

### Objective

- Min 20% increase in High meal order capacity centers from current levels based on an ultra-efficient AI generated sales forecast.
- Enhanced forecasting using SXI.

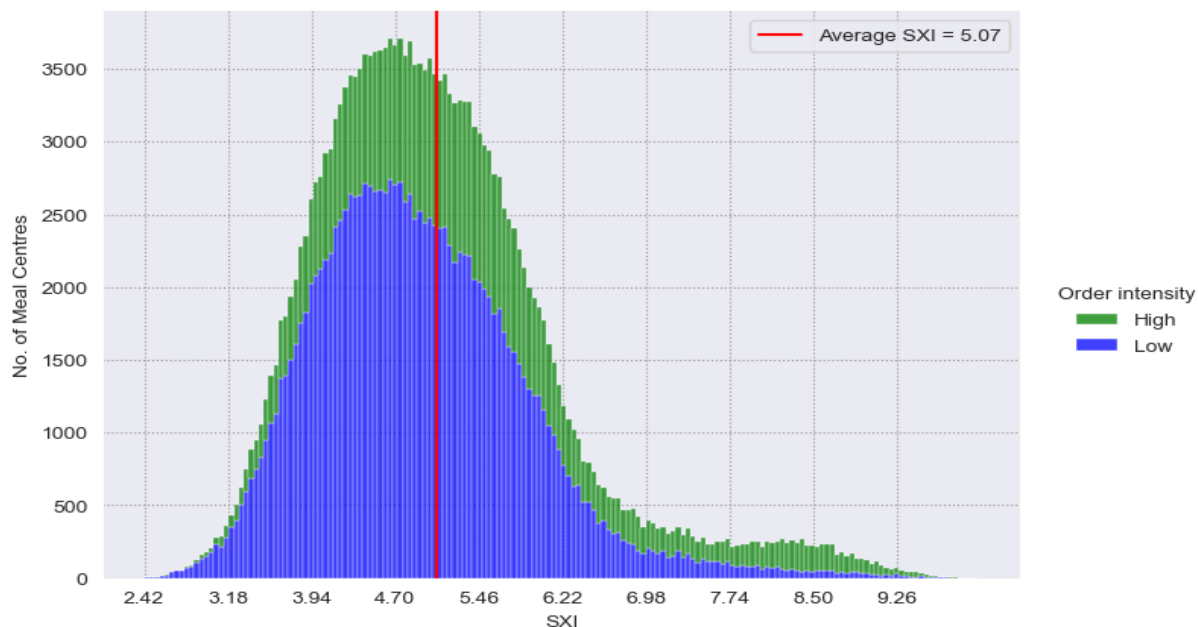
### SXI Hypothesis

- SXI is a proxy/surrogate for all features responsible for ensuring high or low meal order capacity centers. The higher the SXI, the better is the likelihood of a high meal order capacity centers and hence increasing SXI score should lead to higher meal order capacity centers.

### SXI Definition

- **Sriya Expert Index (SXI):** Dynamic score/index obtained from a proprietary formula consisting of weights from 10 ML algorithms. SXI is a super feature and is a true weighted representative of all important features. Converts a multi-dimensional hard to solve problem into a simpler 2-dimensional solution (problem solved).
- **SCORE + CORRELATE = IMPROVE**

## Discussion & Results



### 1. Exploratory Data Analysis

2,00,000 centers were distributed to 61970 good and 1,38,030 bad. Good are number of centers with high meal order capacity centers and Bad are number of centers with low meal order capacity centers. So, 30.99% have high meal order capacity centers and 69.01% have low meal order capacity centers.

## 2. SXI - Exploratory Data Analysis

Current Average SXI is **5.07**. No. of total centers above 5.07 is **89125** and of these **34036** have high meal order capacity and **55089** have low meal order capacity. So, centers having High meal order capacity (%) is **38.19%** and centers having low meal order capacity are **61.81%**.

Correspondingly No. of total centers below 5.07 is **110,875** and of these **27934** are high and **82941** are low. So, centers having high meal order capacity (%) is **25.19%** and those having low is **74.8%**.

So SXI is a perfect proxy/surrogate for centers with High meal order capacity centers and above average SXI the ratio of good outcome is **1.23x** overall average and below average SXI this ratio of good outcome is **0.8** overall average. So, the increase in SXI leads to increase in high meal order capacity centers.

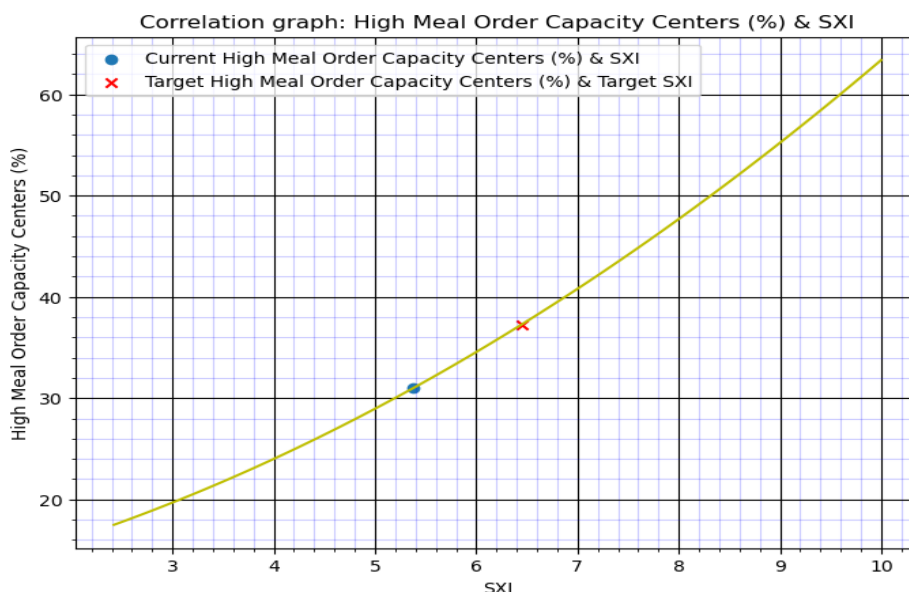
## 3. Predictive AI

- Auto-AI Prediction accuracy is **78.9%** and the best performing algorithm is **XGBoost**.
- SXI Prediction accuracy of centers with high meal order capacity is **99.9%**.
- Ratio of SXI/Auto-AI prediction accuracy is **1.27**.

## 4. Precision AI

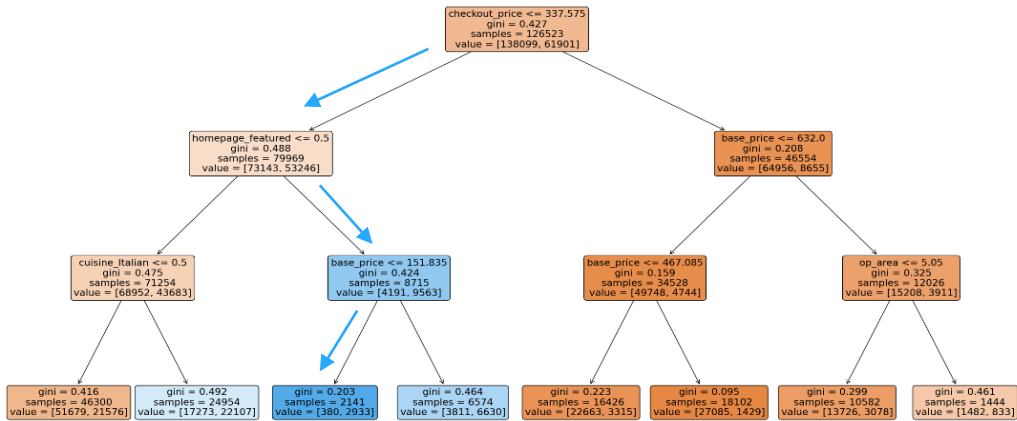
The desired increase in target variable which is high meal order capacity center is 20%. The original high meal order capacity centers are **30.98 %** so a **20%** increase should lead to a **37.18%** overall high meal order capacity centers (**30.98 \*1.2**), which means **74,360** of the centers from 2,00,000 would become centers with high meal order capacity rather than current **61970**.

The correlation between SXI and High Meal Order Capacity Centers is **0.99**. This implies that SXI and High Meal Order Capacity Centers are highly positively correlated to each other. Hence, an increase in SXI will result in an increase in High Meal Order Capacity Centers.



## Current SXI and Target SXI Decision Trees

### a. Current SXI Decision Tree



#### Interpretation: -

**Node 1:** Checkout Price  $\leq$  \$337.57 (No. of High meal order capacity centers in parent node: 61901)

**Left split:** 53246 - majority positive class; gini:0.48, **Right Split:** 8655; gini:0.20

(Total value for the next split: 53246)

**Node 2:** Featured in Website Homepage  $\geq$  50% probability (Right split so it is False symbol changes from  $<$  to  $>$ )

**Left split:** 43683; gini:0.47, **Right Split:** 9563- majority positive class; gini:0.42

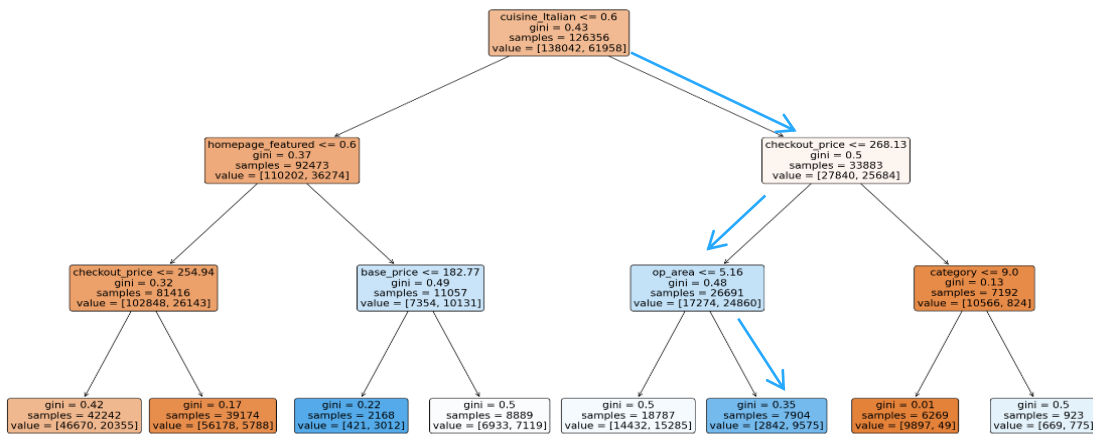
(Total value for the next split: 9563)

**Node 3:** Base Price  $\leq$  151.83 dollar

**Left split:** 2933- majority positive class; gini:0.20, **Right Split:** 6630; gini:0.46 – Final Leaf Node.

- ✓ **2933** are High meal order capacity centers.
- ✓ Success Ratio is: **5.50%**  $(2933/53246) * 100$  – (Total value of the positive class in the final leaf node/Total value of the positive class after first split)  $* 100$

### b. Target SXI Decision Tree



Target SXI from correlation curve for 20% increase in target outcome of higher meal order capacity centers is **6.45**.

**Interpretation: -**

**Node 1:** Italian Cuisine Preferred >= 60% more likely (No. of High meal order capacity centers in parent node: 61958)

**Left split:** 36274 - majority positive class; gini:0.37, **Right Split:** 25684- majority positive class; gini:0.50

(Total value for the next split: 25684)

**Node 2:** Checkout Price <= \$268.13 (Right split so it is False symbol changes from < to >)

**Left split:** 24860- majority positive class; gini:0.48, **Right Split:** 824; gini:0.13

(Total value for the next split: 24860)

**Node 3:** Operational Area >= \$5.16 sq.units

**Left split:** 15285; gini:0.5, **Right Split:** 9575- majority positive class; gini:0.35 – Final Leaf Node.

- ✓ **9575** are High meal order capacity centers.
- ✓ Success Ratio is: **37.28%**  $(9575/25684) * 100$  – (Total value of the positive class in the final leaf node/Total value of the positive class after first split) \* 100

## Conclusion

1. SXI Prediction accuracy is **27%** superior to standard Sriya-AI.
2. The correlation between SXI and High Meal Order Capacity Centers is **0.99**. **SXI is a perfect proxy/surrogate to business outcome and hence SXI improvement will lead to business outcome improvement.**
3. Target 20% increase in High meal order capacity centers is achievable by increasing target SXI to **6.45** from current **5.07** levels. This would result in **74,360** High meal order capacity centers up from current 61,970 levels.

Initial Increase from current levels:  
**20% or 12,390**

**SXI Impact**  
*Potential*

4. Based on the inference from the correlation graph w.r.t SXI there is a **potential 69.45 % compounded increase** if all recommendations in target SXI are completely implemented.

Compounding Increase from current levels:  
**69.45% or 43,036**

**SXI Impact**  
*Potential*