Navigating the Post-Covid Landscape: Insights into Hotel Industry and Employment Trends

Client Presentation #2

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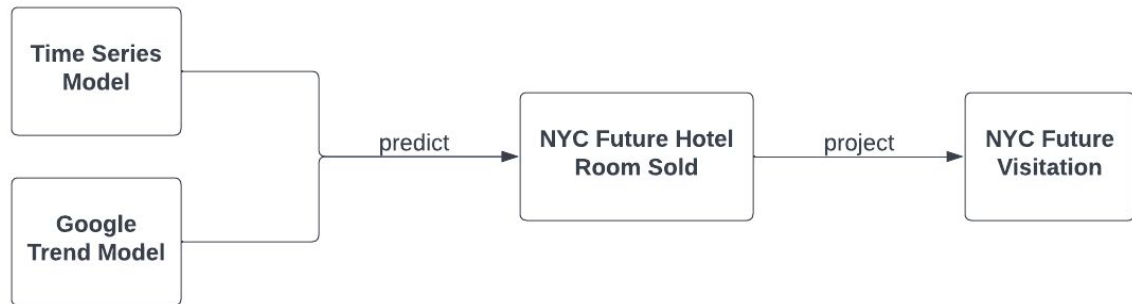
I ♥ NY

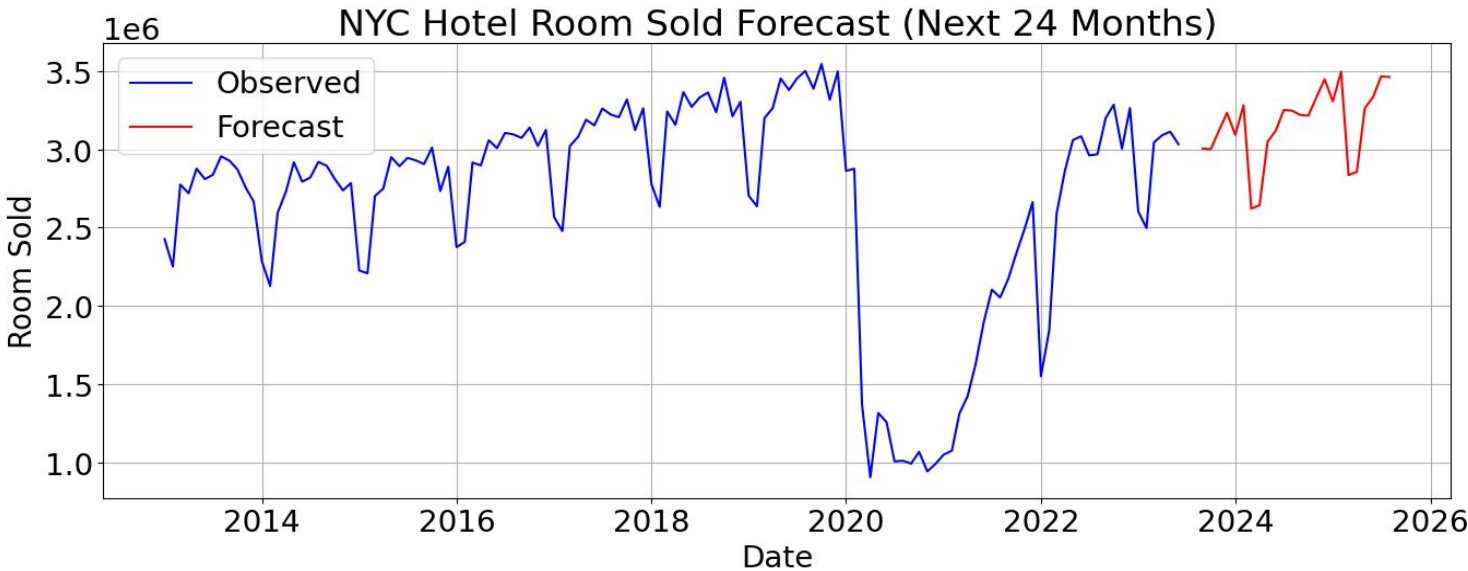# Our main goal is to predict future visitation in NYC

Research Question

How can Historical Data Predict **Future Visitation** in NYC?

Visitation Forecast Process

Time Series Model

Google Trend Model

predict → NYC Future Hotel Room Sold

project → NYC Future Visitation

We predict long-term NYC Room Sold with traditional time series model

NYC Hotel Room Sold Forecast (Next 24 Months)

12 months forecast

Average Monthly
Room Sold of **3.05M**

24 months forecast

Average Monthly
Room Sold of **3.16M**

**Mean Absolute
Percentage Error**

15.32%

We make more accurate short-term NYC Room Sold prediction based on Google Trend

Independent Variable

Monthly NYC hotel Related Google Search Volume

- **"Lag Search"**: the number of Google searches in the previous month
- **"Lag 2 Search"**: the number of searches two months prior

Dependent Variable
Monthly Hotel Room Sold in NYC

| 01 | Google Trend Model 1 | Regression model with "Lag Search" as a predictor |
| 02 | Google Trend Model 2 | Regression model with "Lag 2 Search" as a predictor |
| 03 | Google Trend Model 3 | Regression model with both "Lag Search" and "Lag 2 Search" as predictors |

Predictive Room Sold Results

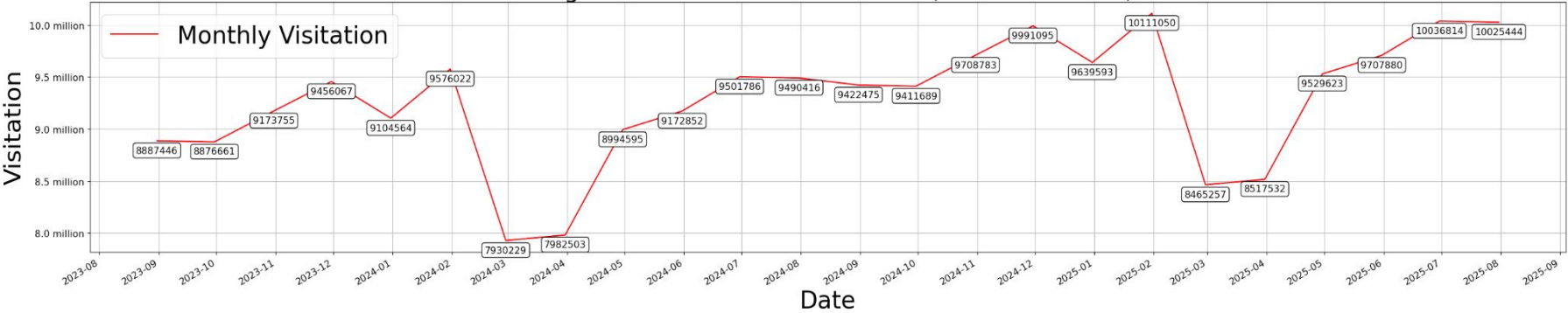| Month	Rooms Sold
2023-7	2645355
2023-8	3519860
2023-9	3324324
2023-10	2842415
2023-11	3254182
2023-12	2071141

← Final Model

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We project NYC **future total visitation** from our **predictive hotel room sold**
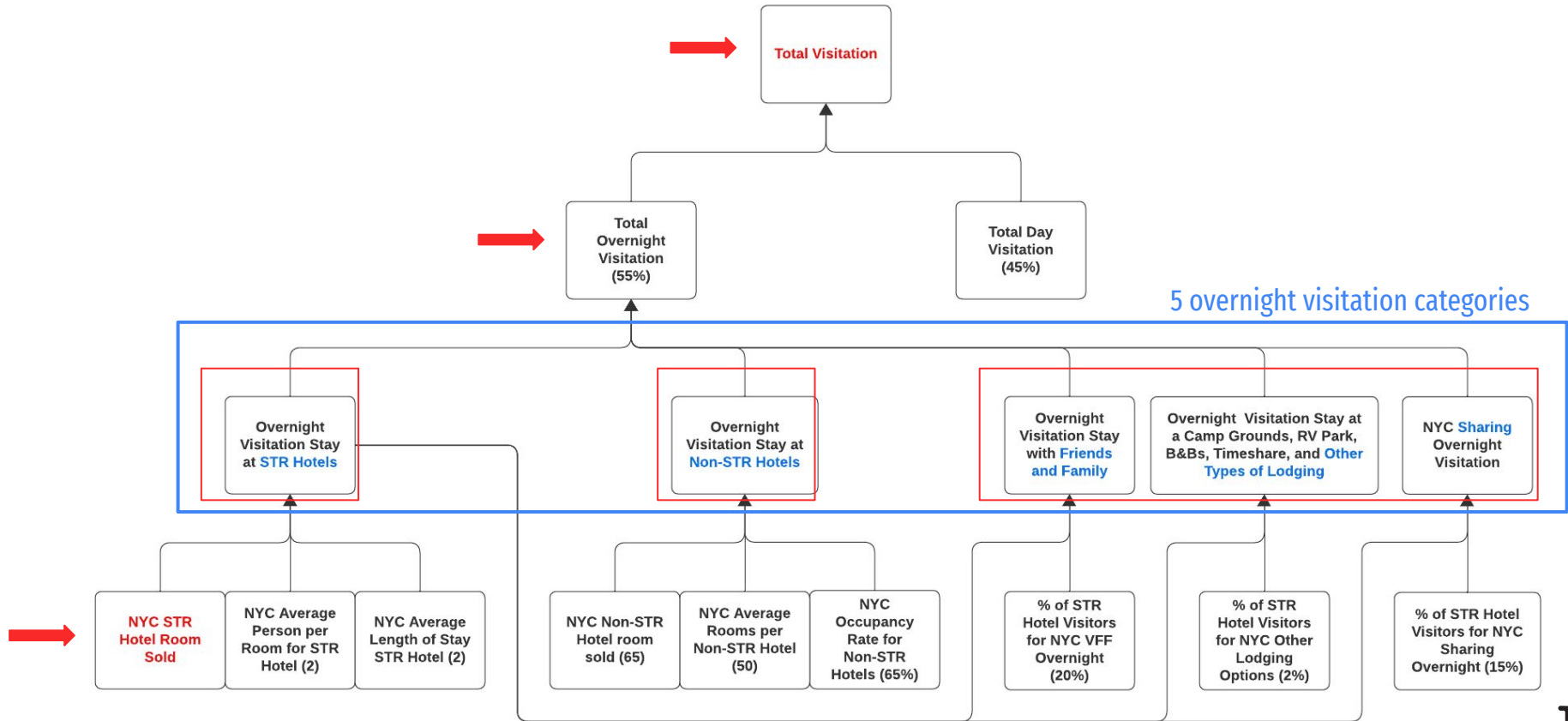
NYC visitation level will grow steadily in the next 24 months

Long-term NYC Visitation Forecast (Next 24 Months)

24 months forecast
Monthly Average Visitation of **9.3M**

12 months forecast
Annual Total Visitation of **108M**

24 months forecast
Annual Total Visitation of **114M**

YoY Growth Rate
5.94%

We have 5 parts of final deliverables for this project

01	Model Demo	The code to reproduce the model demo allowing input values to create different visitation scenarios and generate visitation prediction results
02	Video Instruction	An instructional video providing a step-by-step walkthrough of the processes along with explanations on how to use the model demo
03	Model Estimation Script	The code for the model estimation process with detailed comments, offering insights into the model's functionality and accuracy
04	Datasets	The final datasets used
05	Report	A comprehensive report including results and recommendations

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We have 4 key Success Criteria

Accuracy

Include model comparisons and selections to ensure precise predictions in estimating NYC hotel room sold

Efficiency & Automation

Design an automated process for predicting future NYC visitations with a data processing pipeline and predictive and projective models

User-Friendliness

Develop a user-friendly interface enabling users to input values and generate various visitation scenarios, complemented by an instructional video

Sustainability

Our model is capable of continuously producing future predictions with more comprehensive results when updated with new datasets

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Thank You For Your Time
Any Questions?