**1. Research and summarize what your client’s needs are going to be.**

Ric is the Risk Manager who is concerned about default risk**. Default risk** is the chance that companies or individuals will be unable to make the required payments on their debt obligations. Lenders and investors are exposed to **default risk** in virtually all forms of credit extensions.

1. Fundamentally, Ricneeds to make the following decisions:
   1. Make decisions as to how much money can be invested in the Lending club.
   2. Need to access all profile and decide profiles in which to invest his money.
   3. Go through the interest rate that the lending club has provided over the years,
2. Ric’s Objectives while making decisions:
3. Ric’s main objective is to minimize default risks.
4. Minimize financial impact when risks occur.
5. Analysing past data
   1. can help Ric make better decisions as to the probability of a risk occurring.
   2. Analyse history of Lending club default risk and financial management plan.

**2. Explore the data and comment on data quality, features and get a feel for the data.**

While exploring the data we found the quality of data to be dirty and had a lot of unnecessary columns which made data crowded and unclean. The objective was to find rate of interest and to align with that objective we eliminated fields that indicate time as we did not need time series analysis. Columns contained many null values and invalid columns and we eliminated columns which had more than 50% null values. Features that was needed to align with the objective which we focused on were loan amount, funded amount, interest rate instalments, grade, sub grade, home ownership, annual income and loan status. Methodology used to remove null values, missing values and replace with zero, empty string and mean.

**3. Summary highlighting key takeaways from Lending club graphs**

**­­ Lending Club Statistics:**

**Total Loan Issuance:**

Total loan issuance from Lending Club has been gradually increased from 2011 – 2018. Which shows that it has become reliable platform for online personal loans. Increasing simplicity and functionality of lending club has positive impact on the popularity of platform.

**Reported Loan Purpose:**

68.18% of Lending club borrowers report using their loans to refinance their existing loans or pay off their credit card bills. Though data shows that purpose of the loan is refinance or credit cards, it doesn’t guarantee that money has been used for that purpose.

Investor should focus more on loan grades rather than the purpose of the loan issuance.

**Loan Issuance by State:**

The chart shows that most of the funds borrowed are by people in New York, Texas, California, Florida, Illinois. It shows that states with larger economies have the more people who tend to borrow more loans.

Also, group of some north American states like Montana, North Dakota, Wyoming, South Dakota, Iowa has least number of borrowers.

**Lending Club Statistics Performance:**

**Investor Account Returns by Average Age of Portfolio:**

Client should know the return can change over the life of an investment and different factors can influence the volatility of returns.

**Number of notes:** owning small number of notes usually leads to more volatile returns.

**Concentration of an investment:** notes corresponding to small amount of loans and borrowers rather than spreading investment leads volatility of returns.

**Weighted average interest rate:** returns are more stable on notes with lower interest rates

**Weighted average note age:** After past-due status of the loan, returns are declined.

**Diversification:**

To avoid volatility of the returns, diversification-spreading of an investment can lead to more solid returns. Having greater diversification or owing more notes can reduce the volatility of returns.

Diversification chart shows that moving from left to right, returns become more stable as the number of notes increases.

Net Annualize Returns (NAT) chart shows that the accounts having more than 100 notes have been more likely to see positive returns and the accounts with less than 100 notes have been more likely to see negative returns.

Diversification reduces the risk of single investment.

**Lending Club Statistics – Demand & Credit Profile**

**Average Interest Rate**

This chart shows the weighted average interest rate for loans issued over time.

For a 3-year term, we see that for grade A the average interest rate was maintained below 10% throughout 2011-2018. For grade B we observe that the interest rate rose from 10% from 2011 and dipped back to 10% during 2015 and is slowly rising. For C and D grade we could slowly see that the rates slowly rise from 15% but finally in 2018 C grade is at 15% and D grade is at 20%. With grade E & F we see a sudden rise in the interest rate post mid of 2015, 2016 respectively. With grade G we see a rise from 20% over to 30%. Thus, average interest rate for the 3- year term period is between 10 to 15% overall.

For a 5-year term, we see grade A interest rate has been consistently maintained near 10% whereas grade B is between 10-12%. Grade C dwindles near 15% and grade D reached 20% by the end of 2018. Grade E and F has a rise in interest rate from 18%, 19% reaching 25% 30% respectively till 2018. Grade G has started with an interest rate of 20% and reaches close to 30% by 2018.

Thus, overall the average interest rate for the overall term is 12.84% and for the 36-month loan is at 11.55%, for the 60-month loan period is 14.55%.

**Loan Performance Details**

This is the most useful chart that tells the performance of loans which is important for the risk manager. It gives us information on the Principal amount of loans that is paid, that is in current status, or in grace period status. It tells us that the principal amount of loans is late and not charged off. From the year 2007 to 2012 the late payments were almost always 0. From the year 2013 late payments were negligible. The current which indicates grace period status saw a substantial rise in the year 2014. The increase in loans which were in the grace period was more than the late payments category in the year 2015. The late payments in category C was the highest at 2016. In 2017, the current and late increased substantially compared to the other years. Grade C had again the highest loans which were in their late payment phase and loans in the grace period phase. In the year 2018 the late payments for Grade C and D was the highest.

It can be observed from the above analysis that Grade C had the loans to be maximum in the current phase which is the grace period phase and maximum in the late payment phase.

We can also observe that the number of loans issued has been reducing over the years and is the lowest in 2017 and 2018. In 2018 literally half of the loans were issued when compared to 2017.

**Loan Status Migration Over 9 Months**

The chart gives a nine-month recovery rate by loan status. In grace period we have close to 80% in active status and 22% in net charge offs. Net charge offs are equal to the total principal amount charged off less any funds recovered within three months of the last day of the applicable nine-month period. The default which is more than 120 days has active loans 28% whereas the charge offs is 72%. Thus this can help Ric analyze the grades and loans that more tend to default and the interest rates applicable.

