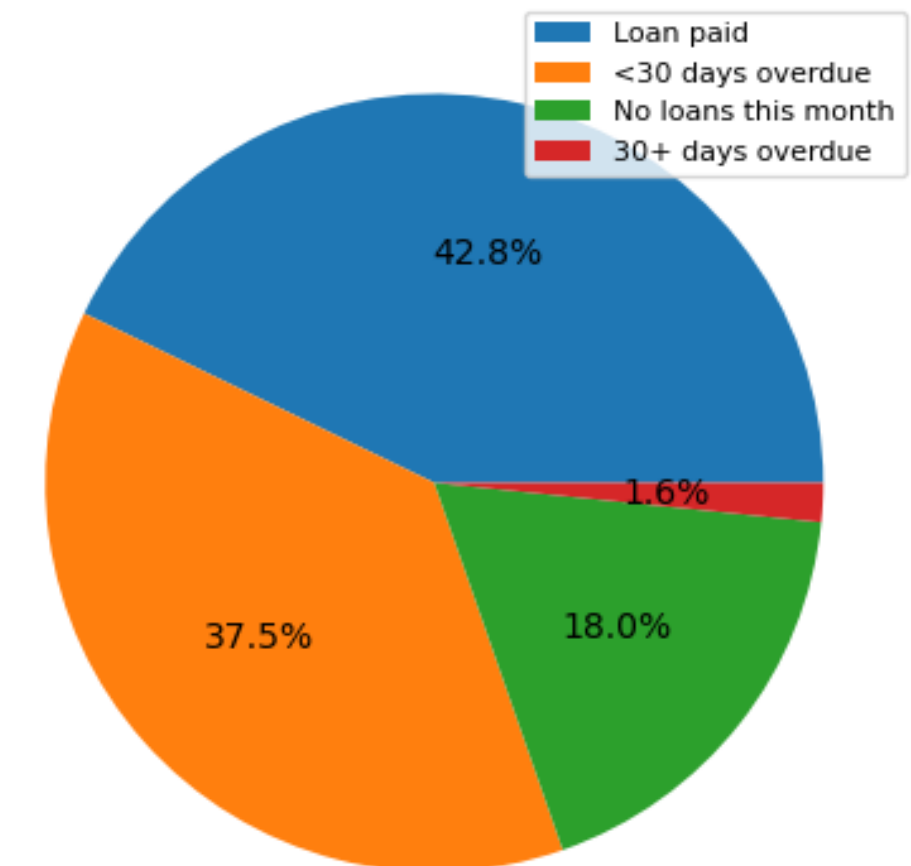
Alternative hypothesis: There is a relation in Credit Status of car and non car owners

Result: Accept the Null Hypothesis (Critical value > Chi-square statistic and p-value close to 1)

Credit Status of people who own a car



Credit Status of people who do NOT own a car



Does *owning a car and a house* influence credit card payment?

Home and Car owners

The dataset analysed between:

- People who own car(s) and own house(s)
- People who do not own car(s) nor own house(s)

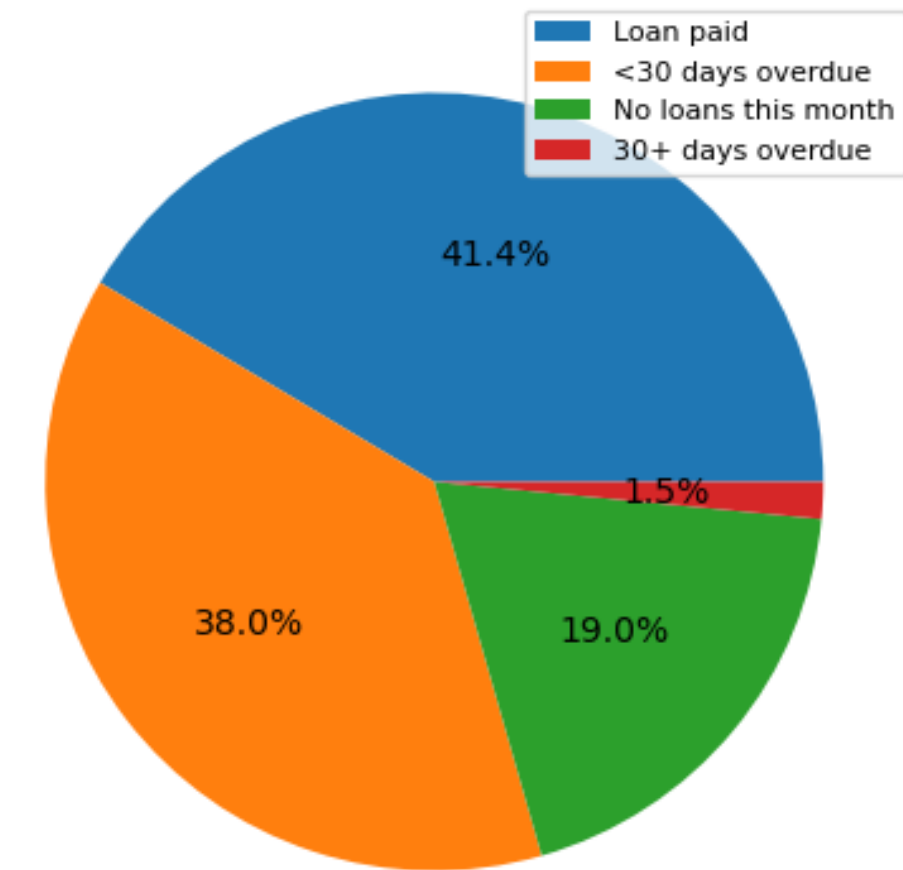
Conducted Chi-squared test on the proportion of Credit Status of car and home owners and non-car and homeowners to test the following hypothesis:

Null hypothesis: There is no relation in Credit Status of car and homeowners and non car and homeowners

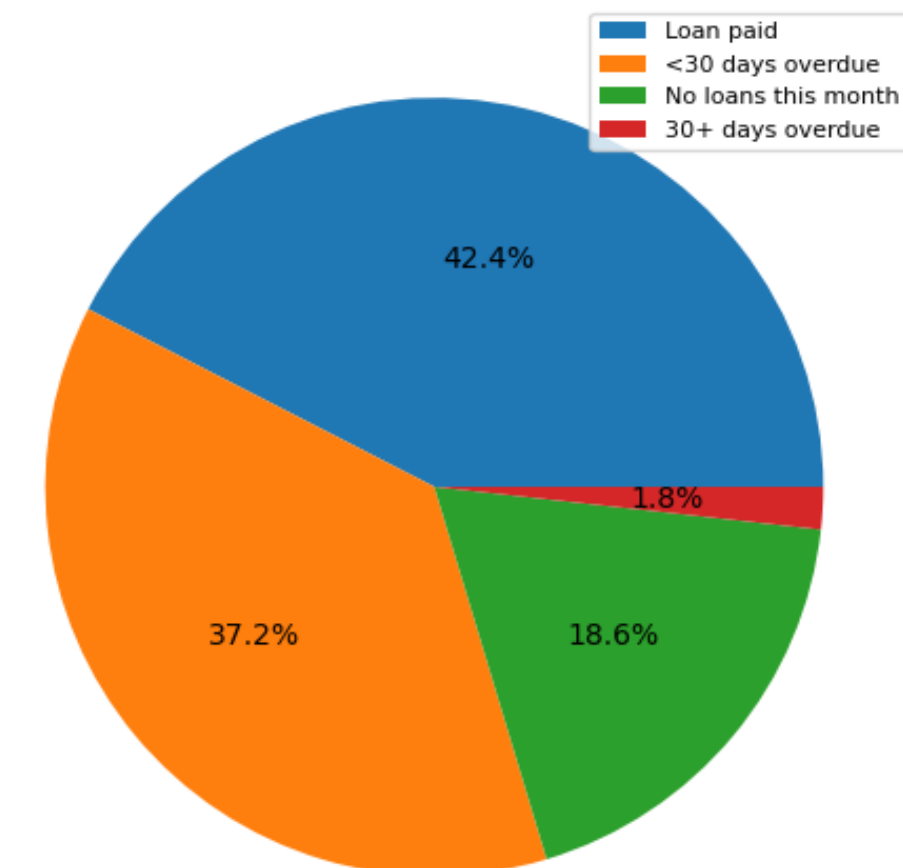
Alternative hypothesis: There is a relation in Credit Status of car and homeowners and non car and homeowners

Result: Accept the Null Hypothesis (Critical value > Chi-square statistic and p-value close to 1)

Credit Status of people who own both a house and a car



Credit Status of people who do not own a house nor a car



Does employment play a role in credit card payment behavior?

Employment

The dataset analysed between:

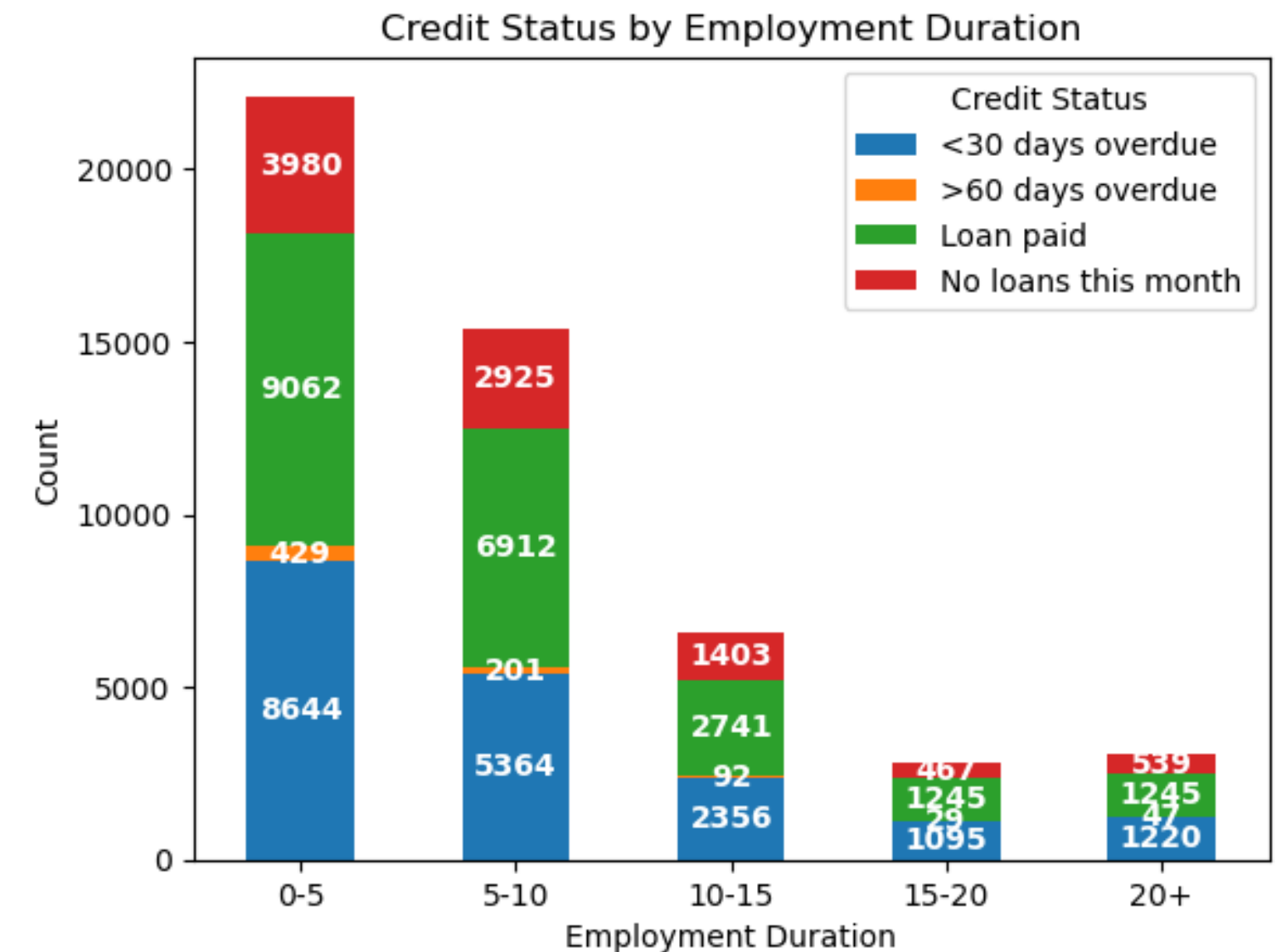
- People who are employed
- People who are not employed

Conducted chi-square test to the following hypothesis:

Null hypothesis: There is no relation between years employed and credit status

Alternative hypothesis: There is a relation between years employed and credit status

Result: Reject the Null Hypothesis (p-value <0.05)



Does *having children* influence credit card payment?

Having children

The dataset analyzed between:

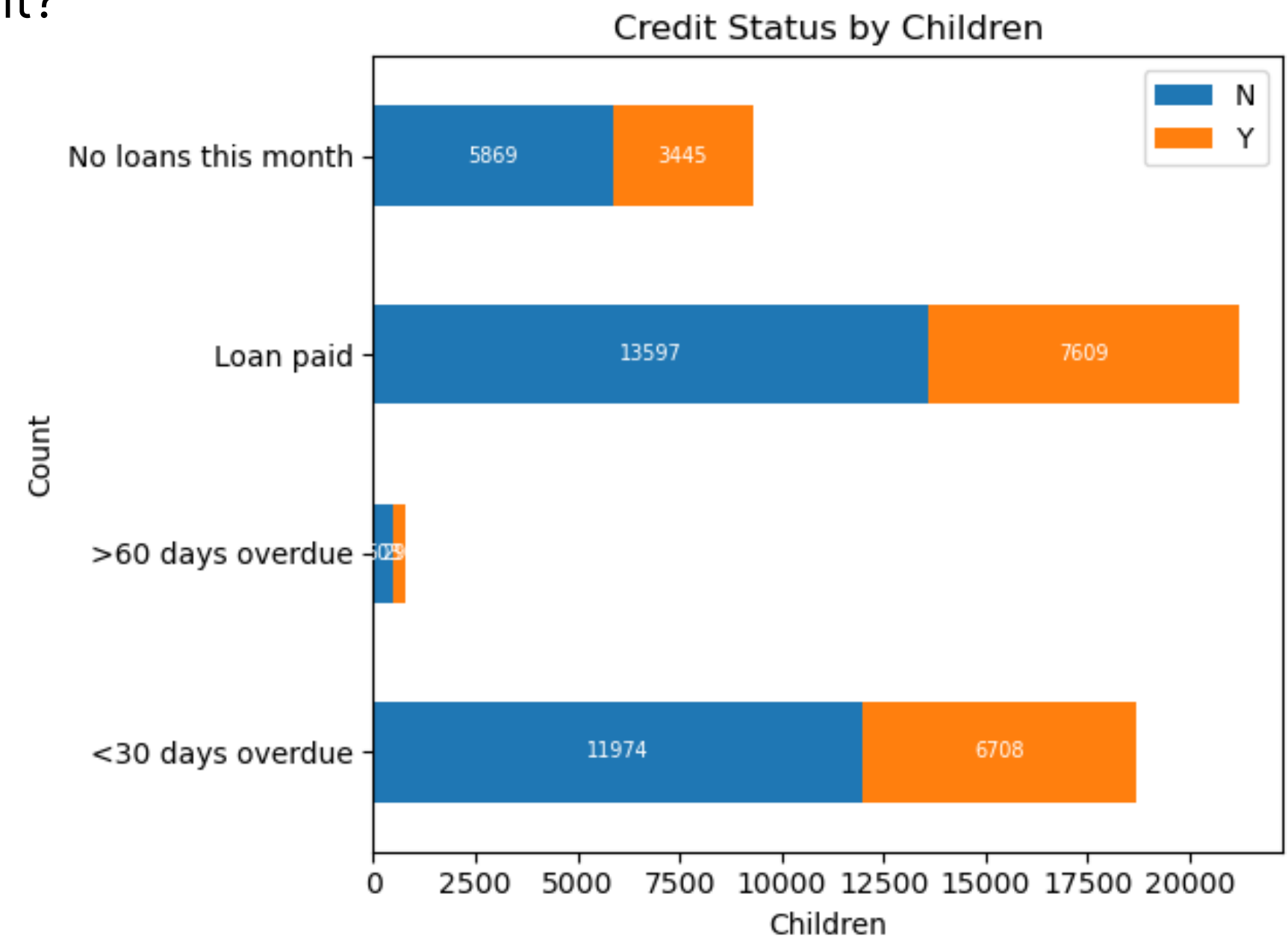
- People who have children
- People who do not have children

Conducted chi-square test to the following hypothesis:

Null hypothesis: There is no relation between credit status and having children

Alternative hypothesis: There is a relationship between credit status and having children

Result: Accept the Null Hypothesis (p-value >0.05)



Does *annual income* influence credit card payment?

Annual Income

The dataset analysed among:

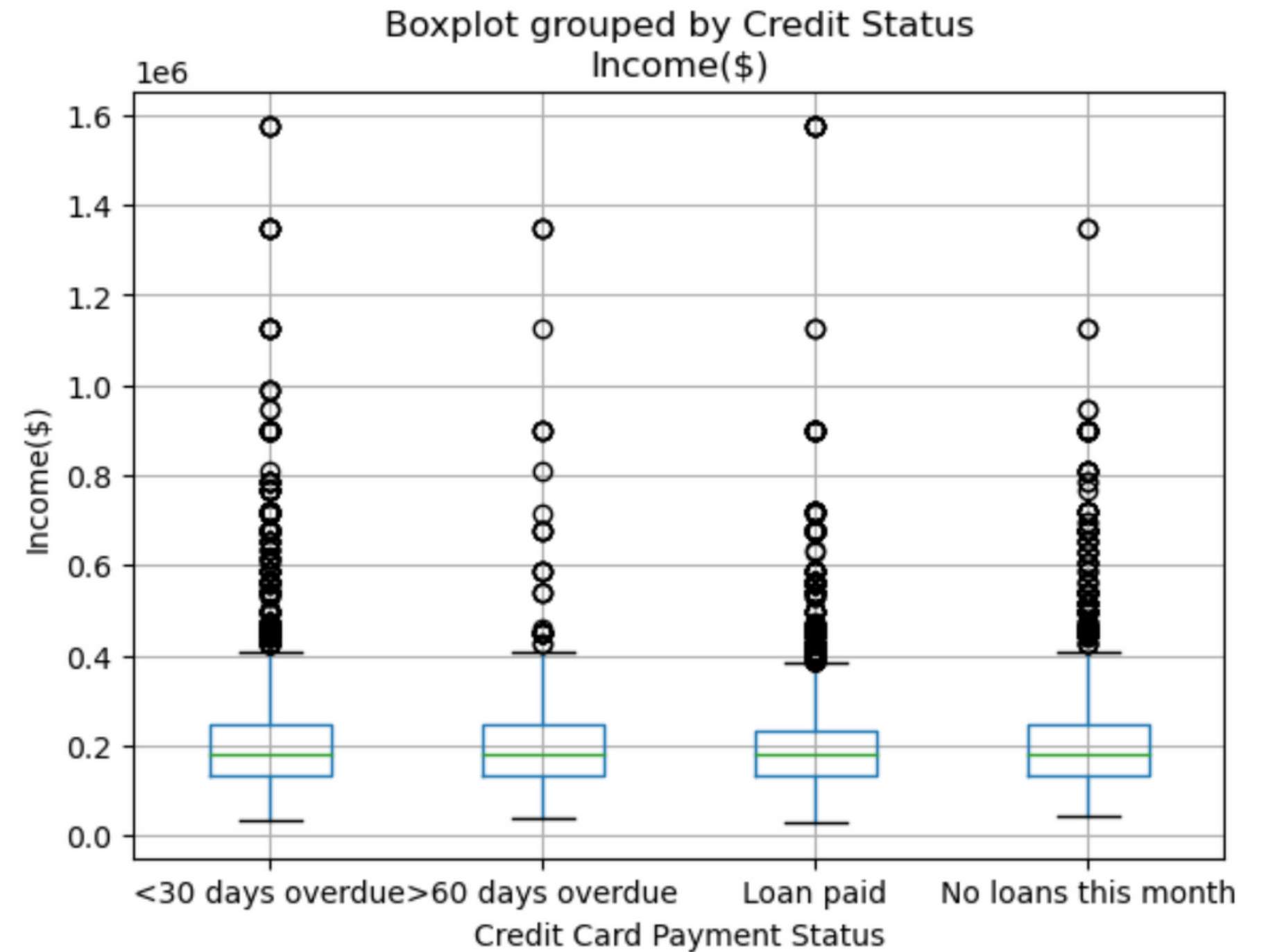
- various income levels
- credit card status

Conducted Chi-square test to test the following hypothesis:

Null hypothesis: There is no relation between income and credit card payment

Alternative hypothesis: There is a relation between income and credit card payment

Result: Reject the Null Hypothesis (p value is less than 0.05 for all income levels)



Does *job type* influence credit card payment?

Job type

The dataset analysed among:

- Core staff
- Drivers
- High skill tech staff
- Labourers
- Managers
- Medicine staff
- Sales staff

vs

- Loan paid

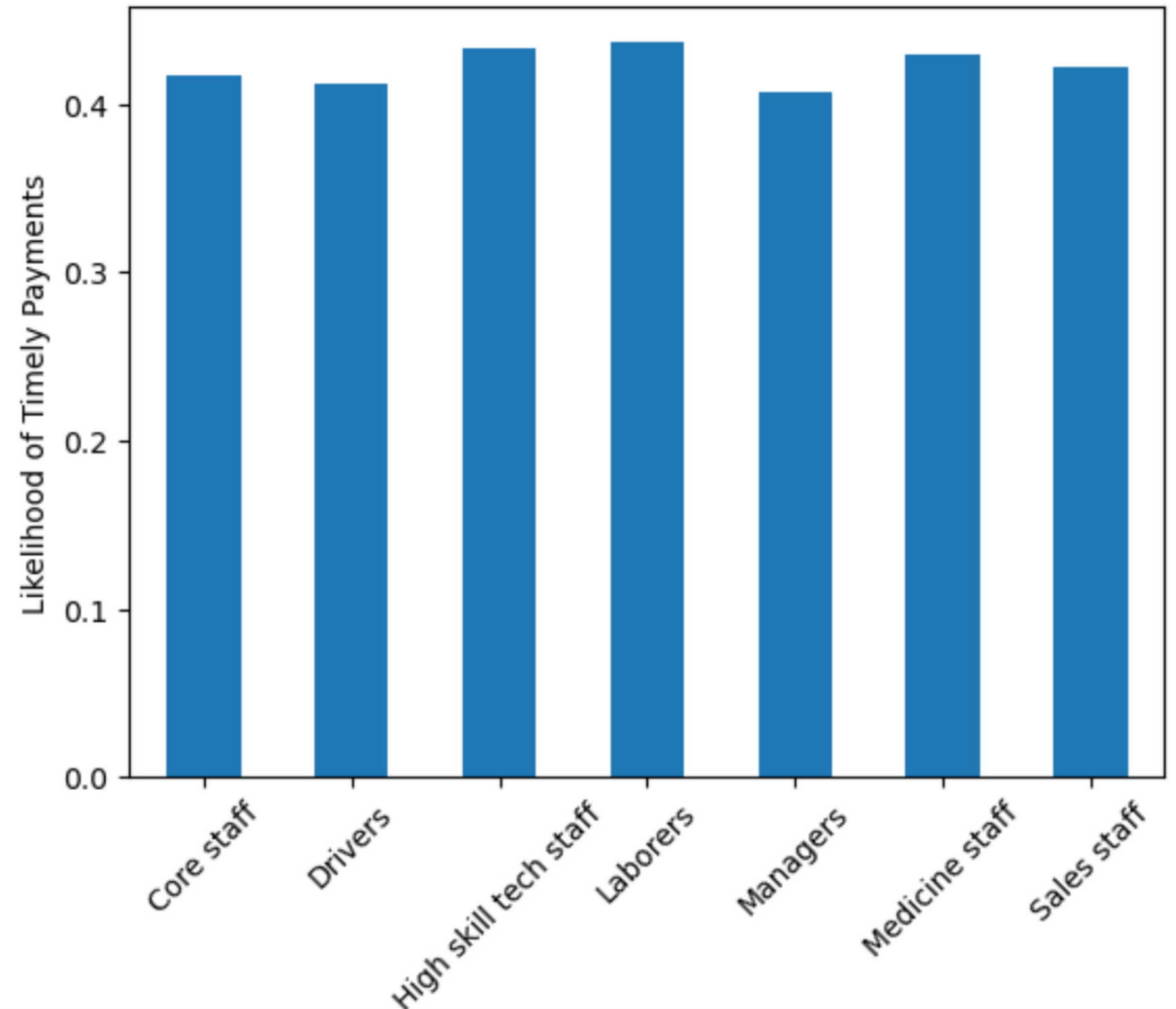
Conducted Chi-square test to test the following hypothesis:

Null hypothesis: There is no relation between job type and timely payments

Alternative hypothesis: There is a relation between job type and timely payment

Result: Reject the Null Hypothesis (p value is less than 0.05 for all job types)

Likelihood of Timely Credit Card Payments by Job Position



Does *job type and annual income* influence credit card payment?

Job type and income

The dataset analysed among:

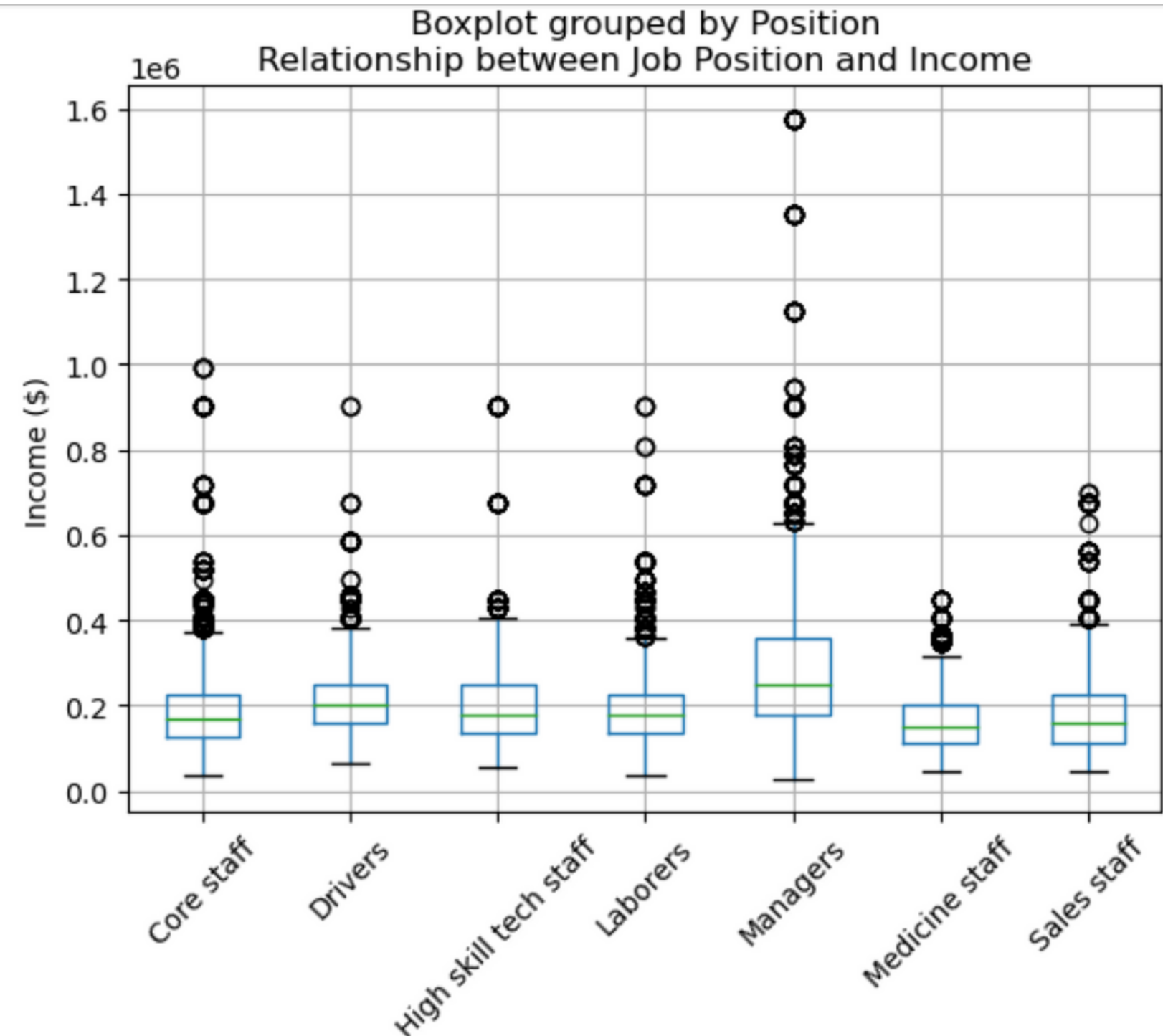
- different job type
- income levels

Conducted Chi-square test to test the following hypothesis:






Null hypothesis: There is no relation between job type and annual income

Alternative hypothesis: there is a relation between job type and annual income

Result: Reject the Null Hypothesis (p value is less than 0.05 for all job type and income levels)



Conclusion

 Age and Gender	 House and car ownership	 Having children	 Being employed	 Annual income and job type
There is a relationship between age and credit card payment status	There is no relation in Credit Status of homeowners and non-homeowners	There is no relationship between credit status and having children	There is a relationship between years employed and credit status	There is a relationship between annual income and credit status.
There is a relationship between gender and credit card payment status	There is no relation in Credit Status of car and non car owners			There is a relationship between job type and loan paid.
	There is no relation in Credit Status of car and homeowners and non car and homeowners			There is a relationship between job types and income

The analysis of the predictors can assist companies that issue credit cards to see how certain attributes influence credit card payments