# Credit Card Approval Predictors

Presented by: Group 6

Cindy Hung Ling
Paolo Labuguen
Parshant Mahajan
Manisha Reza Paul

# 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?

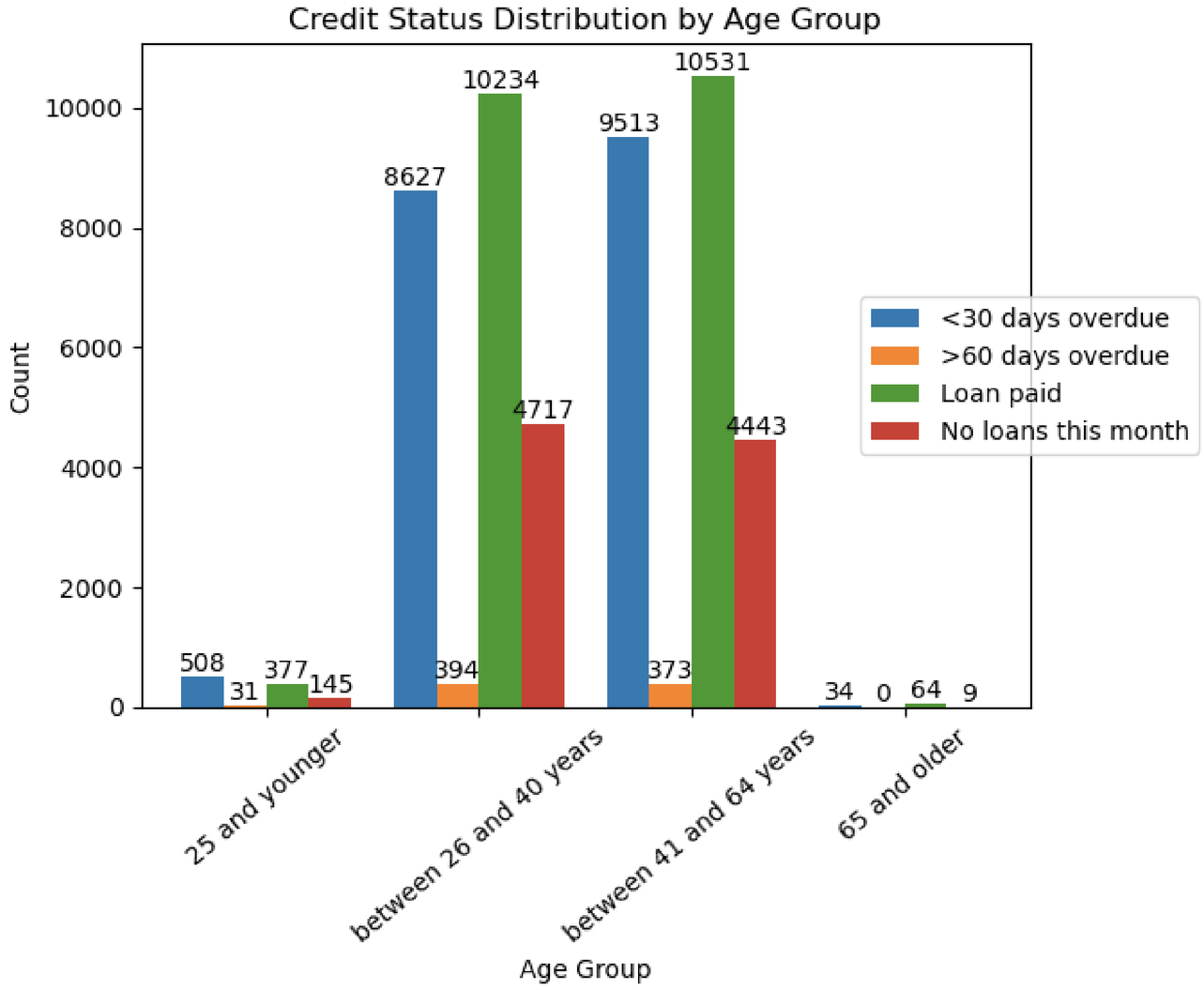
Does annual income or job type have an influence on credit card payment?

Does *Age* influence credit card payment?

# Age

The dataset analysed four different age groups:

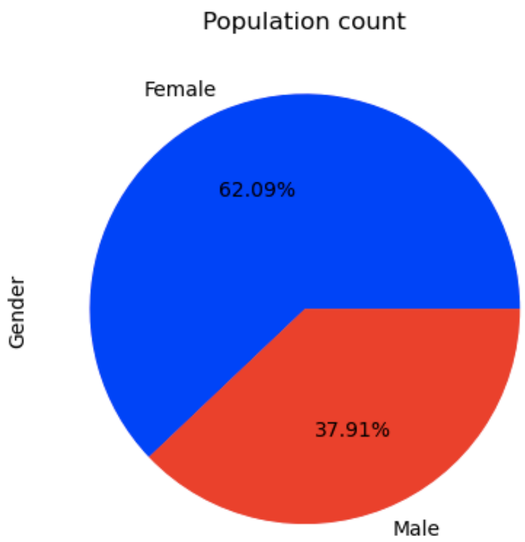
- 25 and younger
- Between 26 and 40 years
- Between 41 and 64 years
- 65 and older




**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

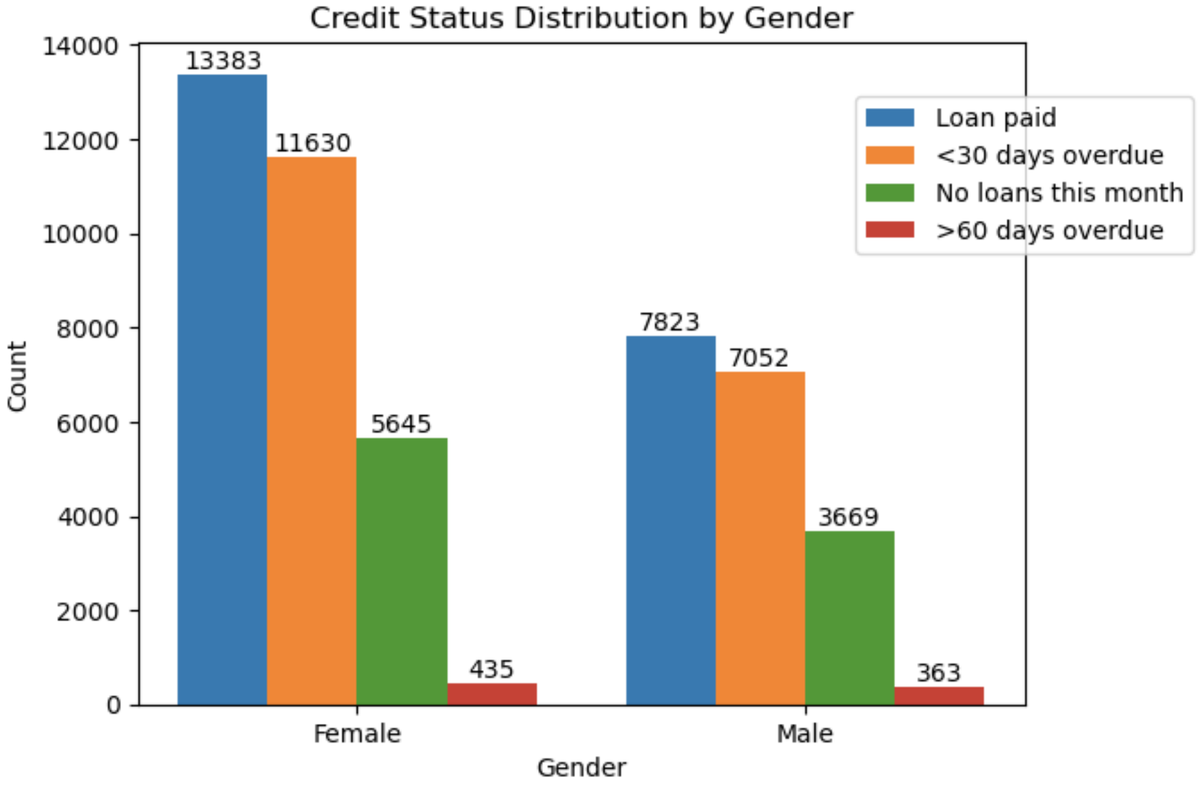
The dataset analysed between:

- 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

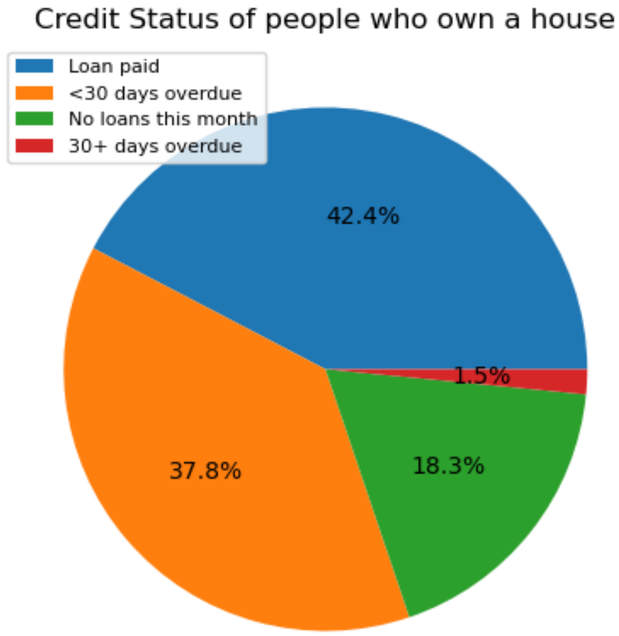
The dataset analysed between:

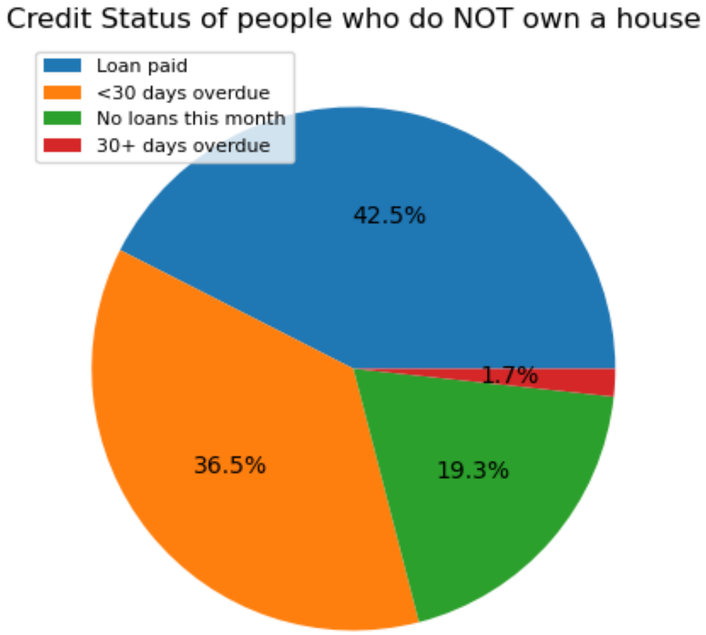
- People who own house(s)
- People who do not own house(s)

**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)**



Does *owning a car* influence credit card payment?

# Car owners

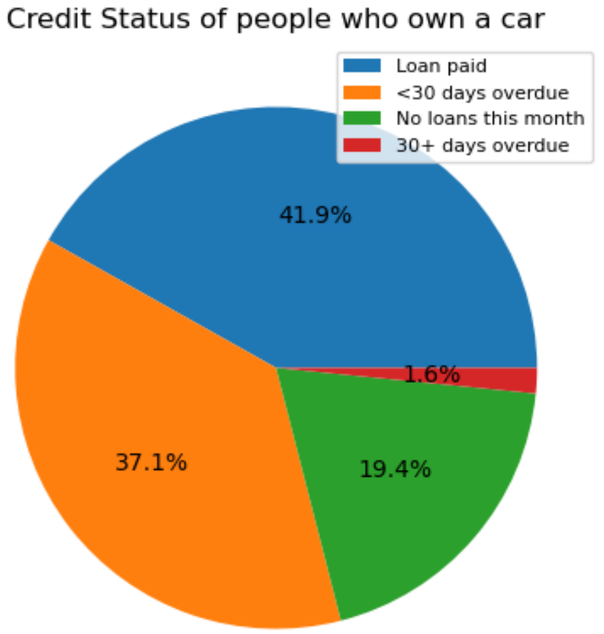
The dataset analysed between:

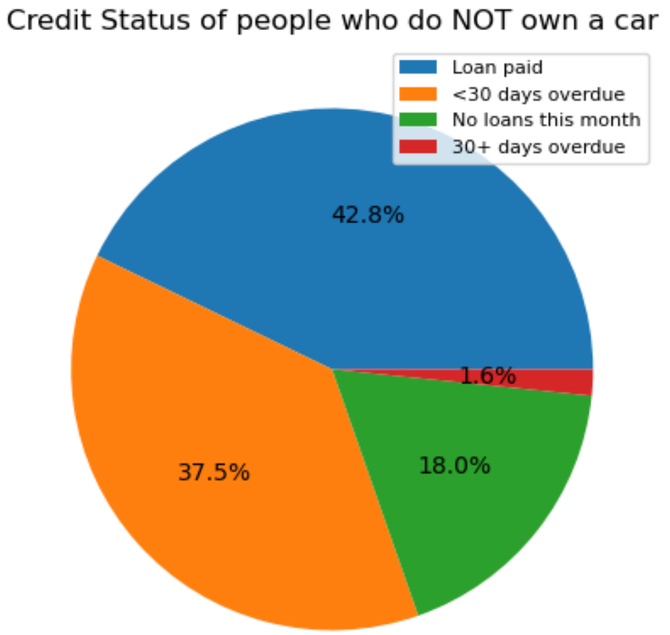
- People who own car(s)
- People who do not own car(s)

**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)**



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

# Home and Car owners

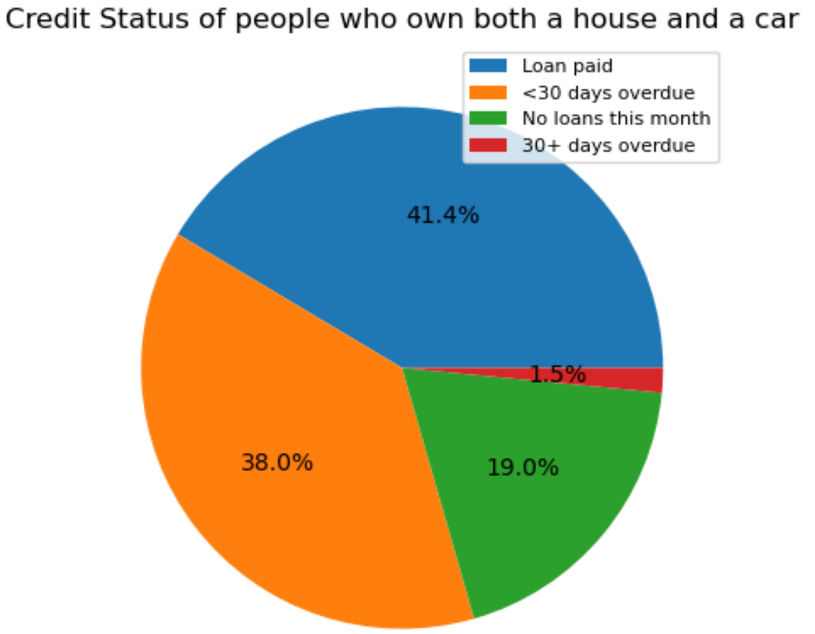
The dataset analysed between:

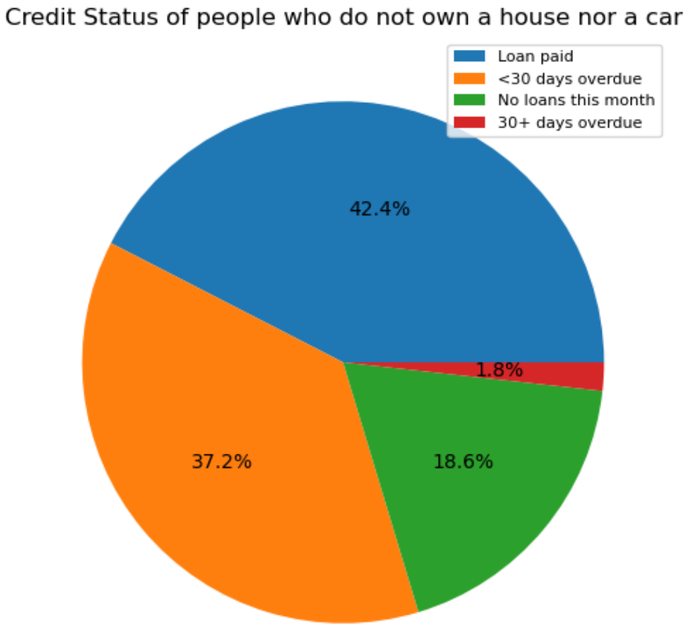
- People who own car(s) and own house(s)
- People who do not own car(s) nor own house(s)

**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)**



Does employment play a role in credit card payment behavior?

# Employment

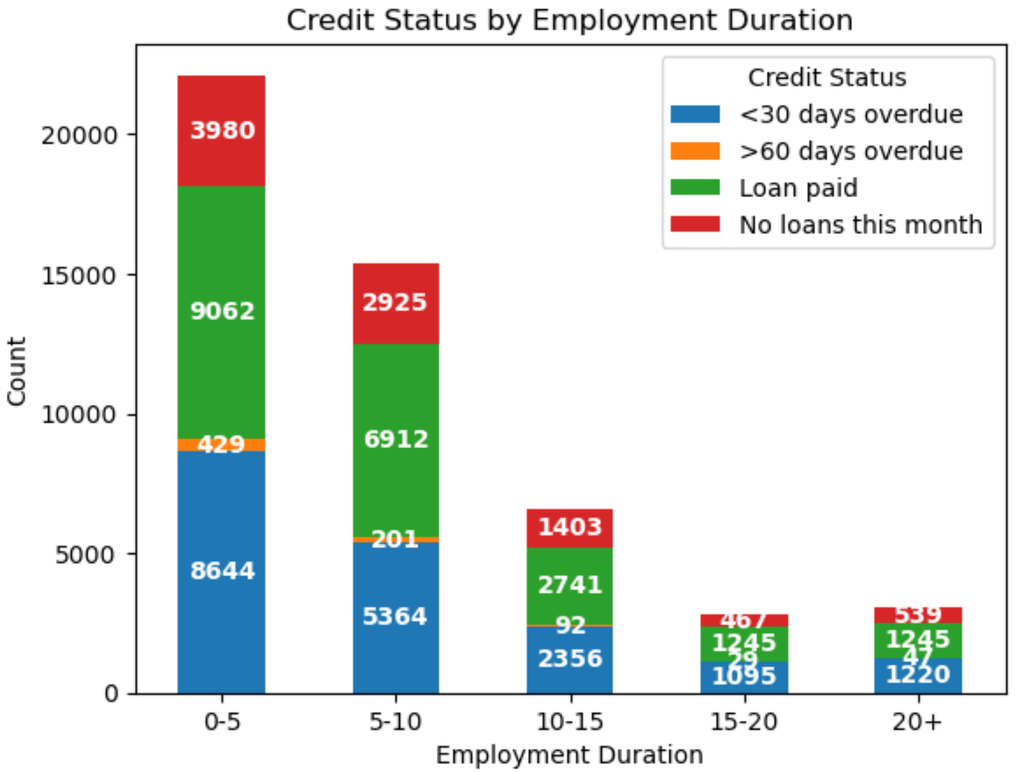
The dataset analysed between:

- 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

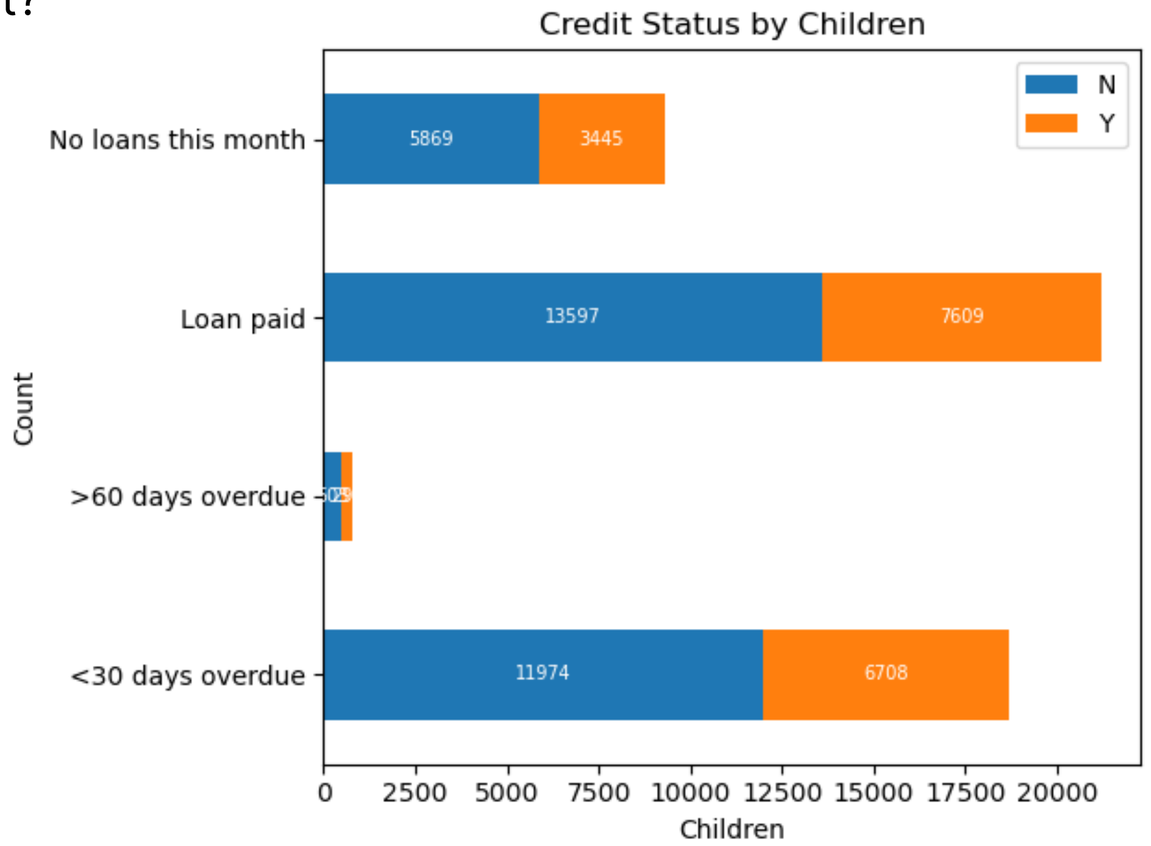
The dataset analyzed between:

- 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

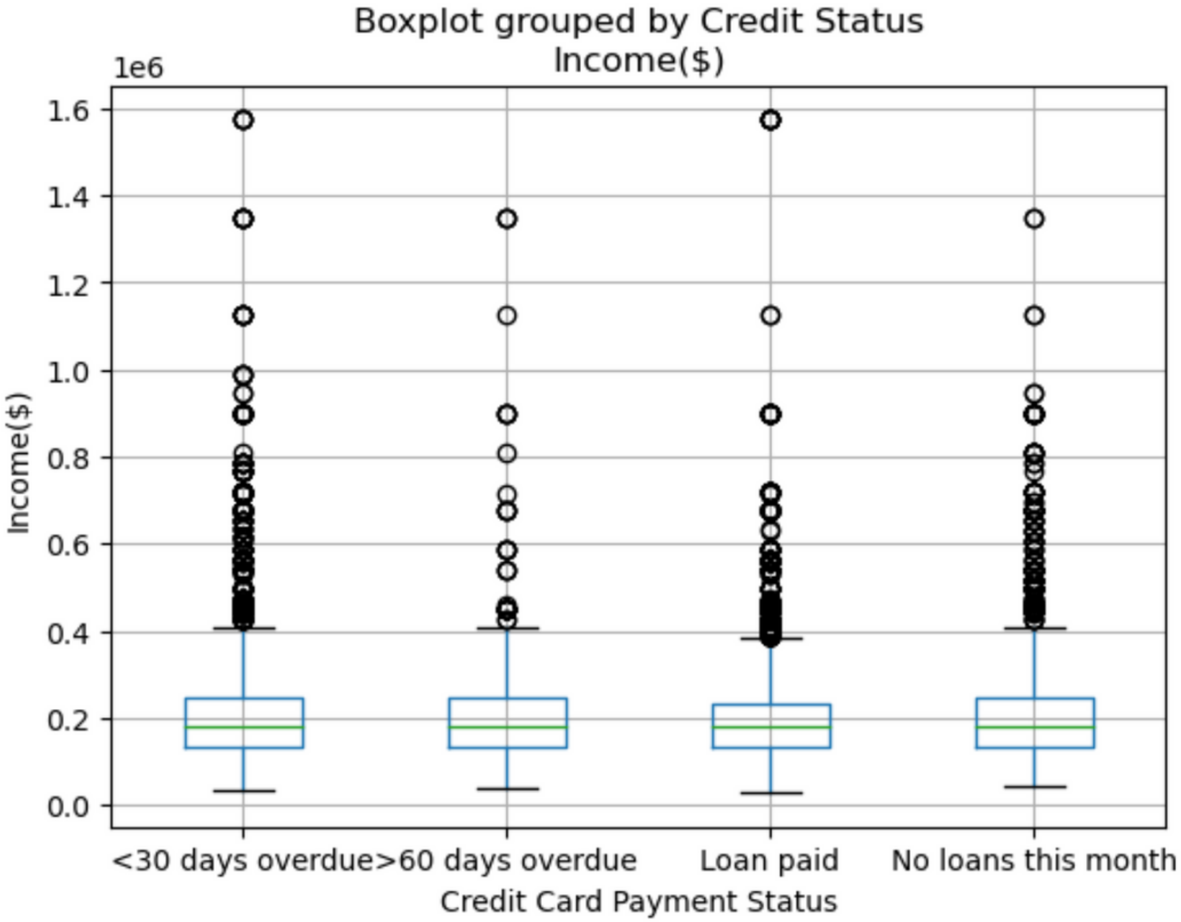
The dataset analysed among:

- 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

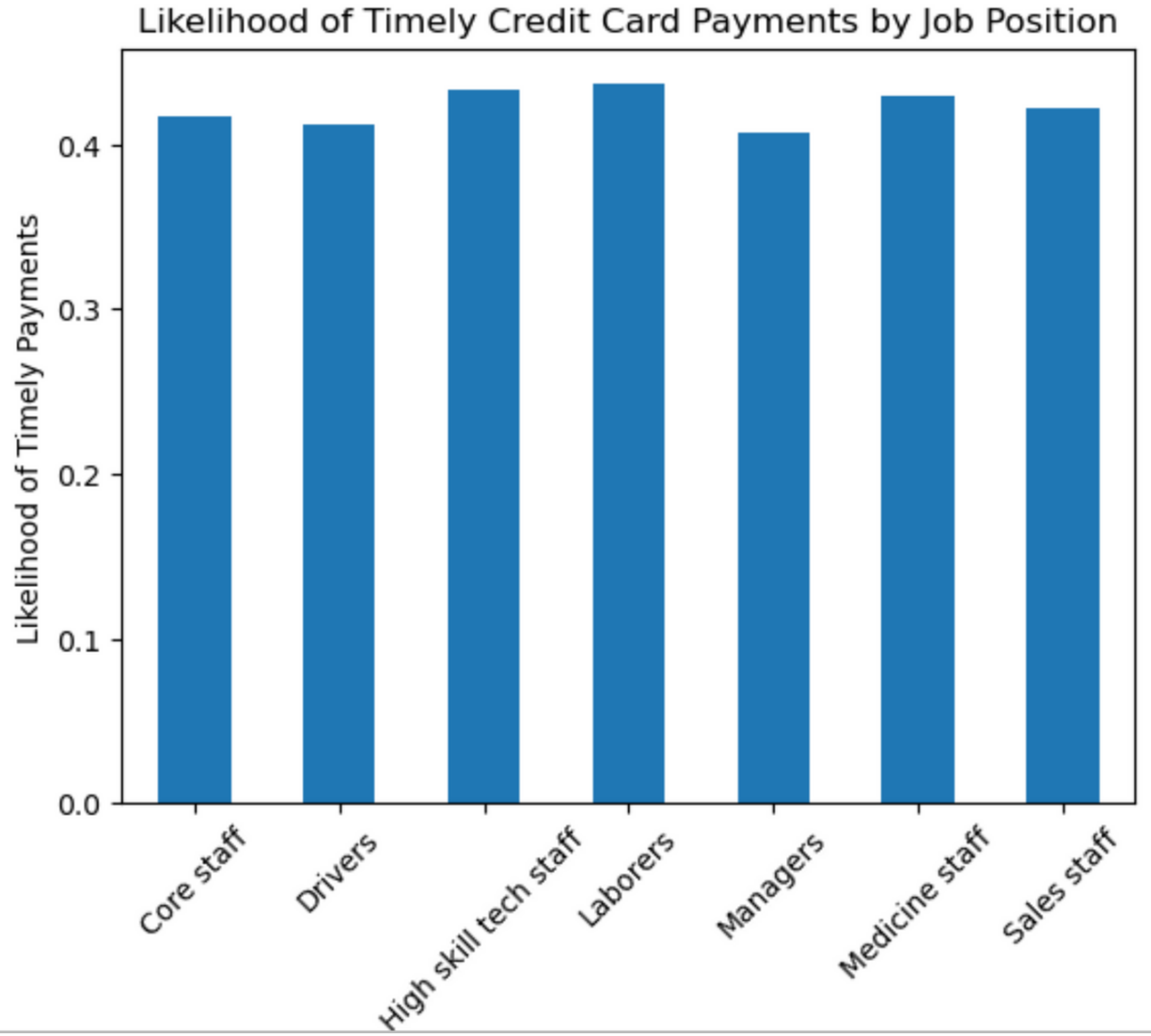
vs

- 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)**



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

# Job type and income

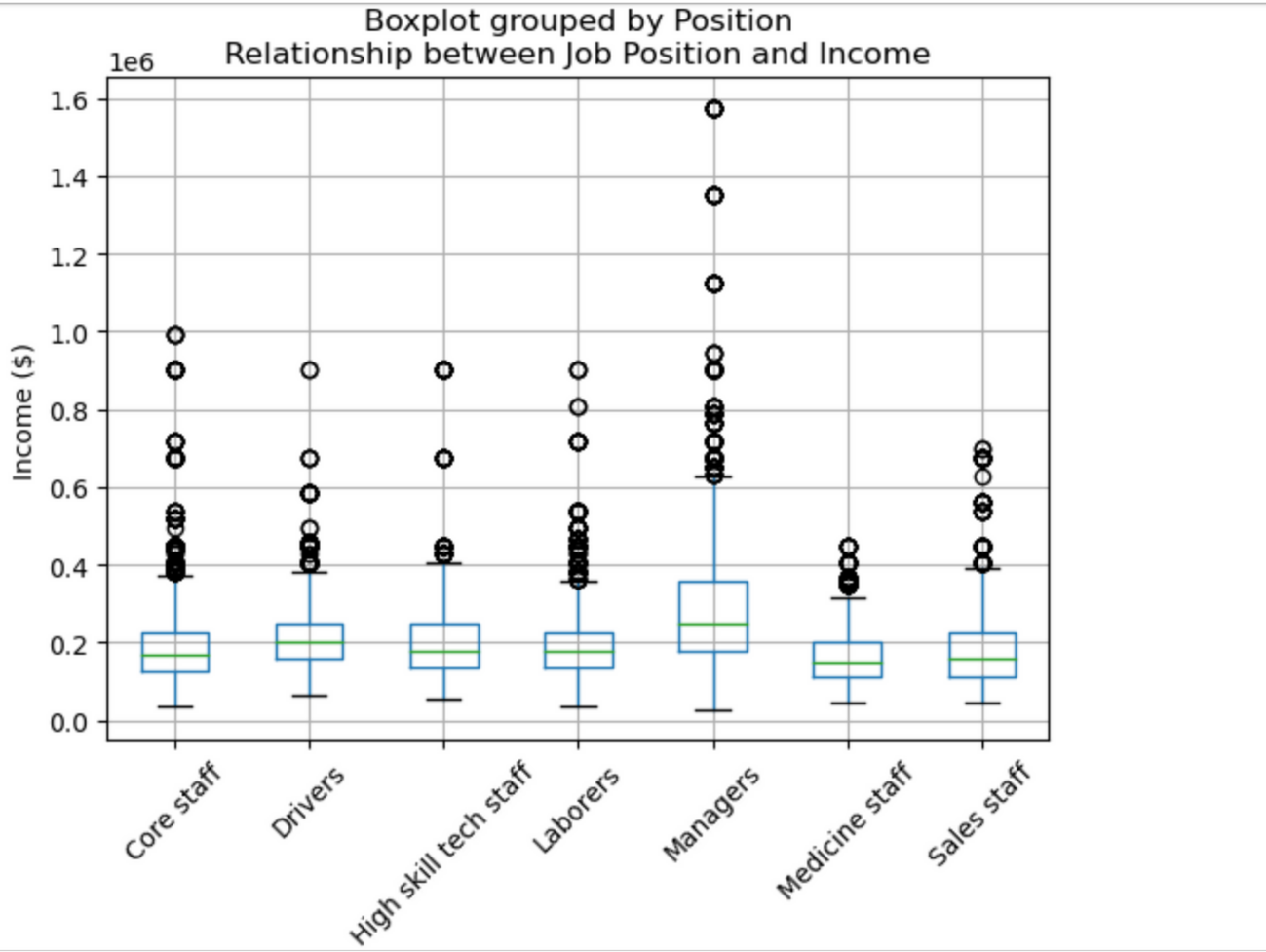
The dataset analysed among:

- 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

There is a relationship between age and credit card payment status

There is a relationship between gender and credit card payment status

### House and car ownership

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

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

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

### Having children

There is no relationship between credit status and having children

### Being employed

There is a relationship between years employed and credit status

### Annual income and job type

There is a relationship between annual income and credit status.

There is a relationship between job type and loan paid.

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**