1. Load the data and check information
2. Loan status is the target variable, so first plot loan status count. Full paid loan and Current loan are the main status, so most of the loans are good.
3. There are only a few defaults, define the bad loan (including charge off) and use pie chart to show the portion (about 11% are bad loans)
4. Create issue\_y to analysis loan status and loan amount by time, loan increased dramatically after 2014. Not so much loan exsit before 2012. And there is a spike for bad loans in 2015. After apply the ratio, we can see the ratio is pretty stable, and 2007 is high, but the loan amount is low, so that’s ok.
5. Analysis loan amount.

* Generally, loans are with small amount, within 50k, most of the loans are around 10k.
* After 2015, the loan amount is pretty stable. The volume of the company doesn’t increase since 2015.

1. Check Credit score.

* Most of the loans are lended to GradeB&C, and which is surprise me is that Grade D has a big amount.
* And year of 2015 has big amount for Grade E.
* From Bar chart, GradeC&D has big probability of default.
* Grade D has a big portion of default, almost 20% loans are bad loans in grade D, it may not a good idea to lend loan to grade D, or need some more rules to lend loan to grade D.
* Show sub grade information.
* Show grade default percentage, after D grade, the default rate is really high above 20%
* There are some big amount loans in 2012.

1. Interest rate analysis. Interest rate increases steadily recent years, it makes sense, because the federal raise the rate these years.
2. Verification Status

* About 1/3 of full paid loans are not verified.
* About 1/3 of bad loans are verified.

1. Application Type. Individual loan has high default rate obviously.
2. Employment Title Analysis

* Most of the lending club loans are lended to Teacher and Manager.

1. Loan Term analysis
2. Annual Income and DTI analysis.

* Most people annual income are around 100k.

1. Finally plot heat map to show the correlation for all the variables.