

Loan Interest Rates Determining Factor

Walter Castillo, Ada Lazuli, Christian Hong and Richy Peterson



Project objective:

Our objective is to determine which factor is the biggest driver for interest rate in individual loans.

**INTEREST
RATES**



Data

Our data was originally broken up into 5 columns with 2498 rows:

Target:

- Interest rate

Factors:

- FICO range (in increments of 5)
- Amount requested by the loaner
- Amount funded by investors
- Loan length (36 or 60 months)

Interest rate	FICO range	Amount requested	Amount funded by investors	Loan length
8.90	735-739	20000	20000	36
12.12	715-719	19200	19200	36
21.98	690-694	35000	35000	60
9.99	695-699	10000	9975	36
11.71	695-699	12000	12000	36

Interest rate	FICO range	Amount requested	Amount funded by investors	Loan length
11.03	685-689	7500	0	36
12.29	685-689	7500	0	36
8.63	730-734	5000	0	36
7.68	790-794	4000	0	36
13.87	640-644	2200	0	36

Inferential Linear Regression

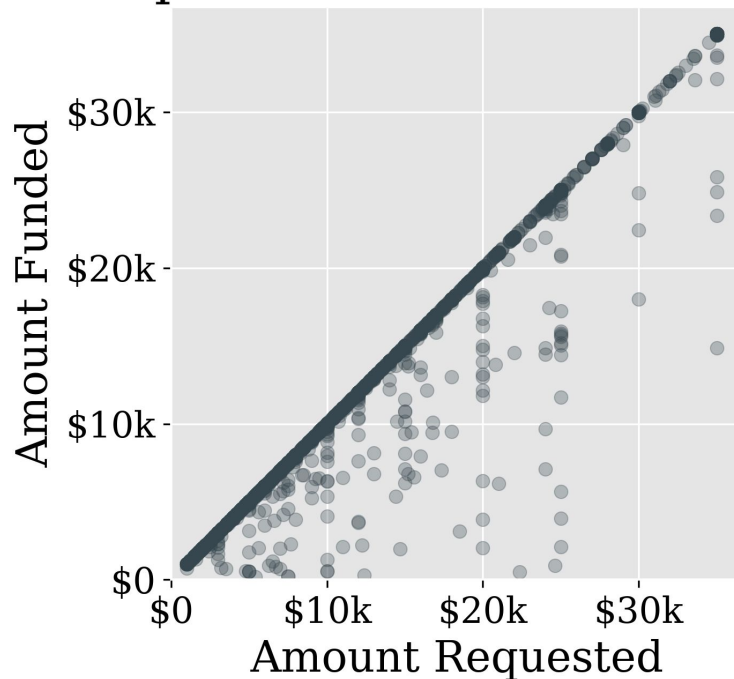
5 Important Assumptions:

1. **Linearity**: the relationship between the target and the features can be modeled linearly.
2. **Independence**: the residuals should be independent from each other .
3. **Normality**: the residuals are normally distributed.
4. **Homoscedasticity**: the variance of the residuals is constant.
5. **No multicollinearity**: the independent features are not highly correlated with each other.

Steps To Determining Our Model

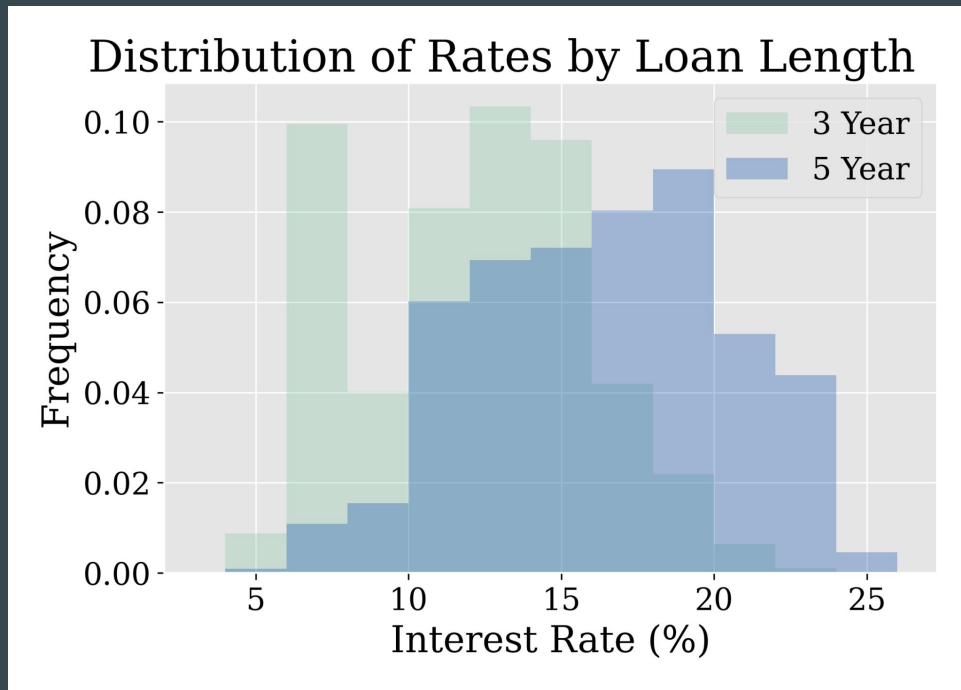
- Issues of multicollinearity
- Amount requested vs Amount funded

Example of Related Variables



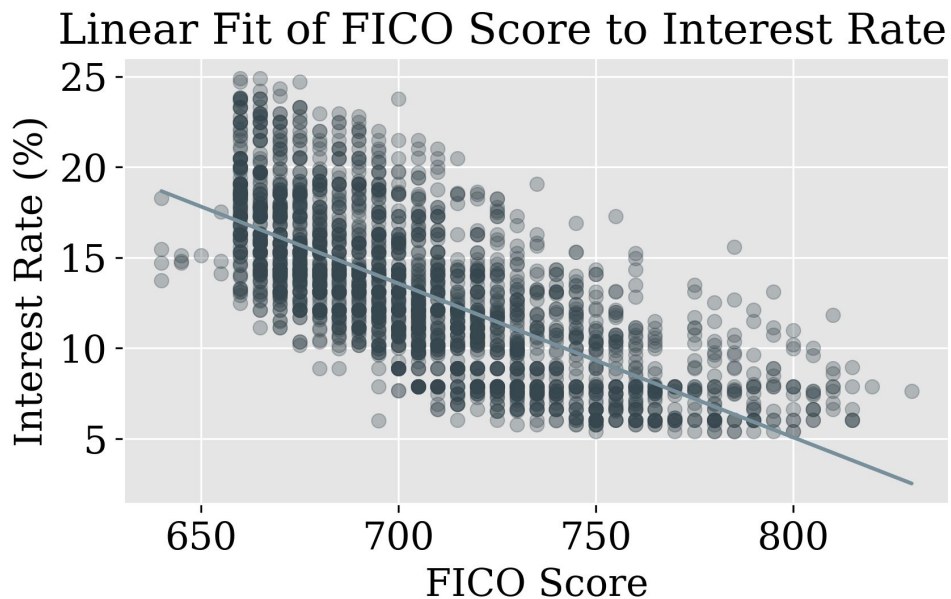
Steps To Determining Model Continued...

- Loan length doesn't show a clear linear relationship to the interest rate.
- Testing concluded that 5 years loans have higher interest rates on average.



The Big Takeaway

- Inverse linear relationship
- Higher the FICO score the lower the interest rate



Conclusion

Findings:

1. FICO score is inversely related to interest rate. Higher FICO rating means better rates!
2. Hypothesis testing showed loan term matters. Longer usually loans have higher interest!

Business owners should focus on increasing their FICO score and request shorter loan durations to minimize interest rates.

Questions?

**LLOYD, YOUR CREDIT SCORE IS
470"**



**"SO YOU'RE TELLING ME THERE'S A
CHANCE?"**

memegenerator.net

Conclusion

In conclusion as a new business owner looking for a business loan it is very important to increase your FICO score to ensure you get the lowest possible interest rate. We conducted hypothesis testing on whether loan term affects interest rate and we found it does not. With that in mind a new business owner should choose the loan term length they are personally comfortable with.

Data

Our data was originally broken up into 5 columns all numerical:

Target:

- Interest rate

Features:

- Fico range (in increments of 5)
- Amount requested by the loaner
- Amount funded by investors
- Loan length (36 or 60 months)

Interest Rate	Fico Range	Amount Requested	Amount Funded by Investors	Loan Length
8.90	735-739	20000	20000	36
12.12	715-719	19200	19200	36
21.98	690-694	35000	35000	60
9.99	695-699	10000	9975	36
11.71	695-699	12000	12000	36

Interest Rate	Fico Ordinal	Amount Funded by Investors	Loan Length
8.90	735	20000	36
12.12	715	19200	36
21.98	690	35000	60
9.99	695	9975	36
11.71	695	12000	36