WeWork Building Occupancy Forecast

The building occupancy project is to explore demand drivers to **forecast and improve** 450+ WeWork buildings' **monthly occupancy**.

Overview

Key Issue

Low Occupancy

Most WeWork buildings were **65-85%** occupied in years 2016-2019, meaning a 15-35% vacancy for improvement

Potential Causes

#1: Pricing

Is revenue maximized under the current pricing?

#2: Sales Strategy

Is the current focus on new user acquisition effective?

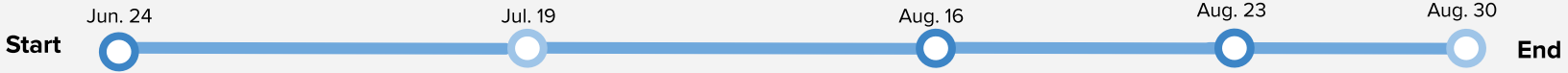
#3: Member Experience

Are WeWork community teams improving experience?

An ML-backed Solution

- **Pricing Logic Reinforcement**
- **Client-Retention Focus**
- **Event-driven Community Management**

Timeline & Approach



Exploration

- Spoke with business stakeholders
- Went through relevant projects
- Explored internal data sources

EDA & Feature Engineering

- Analyzed data thoroughly
- Made assumptions
- Engineered features

Machine Learning

- Trained ML models
- Validated results
- Came up with use cases

Wrap-up

- Pushed code for review
- Presented to 5 teams

Model Methodology

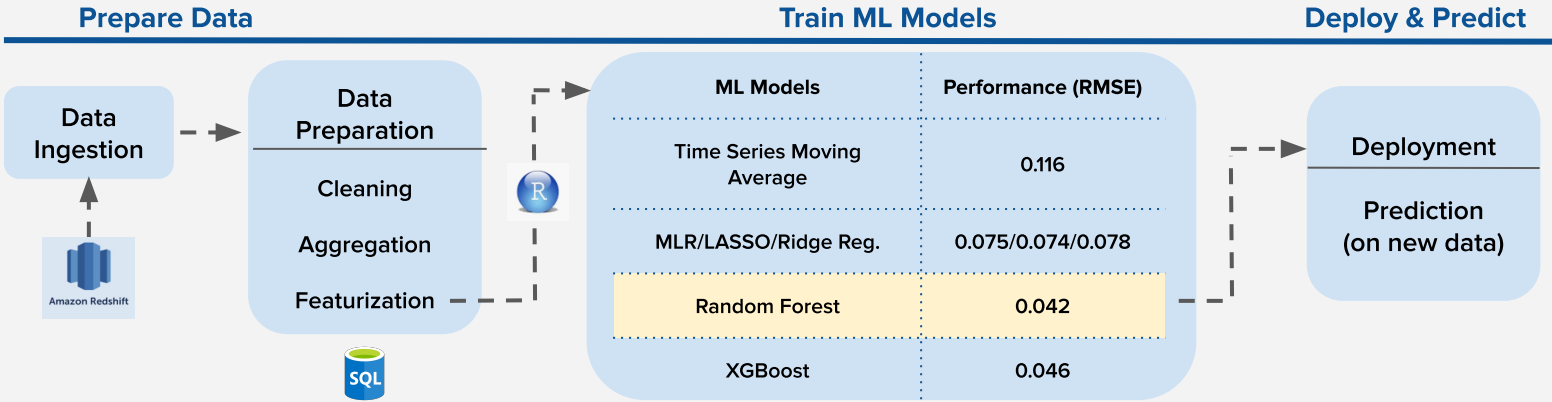
Part 1: Data

Internal Source: Marketing, community, revenue, product, and central data teams.
Size: 11,000+ rows & split 80/20 into training and testing subsets.
Format: Each row is aggregated by building by month with 31 demand signals and the monthly occupancy.

Part 2: Data Input

Variable Category	Historical Occupancy	+	Building-level Demand	+	Neighborhood Attributes	+	Service & Community	+	Discount	=	Future Occupancy
Variable Examples	3-month average occupancy		% of member churn % tour conversion		Bike score Amenity ratings		# of zendesk tickets per member Event participation rate		Decision variable		

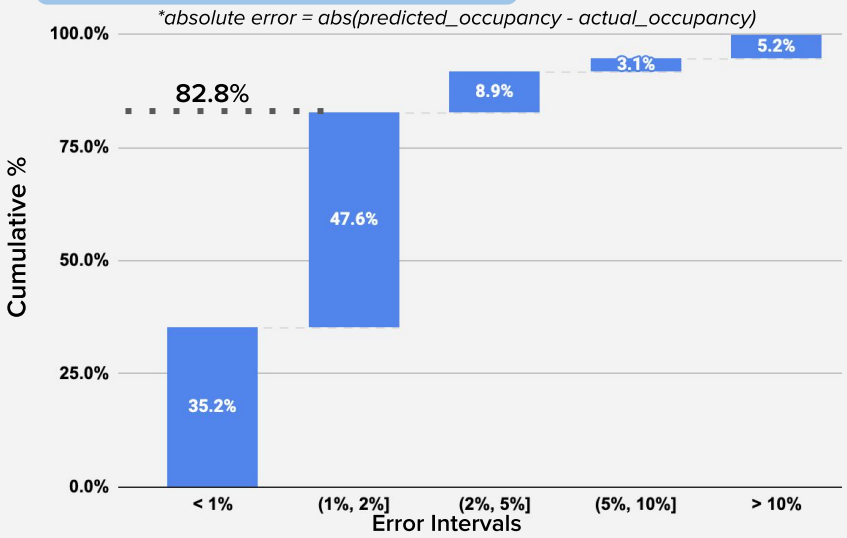
Part 3: Machine Learning Pipeline



Results & Retrospectives

Most predictions are within **2%** of the actual occupancy. The model is **actionable** to drive insights on pricing, sales, and brand enhancement.

Prediction Absolute Error



Takeaway

#1: Overall model accuracy is high.

#2: Mature buildings have better predictions.

Business Impacts

Identify Bad Pricing
(month of Aug., 2019)

Monthly Revenue Gain

1 **Pricing Logic** → **82** buildings were overpriced, **64** buildings were underpriced → **$2.4MM**

2 **Sales Strategy** — Pivot towards **client retention**, which was overlooked in the pursuit of new user acquisition

3 **Brand Enhancement** — Well-planned community events and speedy problem-solving boost **member experience**

Next Steps

Automation: automate the process to be truly **one-click**

Improvement: Incorporate **city-level demand signals**

Validation: **Test model performance** for several more months before roll out