

# Iowa Liquor Sales

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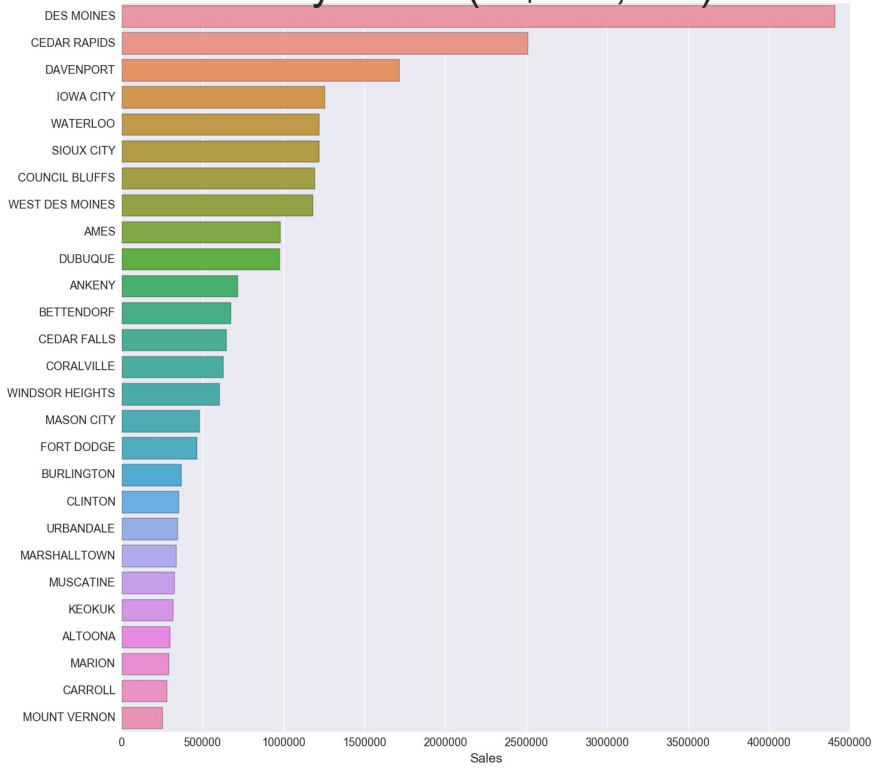
Data Scientist In Residence at the Iowa State Tax Board

# Overview

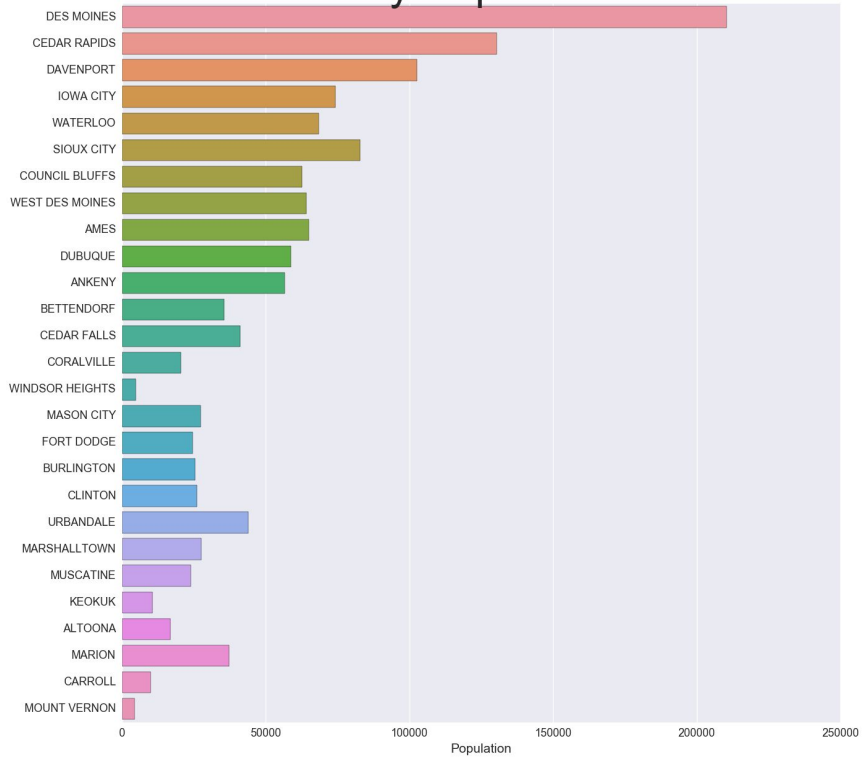
- Current liquor sales broken down by:
  - Quarterly sales by store
  - City
  - County
- Projections
  - Fit and test on 2015
  - Project 2016

# Liquor Sales by City

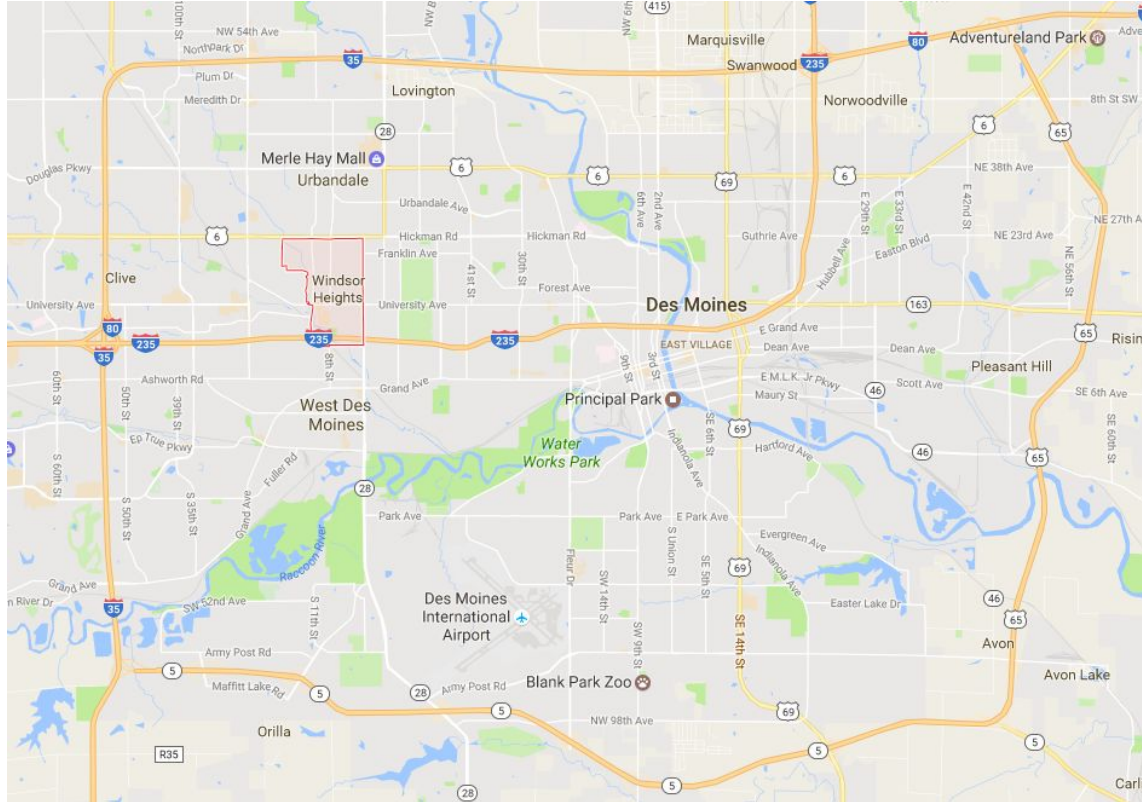
City Sales (> \$250,000)



City Population

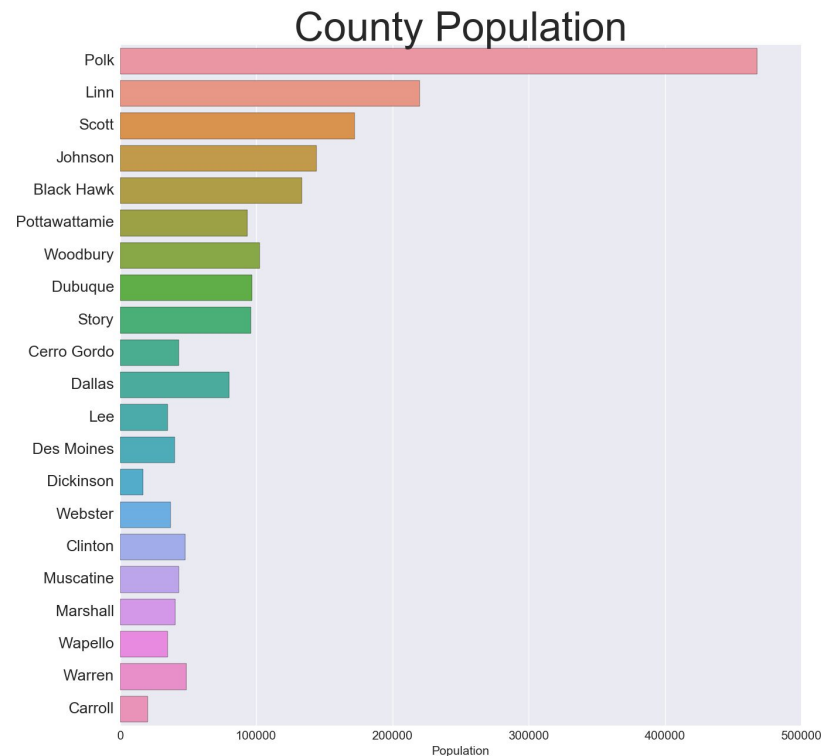
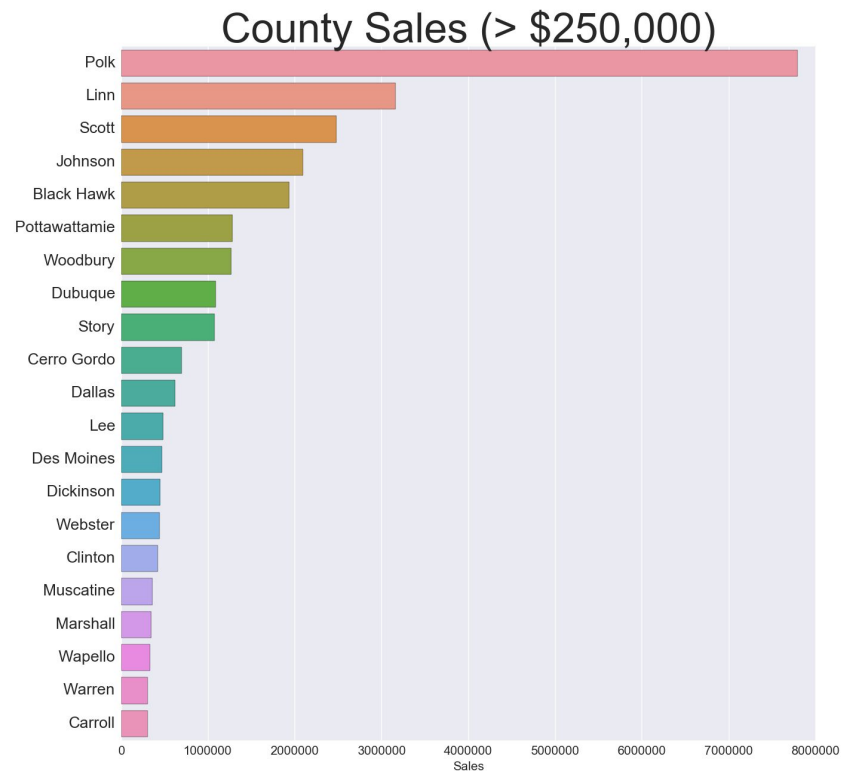


# WINDSOR HEIGHTS



- Windsor Heights is pretty close to Des Moines
- Even if the Windsor Heights population isn't big, people may still go out there to buy their liquor.
- Average Bottle Retail in Windsor Heights is **\$16.14**
- Average Bottle Retail in Des Moines is **\$15.01**

# Liquor Sales by County



# Liquor Sales by Store



# Data

- **Observations**

- 1,400 stores
- 138 stores made \$0 sales in Q1 2015, so I drop those stores from my model
- **1,262 stores** used to fit my model

- **Features**

- Q1 2015 sales
- Counties

# 2015 Projections

Actual 2015 Total Sales for 1,262 stores: **\$27,876,503.10**

Predicted Total Sales 2015 (OLS): **\$27,777,002.44** (Difference of \$99,500.66 with actual values)

Predicted Total Sales 2015 (LassoCV): **\$27,754,999** (Difference of \$121,504.10 with actual values)

**\*\*MSE was slightly lower with the LassoCV model**



# 2016 Projections

- 91 stores with \$0 Q1 2016 sales, so I drop them. Left with **1,309 stores** to predict 2016 Total from Q1 2016.
- Predicted Total Sales 2016 (OLS): **\$28,898,839.76**
  - **Up about 1 million from 2015**
- Predicted Total Sales 2016 (LassoCV): **\$28,861,007.94**
  - **Up about 1 million from 2015**

# Changing the Liquor Tax Rate?

- I built my model on 10% of the Iowa Liquor Sales dataset and I predicted a \$1 million increase for that 10%...
- Very roughly, I project there will be about **\$10 million** more in liquor sales in 2016 than in 2015

**3.7%**

GROWTH

Questions