Advanced Analytics Case Study

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What We'll Cover

- The Prompt
- Case 1 & Case 2
  - Data
  - Analytical Approach
  - Insights
- Conclusions
- QA

Prompt

What is the expected volume and revenue for a product when discounted.

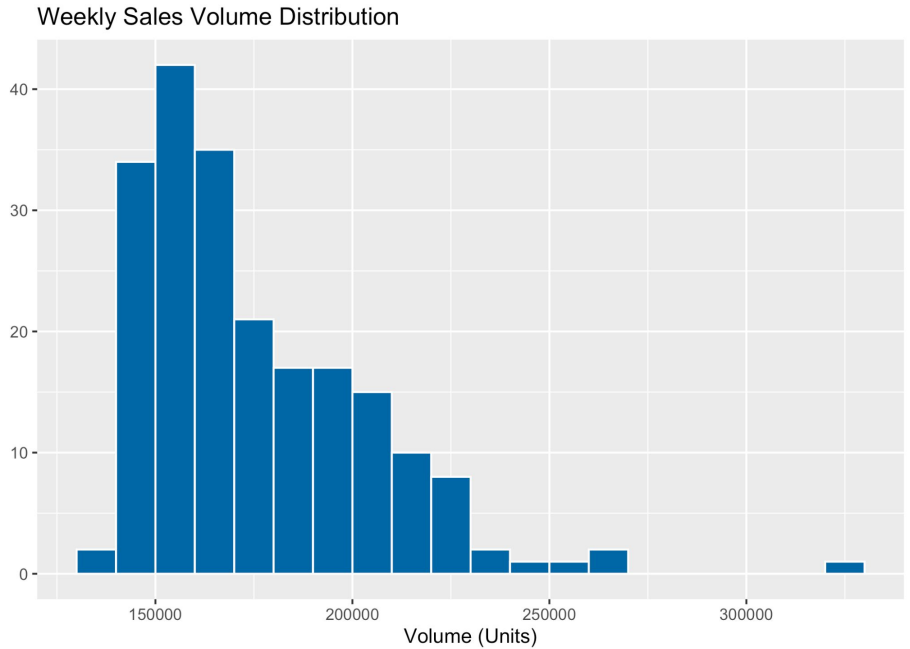
Key Points

- Suggested retail price: $4.99
- Desired promotional price: $4.25
- 120 weeks of data

Case 1

Data

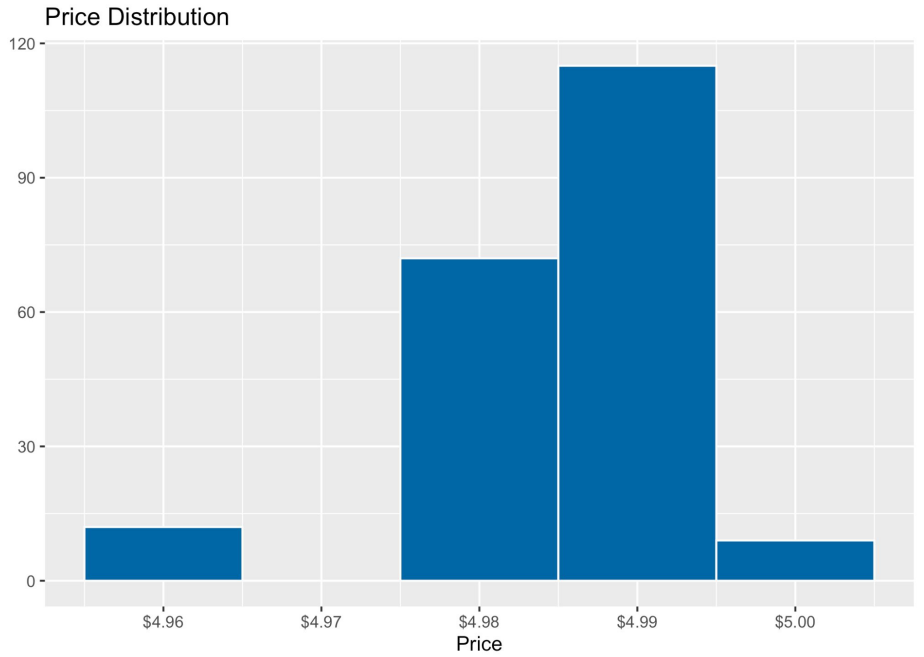
- Dates Range From 01/10/2016 to 12/29/2019
- Average weekly revenue of $850,494



	Volume	Price	Revenue
Minimum	135,734	$4.96	$676,559
Mean	175,250	$4.99	$850,494
Max	324,113	$5.00	$1,471,057

Analytical Approach

- OLS Regression
- t-test Hypothesis Testing

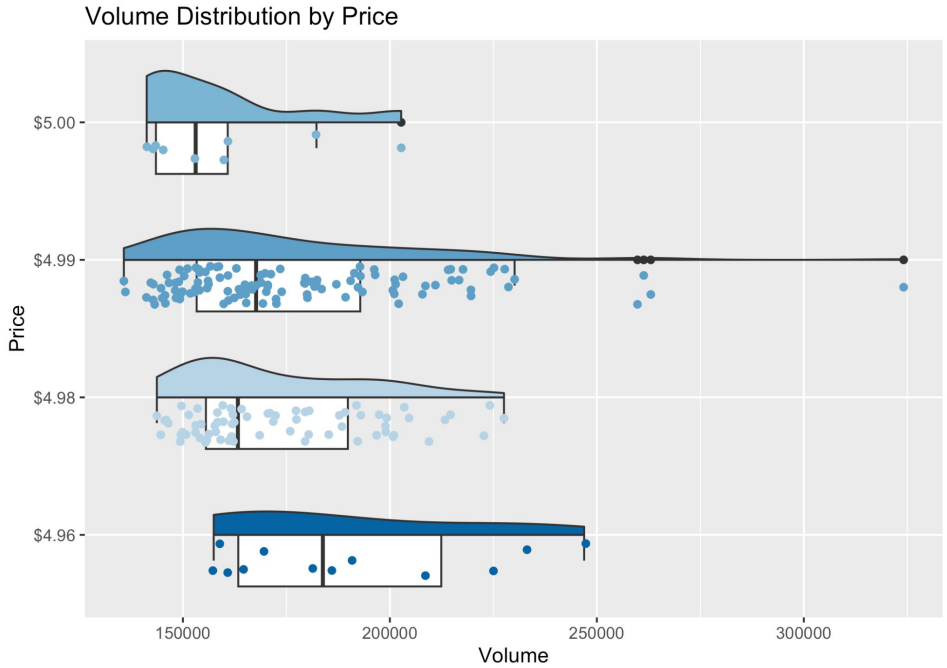


Insights

- These data are insufficient to accurately estimate sales volume
  - Why?
    - Statistically insignificant results
    - Not enough variability in price
  - However
    - Results suggest time is an important factor in sales volume

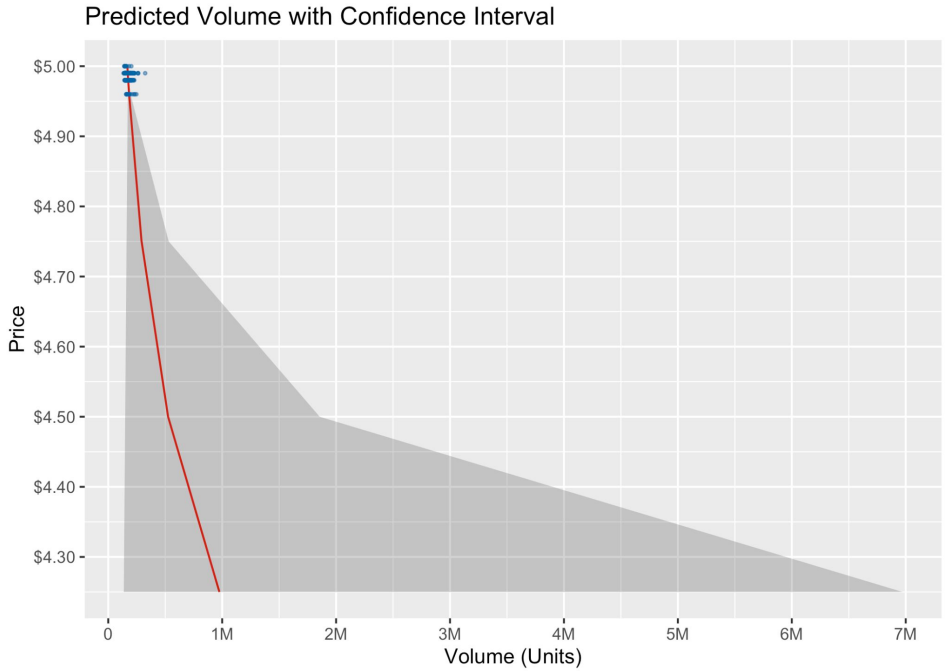
Insights Issues: Variability

- All prices are within $0.04 range
- No observations near suggested promotional price
- No statistical difference in sales volume between suggested retail price and others[1]



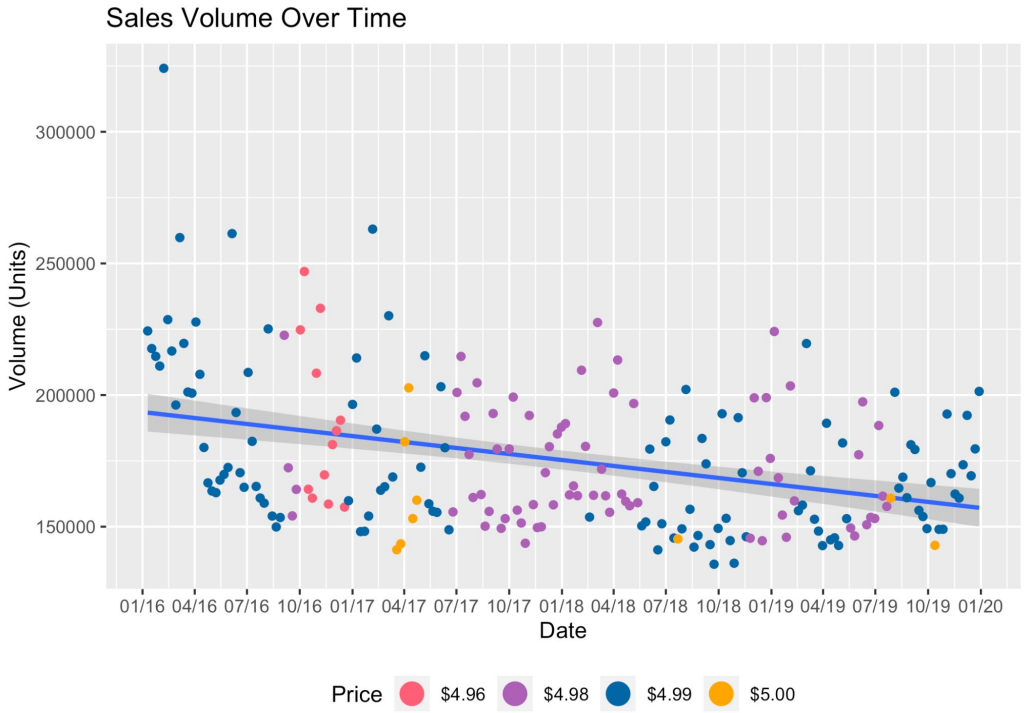
Insights Issues: OLS Regression

- Regression Results
  - Lack of variability in price limits our ability to make assumptions
  - Desired Price is too far away from data



Sales Volume & Time

- Statistically significant link between date and sales volume
- Sales are trending downward



Case 2

Case 2

What is Different?

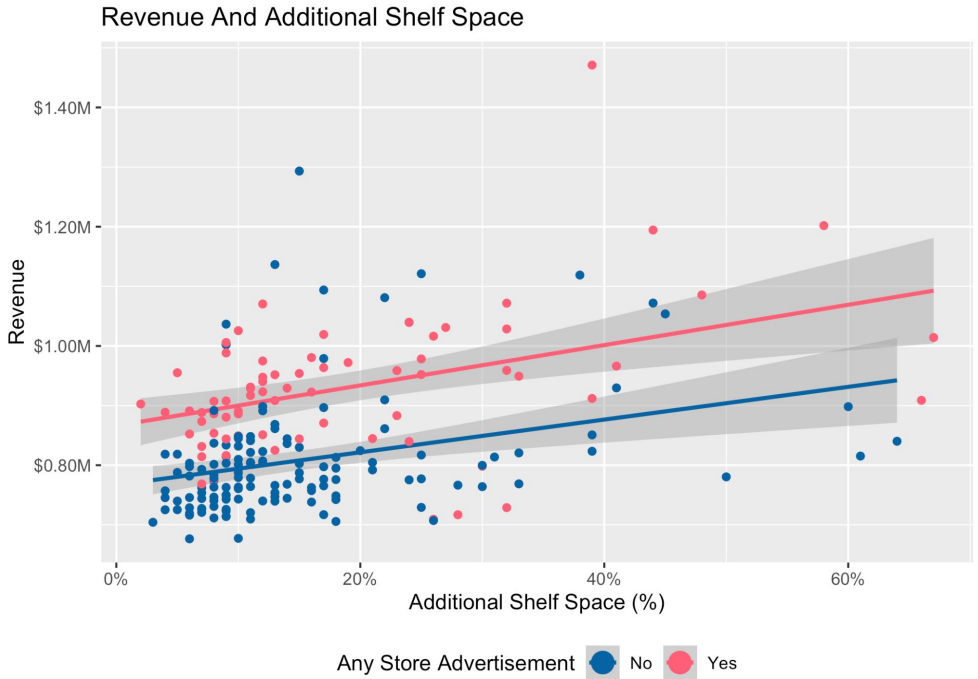
- Same dataset with new columns.
  - Number of Stores
  - Additional Shelf Space (%)
  - Any Store Advertisement

Analytical Approach

- What can we learn from the new data?
- How do these new data affect sales volume?
- Are there significant links between these data and price?

Insights:
Sales Volume

- Additional Shelf Space is positively correlated with revenue
- Revenue is significantly[1] higher when there is store advertisement



Insights: Prediction Value

- The additional metrics are better predictors of sales volume, but do not add any additional significance to price
- The coefficient for price changes sign when *all* variables are included in the model
- The Law of Demand suggests that sales volume will increase, but there are not enough data to quantify the increase.
    - Nor, can we answer how total revenue will change after the price is reduced to $4.25

Conclusions

- These data are insufficient to predict Sales Volume & Revenue
- However we have uncovered meaningful insights on other factors that influence sales volume

Questions?