

Iowa Liquor Sales

Jin Park

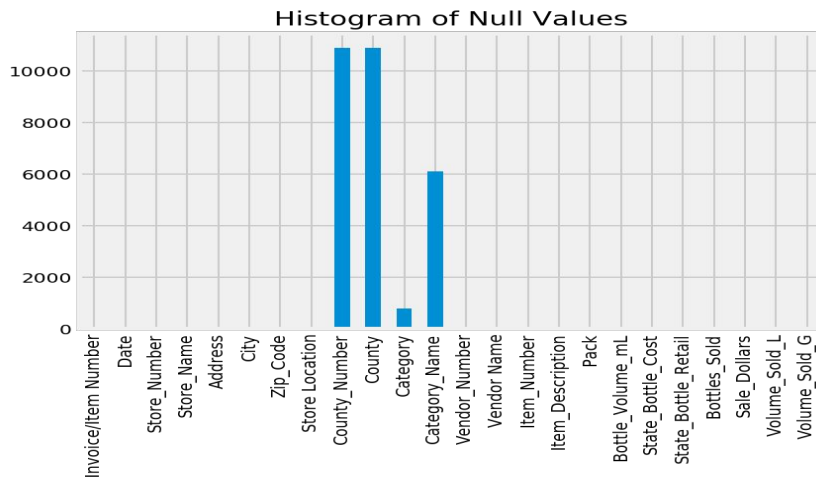
Objectives

1. Find the top cities, zip codes, and store numbers.
2. Find which quarterly sale result can predict the future sales result.

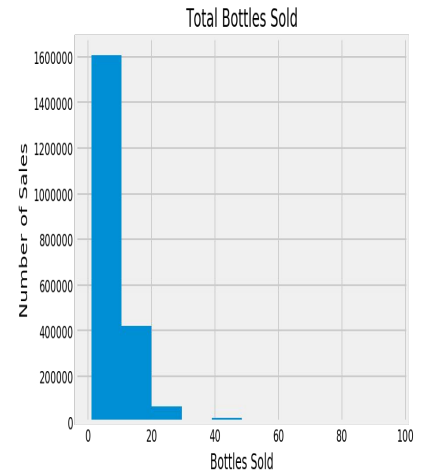
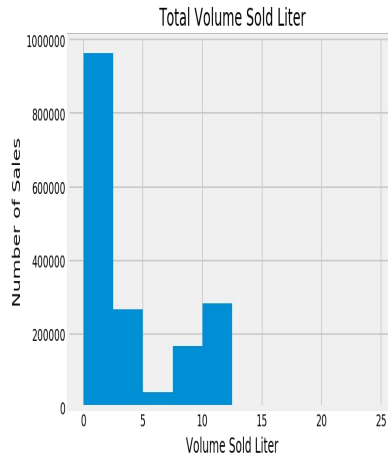
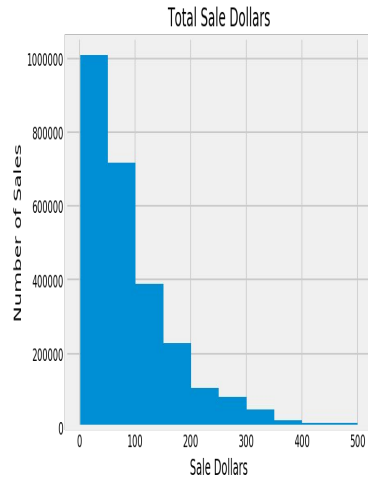


Data

- Transactions from 2015 to 2016 that have a class E liquor license.
- 2.7 million transactions total (2,692,602)
- Total missing values (28714)
- Duplicates



Data



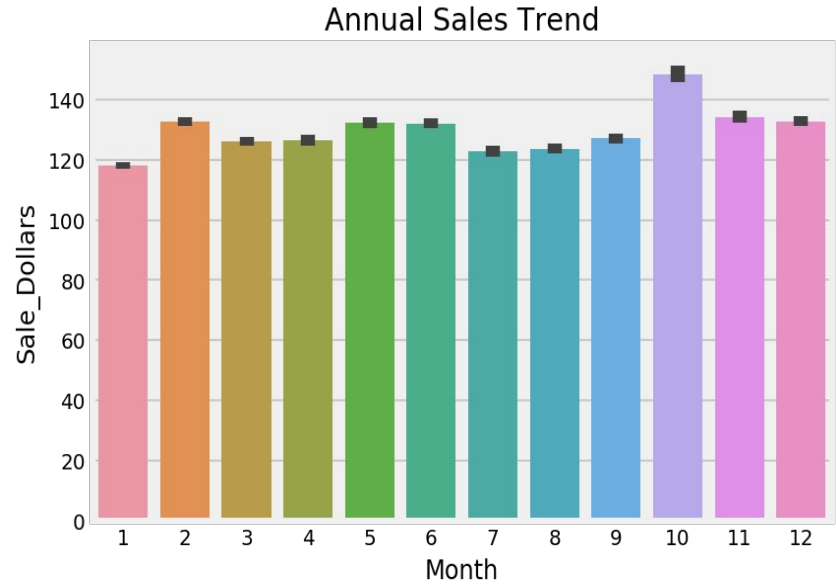
Annual Sales Trend

Highest

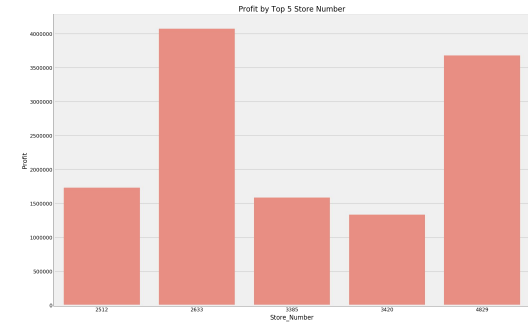
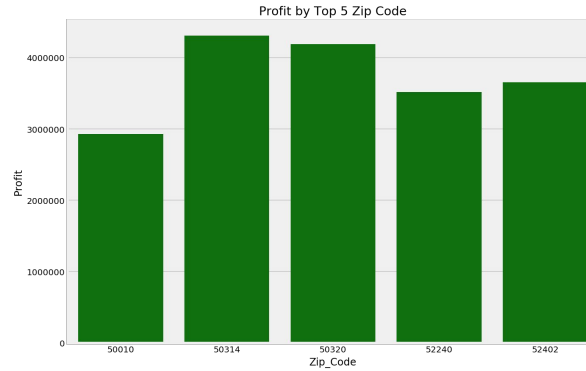
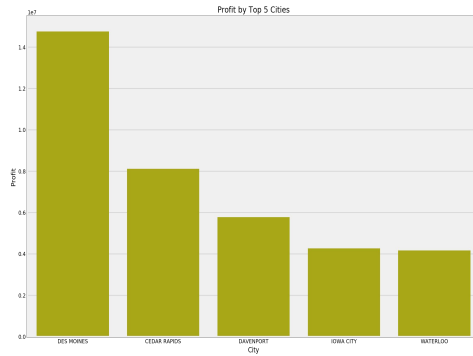
- October(Thanksgiving)

Lowest

- January



Top Cities, Zip Codes, Store Numbers



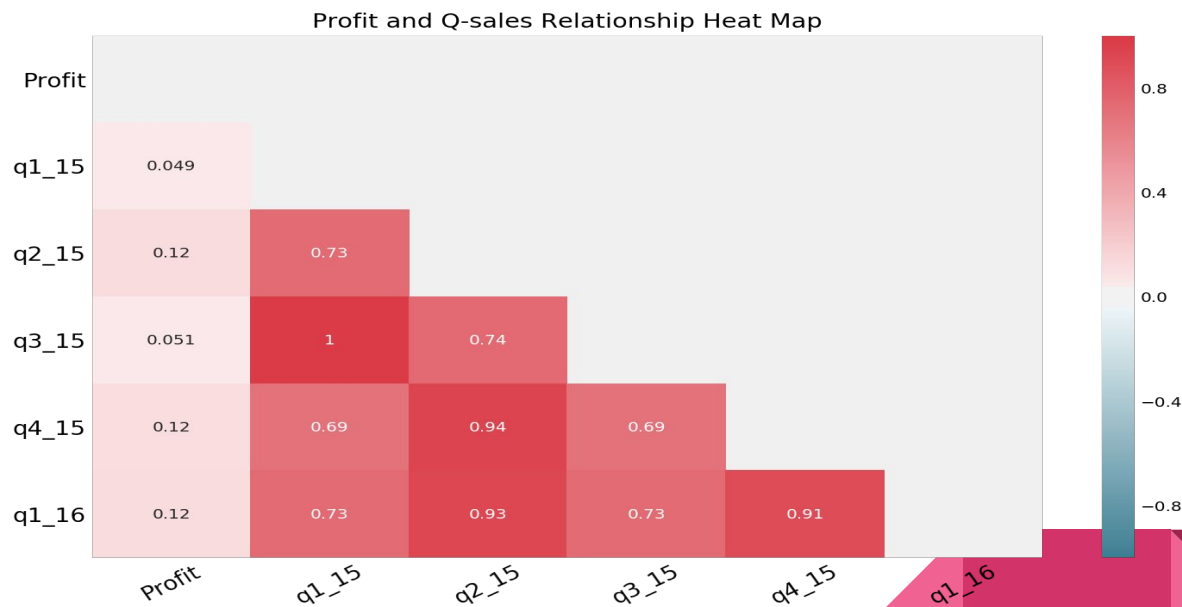
Total Q-Sales

2015

- Q1: 45,245.40
- Q2: 39460.00
- Q3: 45214.50
- Q4: 40744.00

2016

- Q1: 38168.50




Model

Linear regression/Cross-Validation

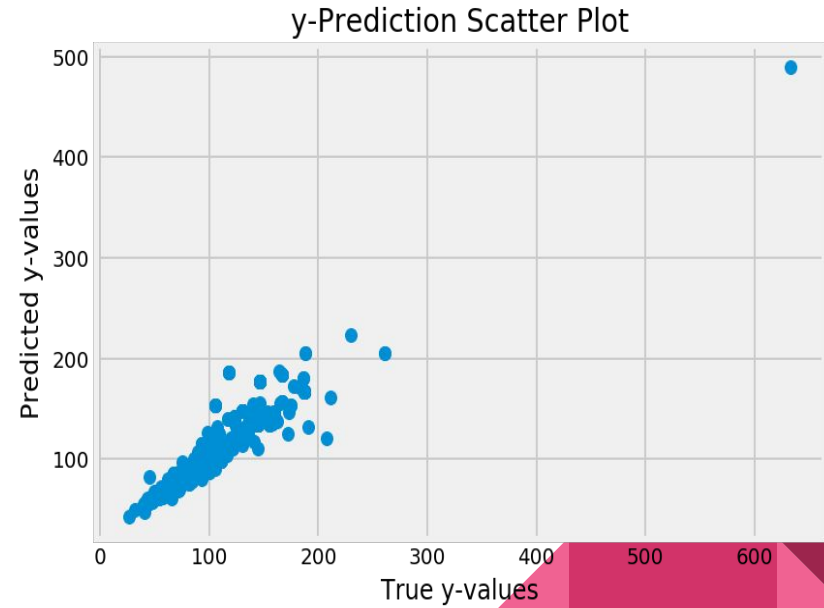
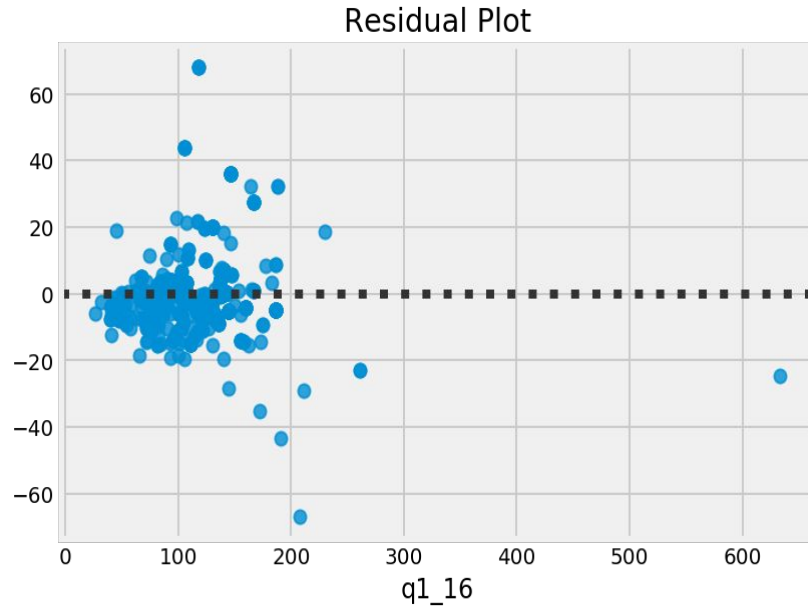
Testing All Quarters from 2015 (First model)

- R-squared Score (training set): 0.864803045975
- R-squared Score (testing set): 0.907228148067
- Mean of 5-fold CV score: 0.852194155195

2nd quarter result from 2015 (Third model)

- R-squared Score (training set): 0.852414951965
 - R-squared Score (testing set): 0.884779771189
 - Mean of 5-fold CV score: 0.846866762153
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Residual/Scatter Plot



Conclusion

- **Best location:**
 - Des Moines(zip-code: 50320 or 50314)
 - Iowa City(Zip-code:52240),
 - Cedar Rapids(zip-code:52402)
 - Remodel the store based on the store number 2633, 4829 in Des Moines or 2512 in Iowa City
- **Sales Forecast**
 - Q2 or Annual data

