



Assessing Marketing Campaigns

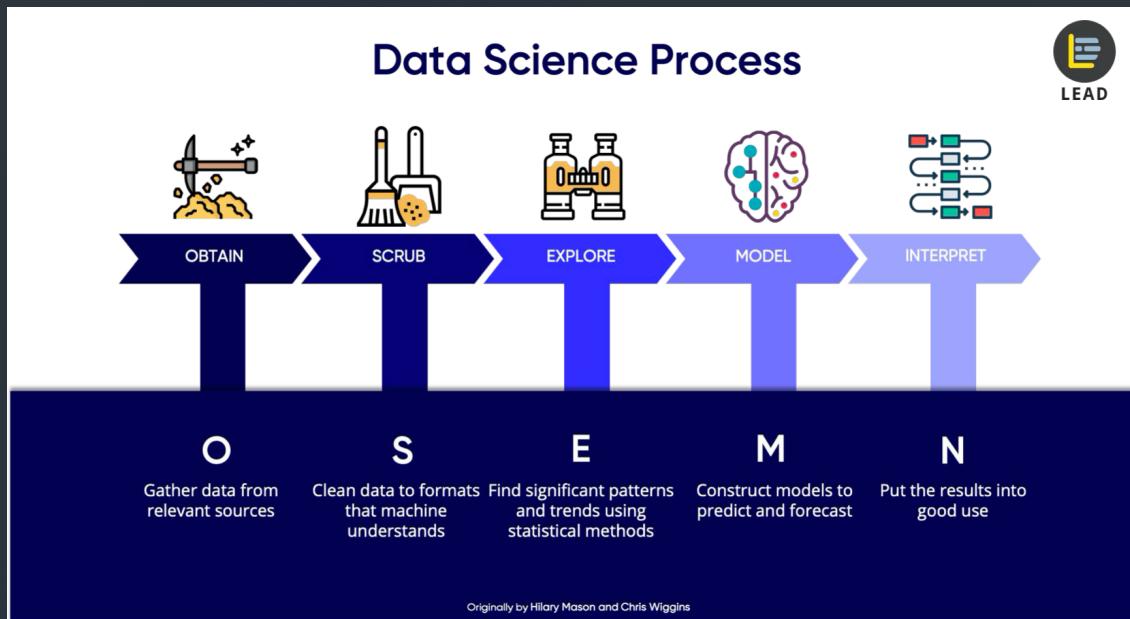
Introduction

- Methodology
- OSEMN Framework
 - Obtain | Scrub
 - Exploratory Data Analysis
 - Modeling
 - Interpret Results
- Limitations
- Future Work
- Thank You

Methodology

- Retail data is provided in order to assess promotional performance.
- Features Include:
 - Identification for - market, location, promotion, week
 - Store Age
 - Sales (in thousands)

OSEMN Framework



Obtain | Scrub

Scrubbing / Data Cleaning

- No significant cleaning processes were completed.
- Manufactured Data
 - Businesses guard their promotional data - real use cases are rarely public.
 - Maintain competitive advantage

Source

- The dataset was provided in Udemy course Data Science & Deep Learning by Rajeev Ratan.

Exploratory Data Analysis

Sales By Promotion

Promo 1:

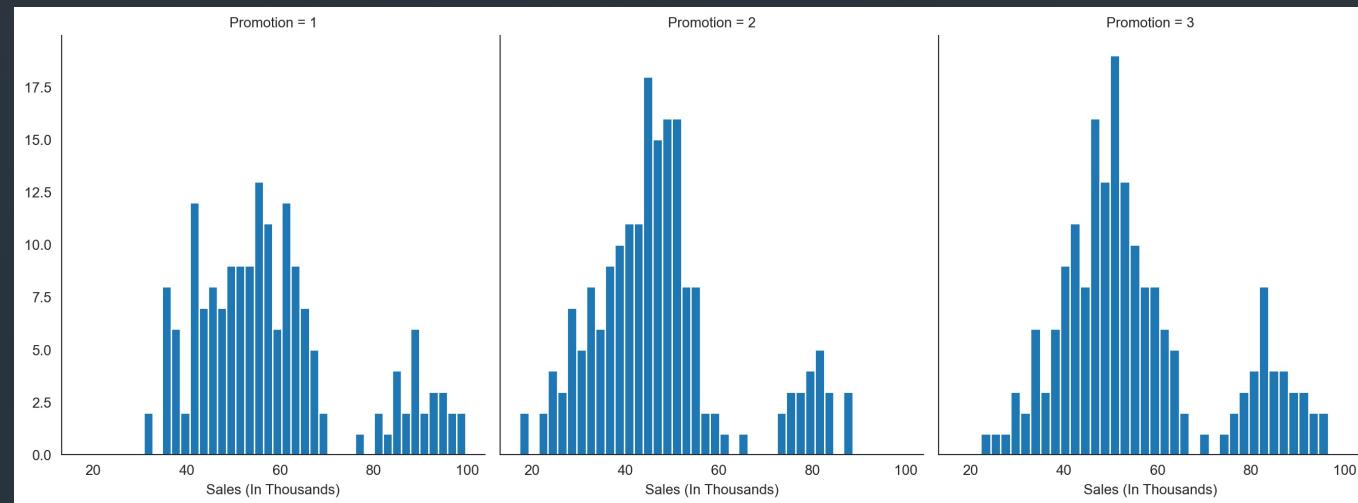
- Lowest value distribution.
- Several high sales 'scores' recorded.

Promo 2:

- Most of the distribution is closer to the average value.
- Smaller number of high sales 'scores' recorded.

Promo 3:

- Appears to have the largest high value sales frequency.



Exploratory Data Analysis

Market By Promotion

Markets By Promotion

Promo 1:

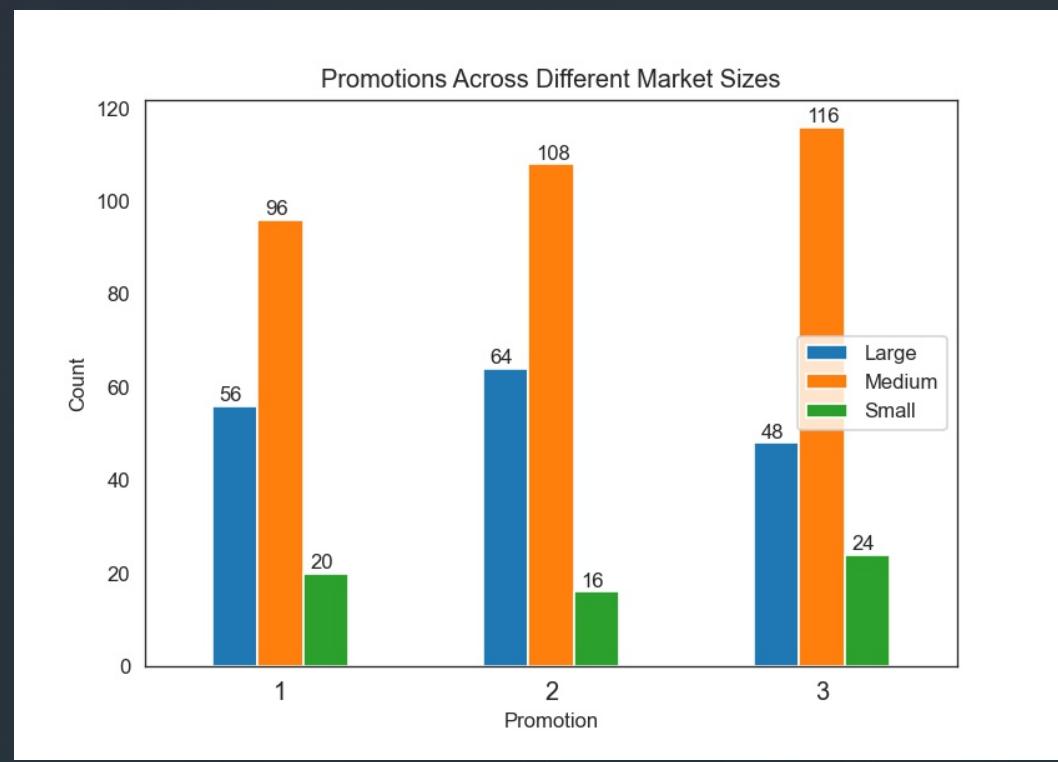
- Lowest number of promotions across all three markets.

Promo 2:

- Most 'large' market promotions.

Promo 3:

- Most 'small' and 'medium' market promotions.



A/B Testing

Generating Statistical Values

T-Value

- Larger value illustrates degree of difference (variation) between promotions

P-Value

- Value smaller than 0.05 reflects statistical significance between promotions.
 - Larger than 0.05 illustrates results may be due to random chance.

Total Sales

- Promotion 1: \$9,993.03
- Promotion 2: \$8,897.93
- Promotion 3: \$10,408.52

A/B Testing

Continued

Promotional Values (in Thousands)

Promotion 1

- Mean Sales: 58.09
- Promotion Count: 172

Promotion 2

- Mean Sales: 47.33
- Promotion Count: 188

Promotion 3

- Mean Sales: 55.36
- Promotion Count: 188

Promotion: 1 vs 2

- T-Value: 6.43
P-Value: 4.29
- Winning Promo: Promo 1

Promotion 1 vs 3

- T-Value: 1.56
P-Value: 0.12
- Result: No significant difference between promo 1 and 3

Interpret Results | Insights

- Promotion 1 clearly outperformed Promotion 2.
- Promotion 1 and Promotion 3 produced similar results.
 - Note: The difference in promotions may be due to random chance.
- The variation in total sales can be explained by the difference in the number of occurrences of per promotions.
 - Promotion 3 had more the 1

Limitations & Future Work

Limitations

- Illustrative business data
- Lack of context
 - Time Period
 - Industry
 - Region

Future Work

- An ideal dataset would include additional client information that mimics client trends found in today's consumer markets.
- Specific market, multiple products and promotions.
 - Test for outside factors that may influence price.

THANK YOU!

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Additional projects can be found on Github.

Username: [miguelangelsantana](#)