**Course Two Task Three: Informal Report**

**An analysis of Credit One Default data has yielded interesting demographic information, which should prove helpful when predicting the best credit limit to approve for our customers.**

**Chart, bar chart

Description automatically generated**

**As we can see, 22% of customers defaulted on their loans, based on the 2,396 observations in this data frame.**

Chart, bar chart, waterfall chart

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**This 22% statistic is true of both Male and Female default statuses. Default Status by Marriage is roughly the same, with default rates of 23%-Married, 20%-Single, 24%-Divorced.**

**Chart, bar chart

Description automatically generated**

**However, there was an observable trend that default rates dropped as the level of higher education increased. 25%-High School Ed, 22%-University Ed, 19%-Graduate School Ed, (6%-“Other” Ed).**

**Beyond these demographic statistics, the payment history observations of customers helped with the business problem at hand, how much credit to allow an individual, or whether they should be approved for a loan, or not.**

**We first worked with machine learning algorithms with the goal of predicting an ideal credit limit to approve for an individual. However, the accuracy of our predictive models was falling well below acceptable thresholds, i.e., between 0-12% accuracy.**

**What we elected to do was to choose a predictive algorithm that would predict an ideal range of limit balance amount to approve an individual. This way, we can look at what amount they are seeking approval for, then pass their data into our model to determine if they should be approved or denied. Our final model was able to accurately predict approval/denial with an accuracy of 80%.**