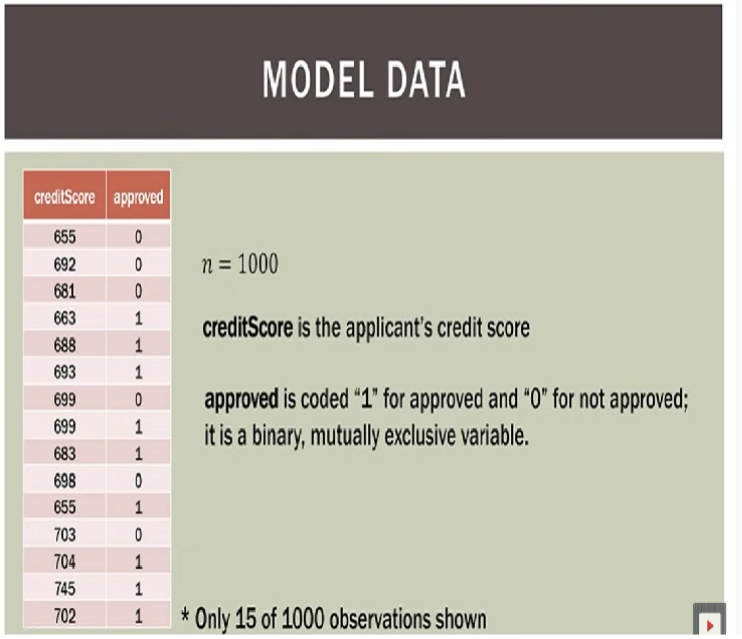
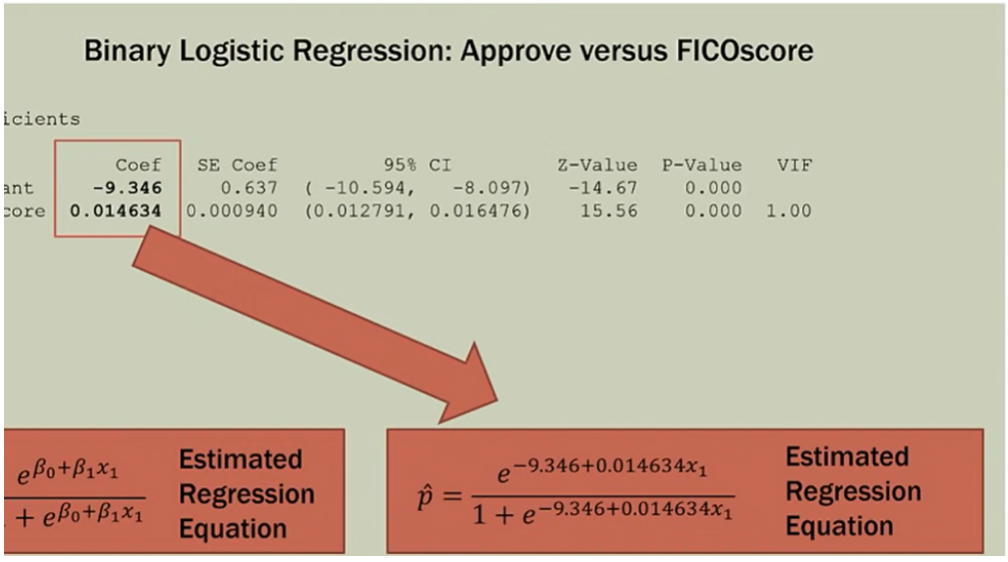
Summary Of Logistic Regression & Odds Ratio

According to the given example in this video :

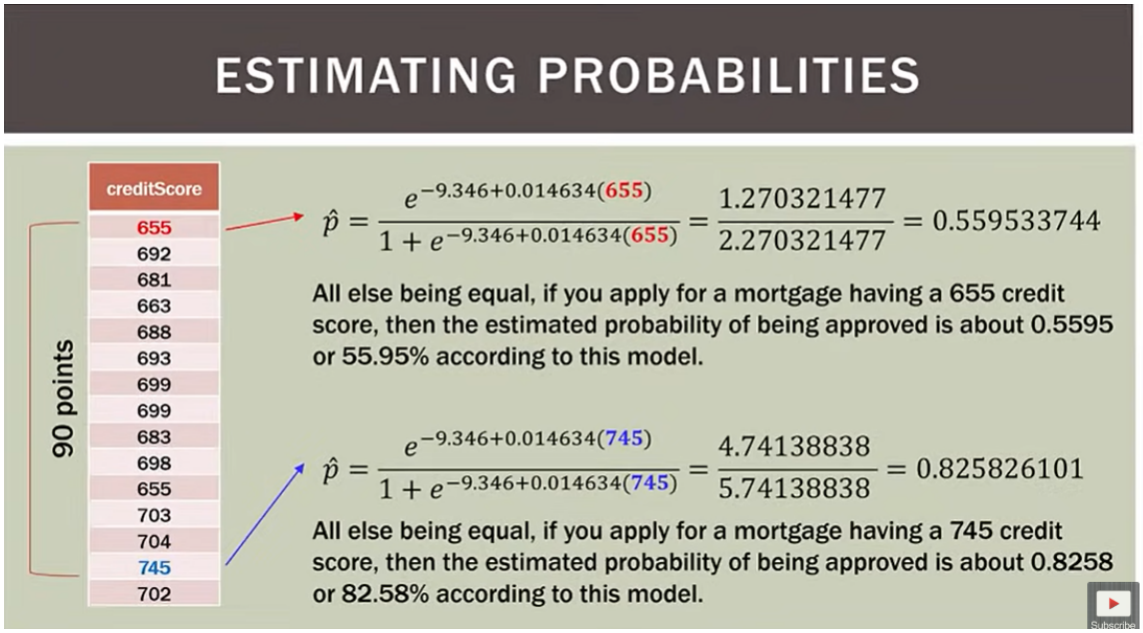
We have a sample dataset of about 15 observations and we are interested in the probability that a person is approved for a home mortgage given their credit score.



After running this logistic in minitab we were given this output. P hat is the estimated probability of being approved and the variable x1 is a credit score and we would substitute any credit score into this equation in the place of x1.

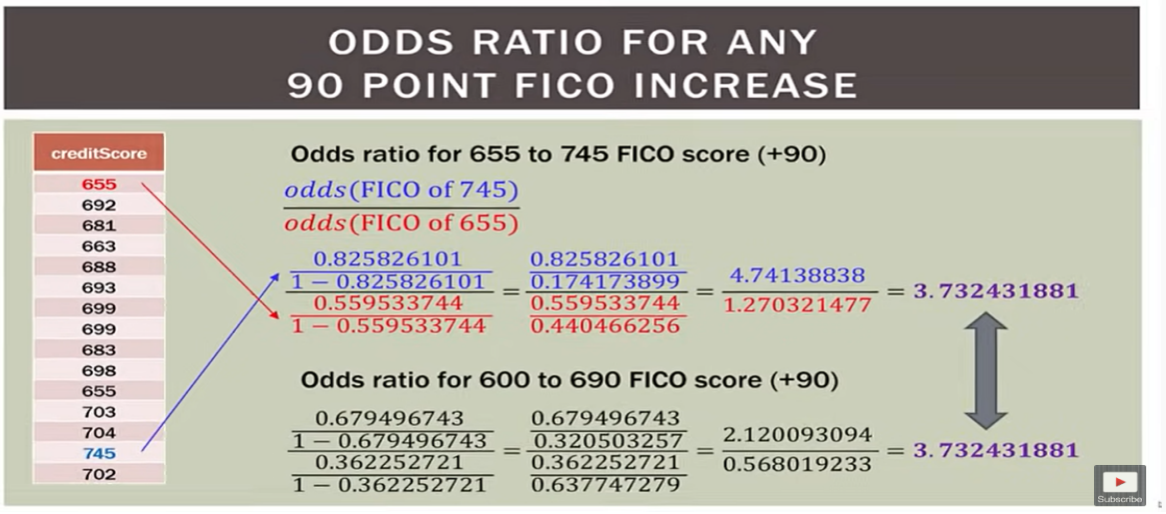


Now we will estimate the probabilities one of the examples given in the video is with a credit score of 655 and 745 we get the P hat values of 0.5595 and 0.8258.



After estimating the probabilities we will find the odds ratio for the 90% increase in FICO score. For example the Odds ratio for a 655 to 745 increase will be calculated by dividing the odds of being approved having a FICO score of 745 by the odds of being approved having a FICO score of 655. **"Odds ratio is the ratio of two odds".**
After doing the above mentioned process we get an Odds ratio of 3.723.

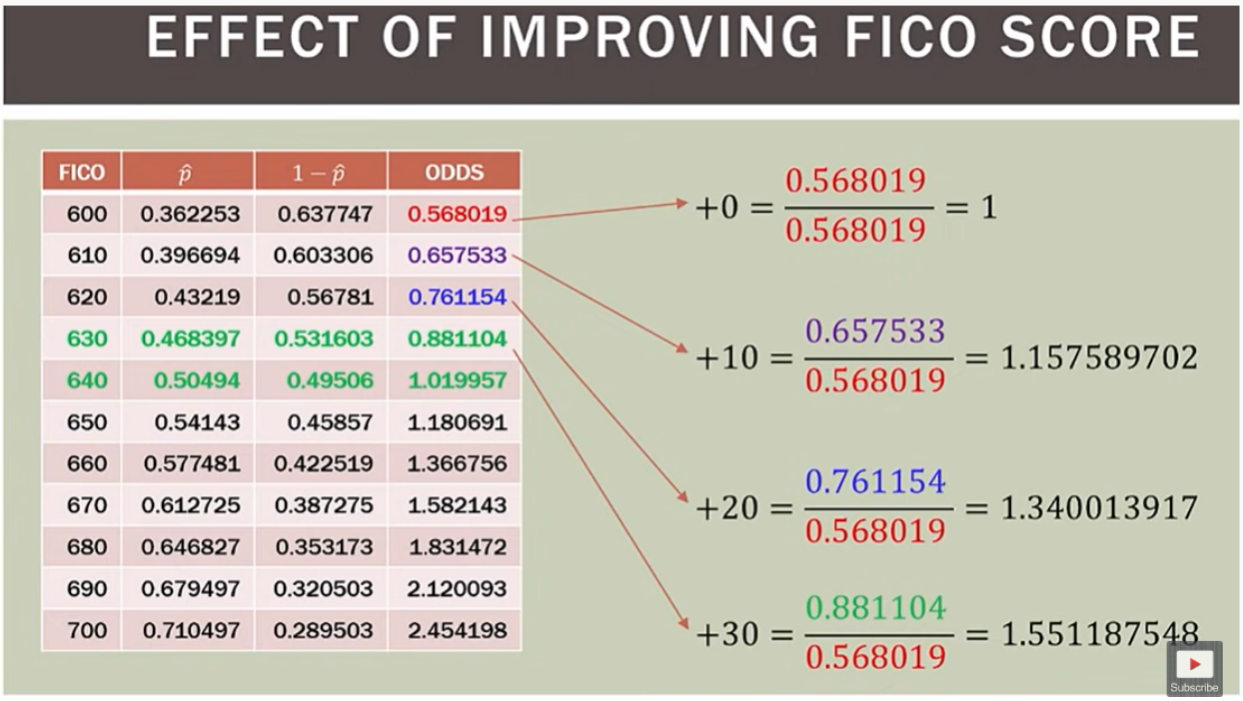
After picking two random scores with a difference of 90 points i.e. 600 and 690 we will get an Odds ratio of 3.723 which is the same as it was for (655 and 745).
So, the main point here is that **"When comparing the Odds ratio for two scores that are the same distance apart in this case 90 points on their credit score the Odds ratio is going to be the same no matter what two scores you pick"**.



Let’s see the Odds ratio for some other intervals. In the table below there is FICO score on the left and they are all 10 points aparts, in the second column there is P hat (found using estimated regression equation, then in the third column we have 1- P hat and in the last column we have Odds ratio which could be calculated by dividing P hat by 1-P hat. So let’s see how your Odds change over time.

For example :

If your FICO score doesn't change, your Odds will not change(will be 1).But if we increased our score by 10 points then the Odds ratio will be 1.157.



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