U12127232 A1. CREDIT RATING
Vinay ratnala

Predictor	expected sign of effect	Rationale
Number of credit cards	Negative (-)	More the number of cards you have more credit will be available to you. If you were to run up your debt, this could leave you unable to pay and resulting in reduced credit score
Age	Positive (+)	Age of a person is not factored into persons credit score, but it can affect indirectly. Higher the age, longer the person has the opportunity to establish credit.
Income	Positive (+)	Education can indirectly affect your credit score. More the education high is the income and higher ability to pay of your debts and maintain good credit score.
Balance	Negative (-)	High balance is because of high credit utilization. Credit utilization has negative impact on your credit score.
Ethnicity	Negative (-)	Race does not have any direct impact on credit score directly because of discrimination education and employment African Americans have a disadvantage when compared to other races.
Married	?(+/-)	This is ambiguous. If marriage leads to high expenditure than it leads to decrease in credit score. In some cases married people, try to maintain good credit score. So, that they can take bigger mortgage loans in future.
Credit Limit	Positive (+)	High credit limit will bring down your credit utilization and can help in maintaining high credit scores
Gender	?(+/-)	Credit Score is not directly affected by Gender. Women are paid less in real world and their credit limit is less which results in high credit utilization. This ultimately results in decrease of credit score.
Student	Negative (-)	student has negative impact in credit score because they don't have any income to to pay of their student loans.

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Models:

Model1:

In the model one we are considering the variables which are significantly affecting the credit score.

m1 <- lm (rating ~ income + limit + cards + balance +student + married, data=CR)

Model2:

m2 <- lm (rating ~ income + limit + cards + balance +student + married+ gender+ ethnicity, data=CR)

In this model we are considering all the predictors in model one and adding two extra predictors gender and ethnicity to compare with model one.

Combined stargazer output of the models:

	rating	
	(1)	(2)
income	0.123*** (0.047)	0.127*** (0.047)
limit	0.063*** (0.001)	0.063*** (0.001)
cards	4.631*** (0.389)	4.628*** (0.390)
balance	0.012** (0.005)	0.012** (0.005)
studentYes	-2.216 (2.779)	-2.266 (2.792)
marriedYes	2.093** (1.045)	2.265** (1.054)
genderMale		-0.245 (1.020)
ethnicityAfrican American		0.275 (1.254)
ethnicityHispanic		-1.769 (1.242)
Constant	28.846*** (3.089)	29.494*** (3.194)
Observations	400	400
R2	0.996	0.996
Adjusted R2	0.996	0.996
Residual Std. Error	10.144 (df = 393)	10.150 (df = 390)
F Statistic	15,404.150*** (df = 6; 393)	10,259.190*** (df = 9; 390)
Note:		*p<0.1; **p<0.05; ***p<0.01

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What is the marginal effect of income on credit score?

From the above observations it can be inferred that on an average for every 1000$ increase in the income the credit rating is going to increase by 0.127 points taking rest other predictors are constant.

Does maintaining credit card balances help or hurt credit score? By how much?

According to our Model maintaining more credit cards help credit score. On an average for every new credit card added the credit rating increases by 4.628 points.

From our second model we can observe that on an average for every 1000$ increase in credit balance the credit score increases by 1.2 points.

Is there a racial bias in credit score, i.e., do African Americans or Hispanic people have less credit score than Caucasian people, if all other factors are equal? If so, by how much?

In the Model2 we have taken Caucasian people as reference. If we keep all the factors as same we can observe that on an average African American people have 0.275 points higher credit score than the Caucasian people. Though the effect size is positive it is low, and the standard error is very high (1.25). If we calculate a 95% CI based on this, it includes 0. Hence, I would say this difference is not significant.

When we consider Hispanics people, they have 1.769 points less credit score than the Caucasian people. Though the effect size is negative, and it is low, and standard deviation is very high (1.24).

If we calculate a 95% CI based on this, it includes 0 and the difference is not significant with Hispanic people. So, I can say that there is no racial bias in credit score.

Is there a gender bias in credit score, i.e., do females have lower (or higher) credit score than males? If so, by how much?

In the model 2 we have taken female gender as reference and we can observe that keeping all the factors as same gender male has 0.244 points less which is very less.so, we can say that there is not gender bias in credit score.