CREDIT SCORE CLASSIFICATION USING MACHINE LEARNING

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INTRODUCTION:

Banks and credit card companies calculate your credit score to determine your creditworthiness. It helps banks and credit card companies immediately to issue loans to customers with good creditworthiness. Today banks and credit card companies use Machine Learning Algorithms to classify all the customers in their database based on their credit history. This project is also based on credit score prediction and uses machine learning algorithm.

Credit Score Classification:

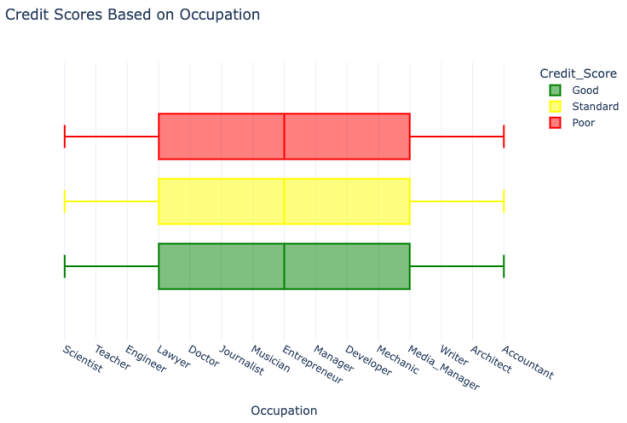
There are three credit scores that banks and credit card companies use to label their customers:

1. Good
2. Standard
3. Poor

A person with a good credit score will get loans from any bank and financial institution. For the task of Credit Score Classification, we need a labelled dataset with credit scores.
An ideal dataset for this task labelled according to the credit history of credit card customers can be downloaded **here**.

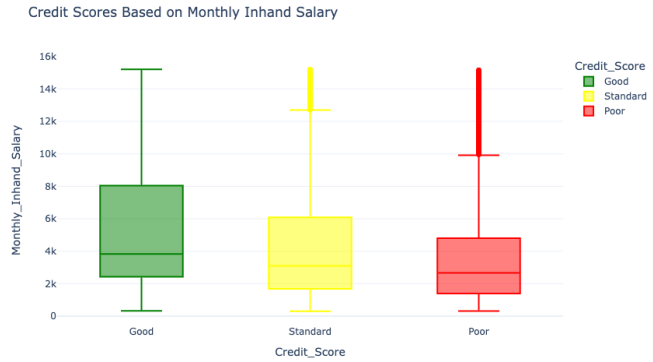
EXPLANATION AND OUTPUTS:

The dataset doesn't have any null values. The dataset has many features that can train a Machine Learning model for credit score classification. Start by exploring the occupation feature to know if the occupation of the person affects credit scores

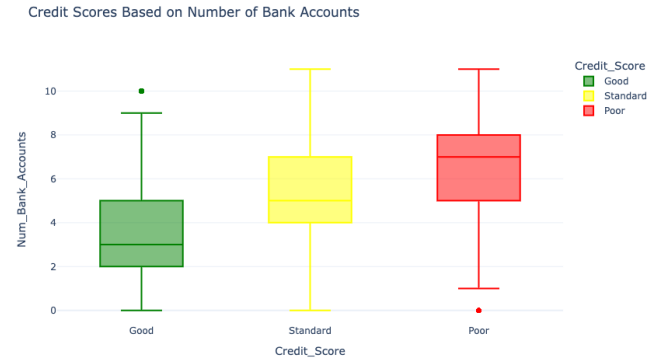


There's not much difference in the credit scores of all occupations mentioned in the data. Now explore whether the Annual Income of the person impacts your credit scores or not

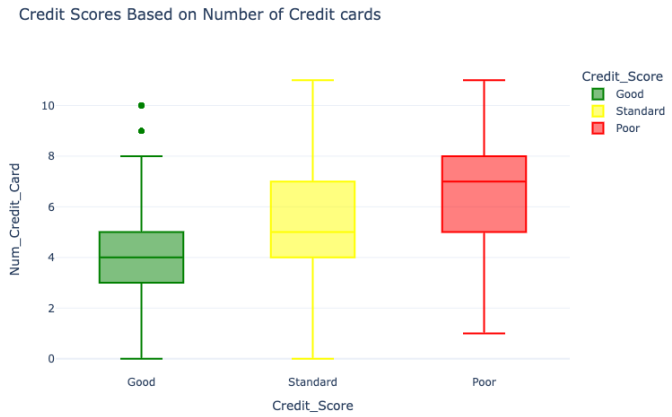
According to the above visualization, the more you earn annually, the better your credit score is. Now explore whether the monthly in-hand salary impacts credit scores or not



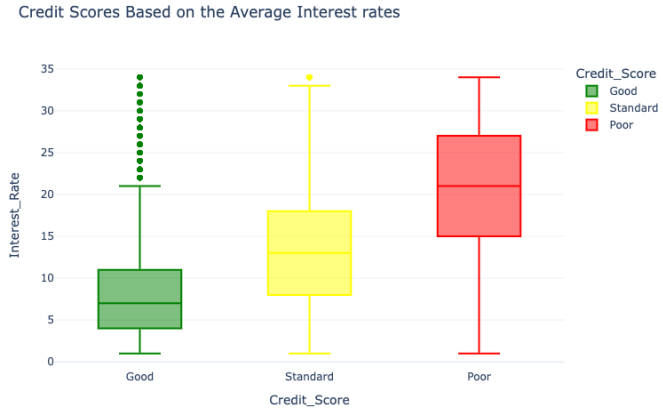
Like annual income, the more monthly in-hand salary you earn, the better your credit score will become. Now see if having more bank accounts impacts credit scores or not



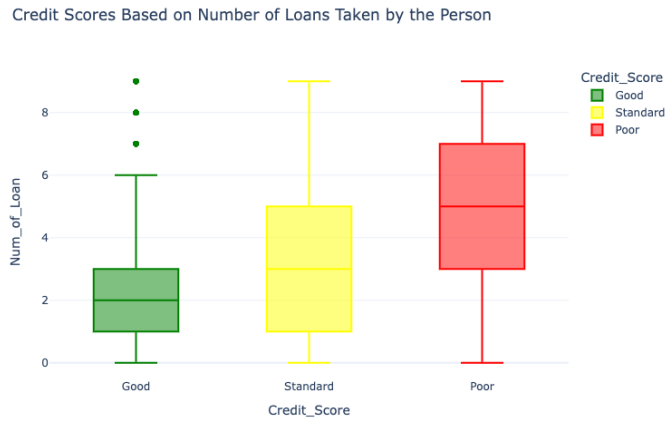
Maintaining more than five accounts is not good for having a good credit score. A person should have 2 – 3 bank accounts only. So having more bank accounts doesn't positively impact credit scores. Now see the impact on credit scores based on the number of credit cards you have



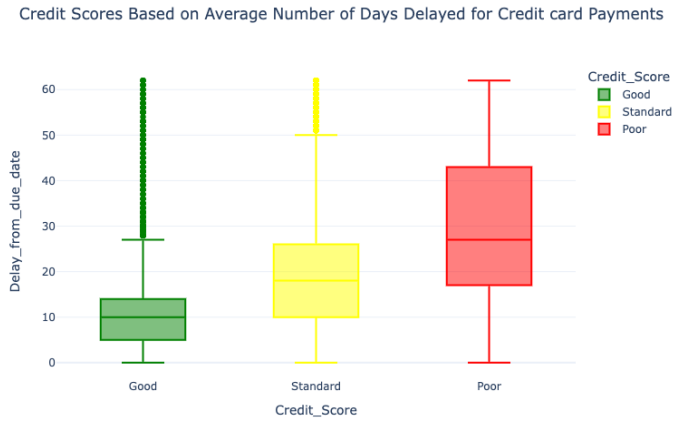
Just like the number of bank accounts, having more credit cards will not positively impact your credit scores. Having 3 – 5 credit cards is good for your credit score. Now see the impact on credit scores based on how much average interest you pay on loans and EMIs



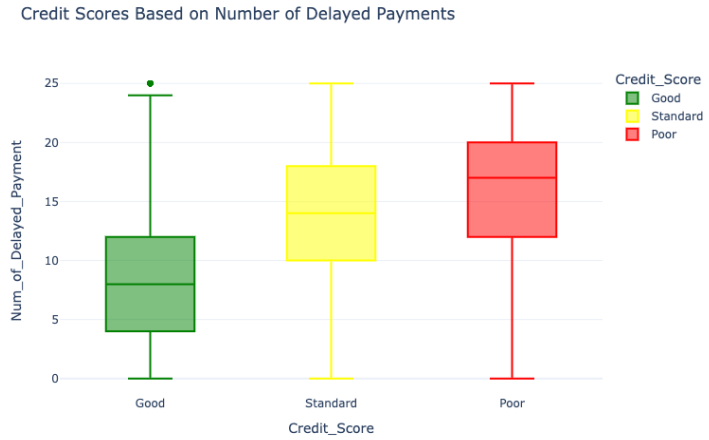
If the average interest rate is 4 – 11%, the credit score is good. Having an average interest rate of more than 15% is bad for your credit scores. Now see how many loans you can take at a time for a good credit score



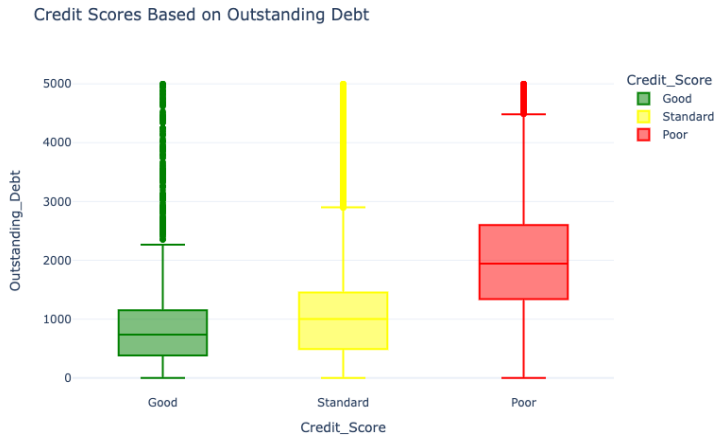
To have a good credit score, you should not take more than 1 – 3 loans at a time. Having more than three loans at a time will negatively impact your credit scores. Now see if delaying payments on the due date impacts your credit scores or not



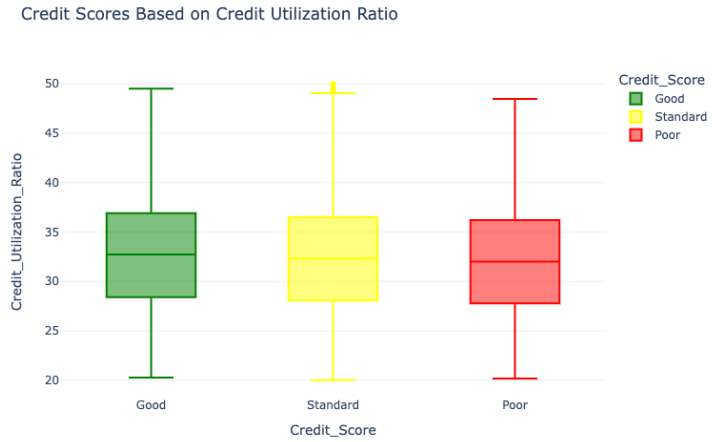
So, you can delay your credit card payment 5 – 14 days from the due date. Delaying your payments for more than 17 days from the due date will impact your credit scores negatively. Now have a look at if frequently delaying payments will impact credit scores or not



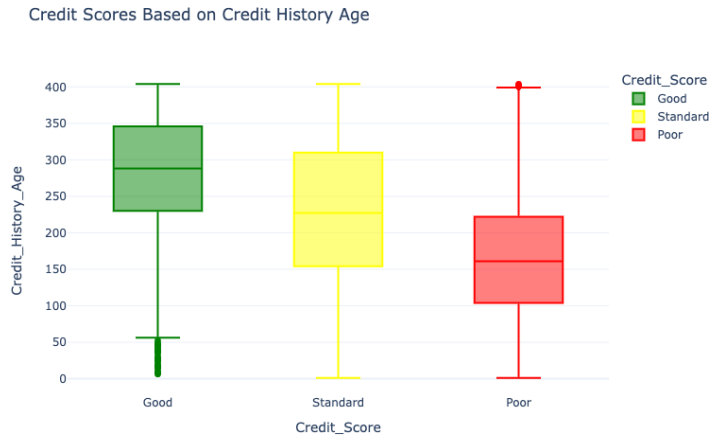
So, delaying 4 – 12 payments from the due date will not affect your credit scores. But delaying more than 12 payments from the due date will affect your credit scores negatively. Now see if having more debt will affect credit scores or not



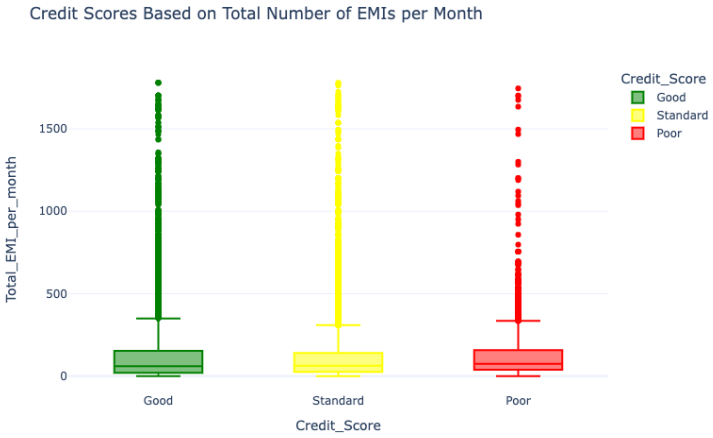
An outstanding debt of $380 – $1150 will not affect your credit scores. But always having a debt of more than $1338 will affect your credit scores negatively. Now see if having a high credit utilization ratio will affect credit scores or not



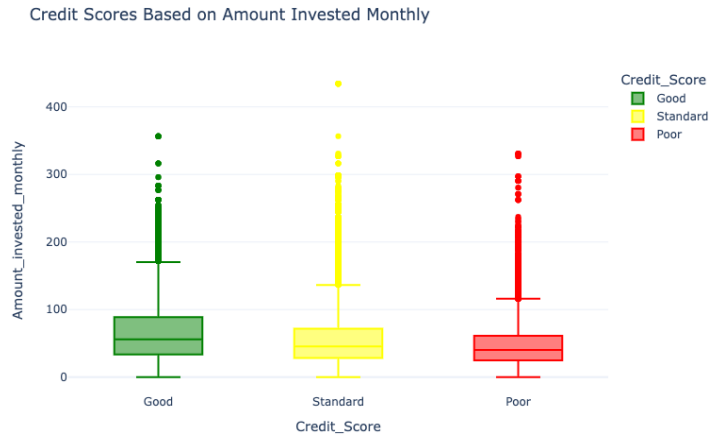
Credit utilization ratio means your total debt divided by your total available credit. According to the above figure, your credit utilization ratio doesn't affect your credit scores. Now see how the credit history age of a person affects credit scores



So, having a long credit history results in better credit scores. Now see how many EMIs you can have in a month for a good credit score



The number of EMIs you are paying in a month doesn't affect much on credit scores. Now see if your monthly investments affect your credit scores or not



The amount of money you invest monthly doesn't affect your credit scores a lot. Now see if having a low amount at the end of the month affects credit scores or not

So, having a high monthly balance in your account at the end of the month is good for your credit scores. A monthly balance of less than $250 is bad for credit scores.

Credit Score Classification Model:

One more important feature (Credit Mix) in the dataset is valuable for determining credit scores. The credit mix feature talks about the types of credits and loans you have taken.
As the Credit_Mix column is categorical, it will be transformed it into a numerical feature so that it can be used to train a Machine Learning model for the task of credit score classification
Now split the data into features and labels by selecting the features, split the data into training and test sets and proceed further by training a credit score classification model, make predictions from the model by giving inputs to the model according to the features we used to train the model.

```
Credit Score Prediction :
Annual Income: 19000
Monthly Inhand Salary: 1800
Number of Bank Accounts: 2
Number of Credit cards: 2
Interest rate: 9
Number of Loans: 2
Average number of days delayed by the person: 12
Number of delayed payments: 3
Credit Mix (Bad: 0, Standard: 1, Good: 3) : 3
Outstanding Debt: 250
Credit History Age: 200
Monthly Balance: 310
Predicted Credit Score =  ['Good']
```

So this is how Machine Learning can be used for the task of Credit Score Classification using Python.

SUMMARY:

Classifying customers based on their credit scores helps banks and credit card companies immediately to issue loans to customers with good creditworthiness. A person with a good credit score will get loans from any bank and financial institution.