Improving NRA Membership Through Data-Driven Insights

Subtitle: *Predictive Modeling for High-Revenue Restaurant Targeting*

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Agenda

1. Key Challenges & Opportunities
2. Methodology
3. Model Performance Comparison
4. Feature Importance
5. Prediction Results
6. Recommendations
7. Q&A

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Key Challenges & Opportunities

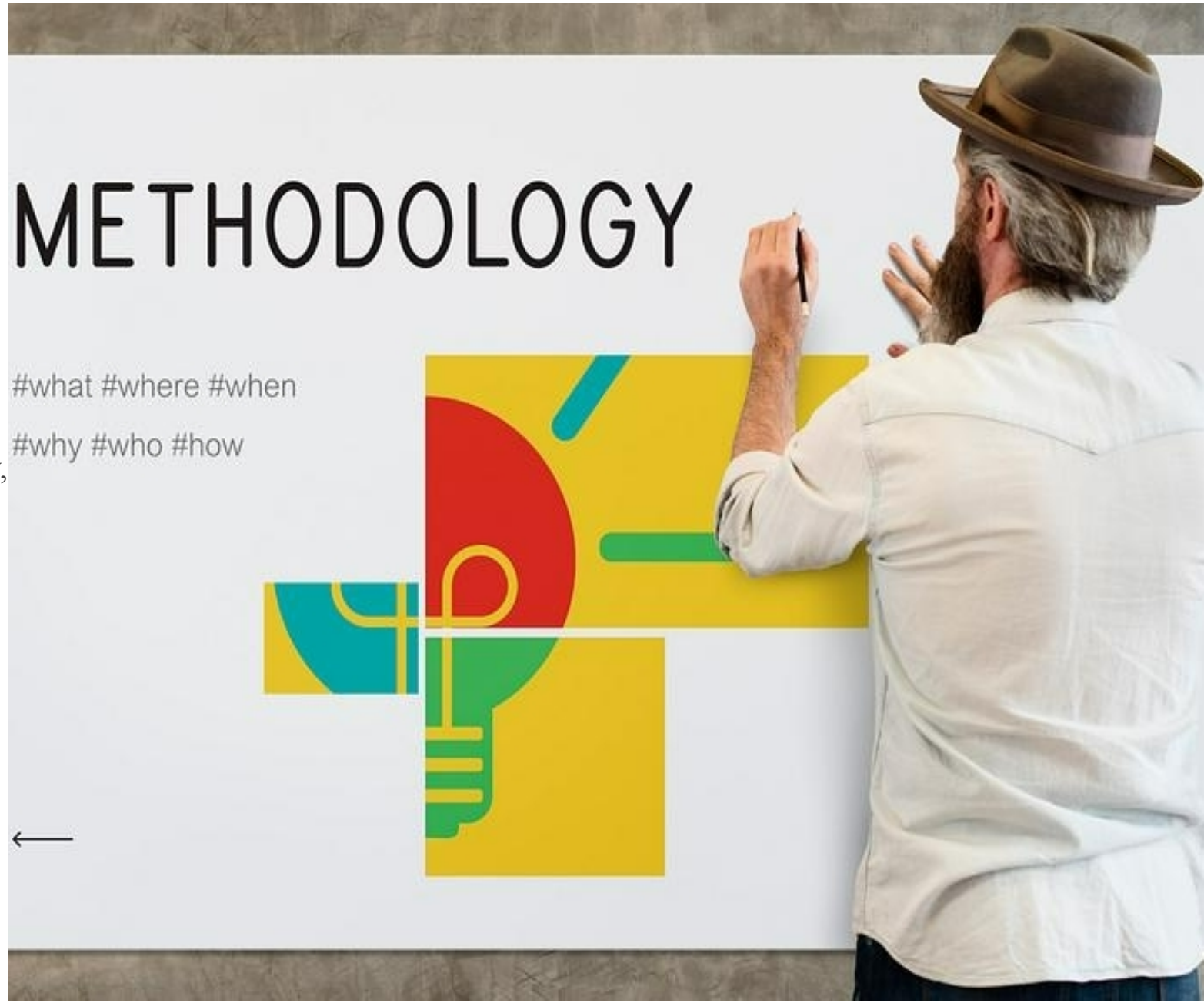
Challenges:

- Decline in NRA membership over the past year.
- Difficulty in attracting high-revenue restaurants.

- **Opportunities**:
  - Use predictive modeling to identify high-revenue restaurants.
  - Focus outreach efforts on high-potential prospects.

Methods Used:

- **Dataset**:
  - Restaurant features: Rating, Seating Capacity, Average Meal Price, etc.
  - Target variable: Revenue_cat (1 if revenue ≥ $656,071, 0 otherwise).
- **Models Trained**:
  - Logistic Regression
  - Random Forest
  - Gradient Boosting
- **Evaluation Metrics**:
  - Accuracy, Precision, Recall, F1-Score.



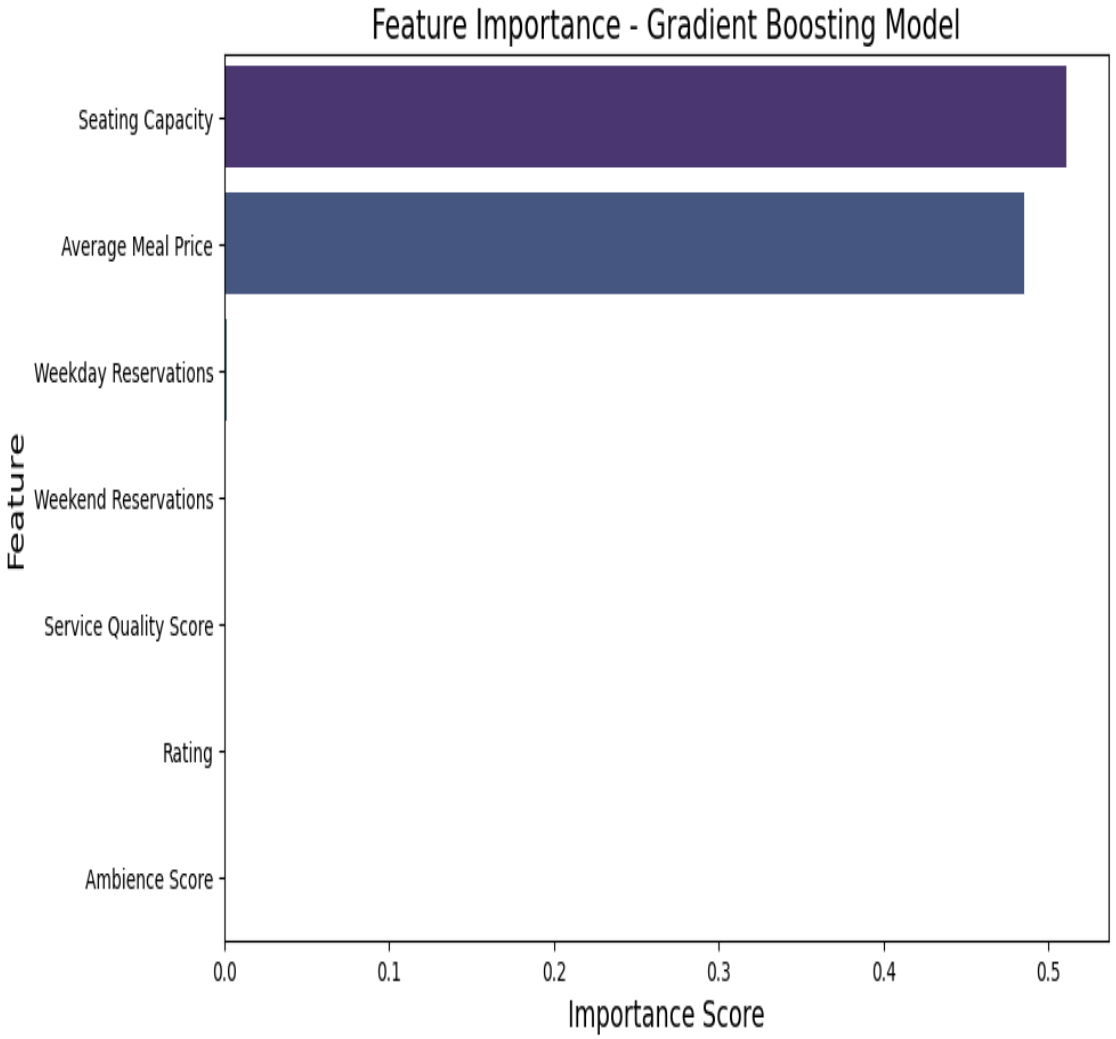
Model Performance Comparison

Comparison Table:

Key Takeaway: Gradient Boosting is the best-performing model.

Model	Accuracy	Precision	Recall	F1-Score
Logistic Regression	0.9514	0.9469	0.9380	0.9424
Random Forest	0.9606	0.9662	0.9398	0.9528
Gradient Boosting	0.9857	0.9813	0.9850	0.9831

Feature Importance



- **Top Features**:
  - **Average Meal Price** (0.45)
  - **Seating Capacity** (0.30)
  - **Ambience Score** (0.10)
  - **Service Quality Score** (0.08)
- **Recommendation**:
  - Focus on restaurants with higher average meal prices and larger seating capacities.

Prediction Results

For 100 New Restaurants:

- **Correctly Forecasted as "1"**: 42
- **Correctly Forecasted as "0"**: 57
- **Incorrectly Forecasted as "1"**: 1
- **Incorrectly Forecasted as "0"**: 1

Key Takeaway:

- The model is highly accurate, with 99 correct predictions out of 100.

Recommendations

- **Target High-Impact Variables**:
  - Focus on restaurants with higher **Average Meal Price** and **Seating Capacity**.
- **Tailor Membership Benefits**:
  - Offer benefits that align with the needs of high-revenue restaurants.
- **Monitor Key Metrics**:
  - Continuously track top features to refine the targeting strategy.

Invitation Strategy

Restaurants to Invite:

- Use the Gradient Boosting model to identify high-revenue restaurants (class "1").
- Focus on restaurants with:
  - High average meal prices.
  - Large seating capacities.
  - High ambience and service quality scores.

Why These Restaurants?:

- They are more likely to benefit from NRA membership and engage with the Association.

Conclusion & Q&A

Summary:

The Gradient Boosting model is highly effective at identifying high-revenue restaurants.

Targeting the right prospects will maximize NRA membership growth

Next Steps:

- Implement the model for pre-screening potential members.
- Monitor performance and refine the strategy over time.

- **Q&A**:
  - Open the floor for questions from the Board.

References

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Thank You

NATIONAL RESTAURANT ASSOCIATION