# EXECUTIVE SUMMARY

The goal of the project is to predict the annual sales for class E liquor in the state of Iowa. The dataset available to use is the 2015 & 2016 Q1 state liquor sale data. The dataset contains information regarding the price of liquor, liquor inventory, sale information, date and address of store along with geographic city/county information.

We have used Linear regression along with refining our model using Regularization to predict the annual sales of liquor for 2016. To build our model, we used 2015 Q1 data, followed building our model on 2015 total sales to predict 2016 total sales.

Here are some of our key findings:

1. 2016 Projected sales are at $279.6 mn, which is an increase of 4.67mn or 1.71% from 2015 Actual sales.
2. Our model predicts sales with an R2 of 0.98
3. The key indicators are sales in Q1 and number of categories of liquor sold at a particular store
4. We were unable to find significant relationship between price/bottle, volume of liquor sold, population, median income, number of stores and other information to improve our model.
5. The 2016 projected sales tell us that 882 stores will have an increase in projected growth from 2015 and 335 stores will have a decrease in sales based off 2016’s Q1 data
6. We see that it takes ~$45000 to open a new store in the state of Iowa. This is our zero cost/cost of investment related to opening a store.
7. All counties/cities experience seasonality in the sale of liquor. The underlying causes need to be explored more.

In the end, we are able to predict sales for a year with the Q1 data of the year with good accuracy. The Iowa State Board will be able to increase its sales revenue next year. We are able to make better predictions using additional census data (age, sex ratio, incomes).