



GROUP 6

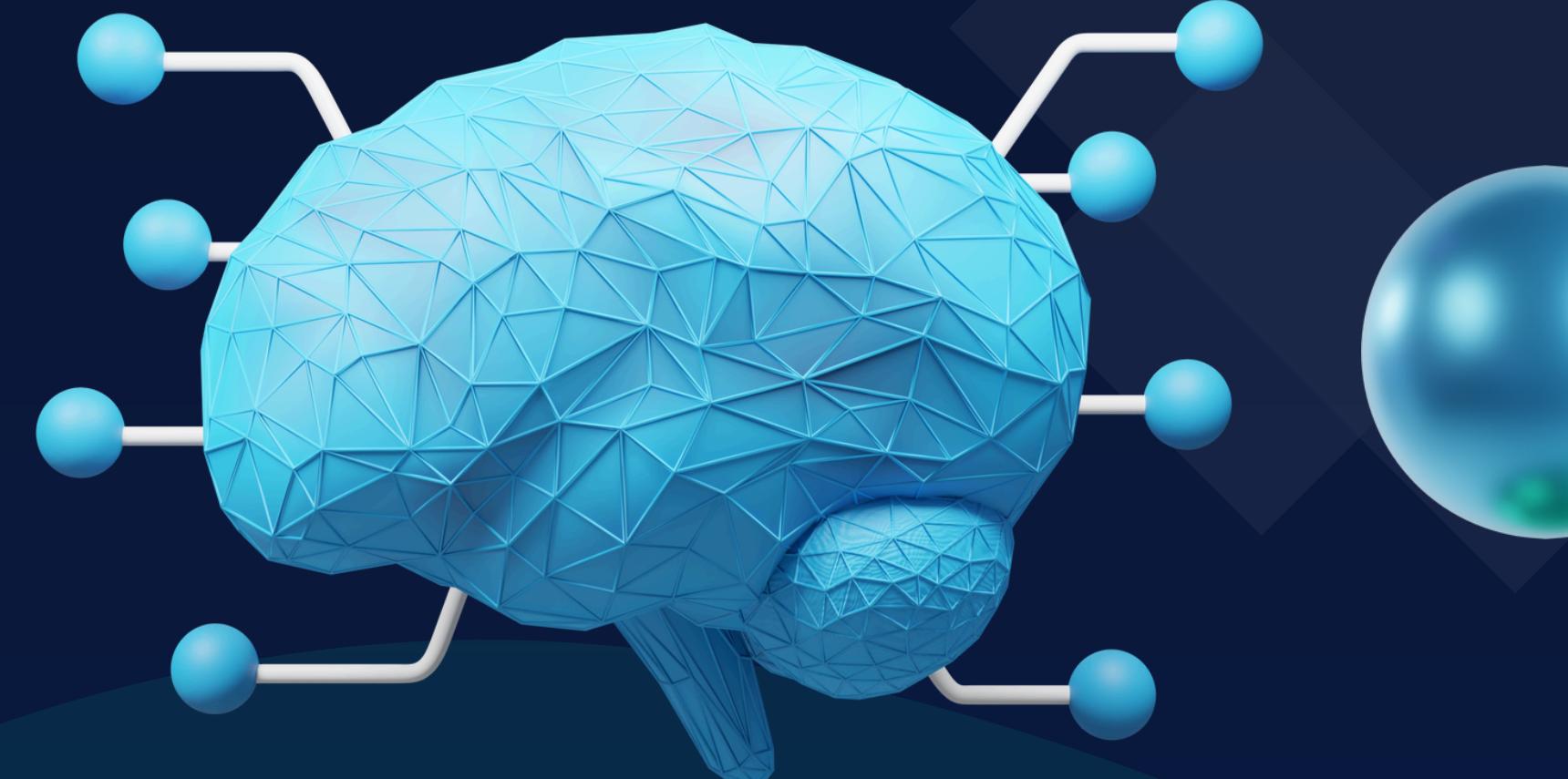
# monitoring GYM USAGE

Data Analysis and  
Forecasting of Student Gym  
Activity

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# PROJECT OBJECTIVE

Objective:

- Record and analyze student gym visits
- Identify peak hours and trends
- Forecast gym footfall

Problem:

- Crowding and uneven usage
- Manual tracking errors
- Need for data-driven planning



DATA

ANALYSIS

INSIGHTS

FORECAST

# DATA COLLECTION & PREPROCESSING

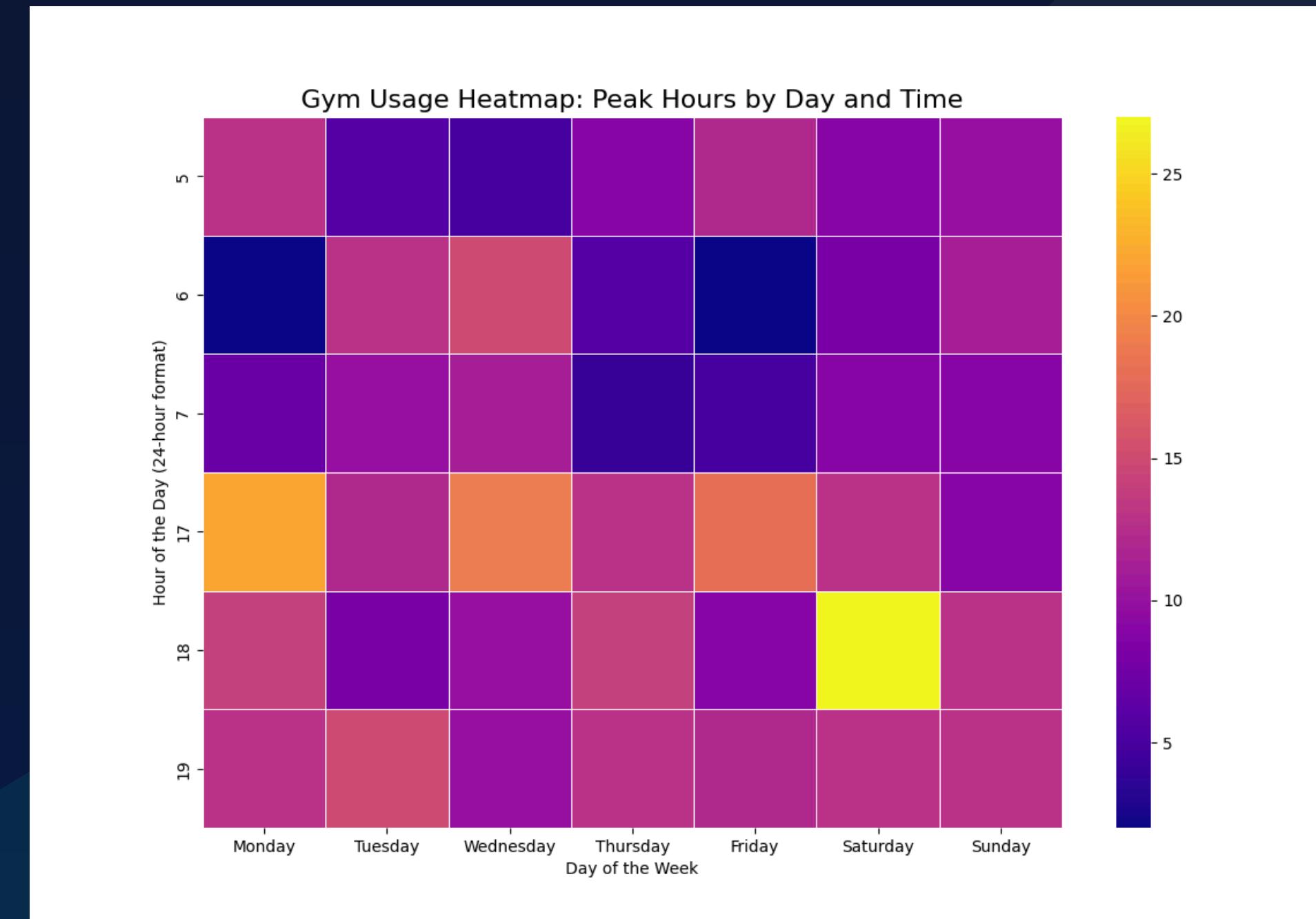
- Data includes anonymized IDs, check-in/out times, durations, and days
- Cleaned and structured timestamps
- Derived features: day, hour, duration
- Anonymized records for privacy

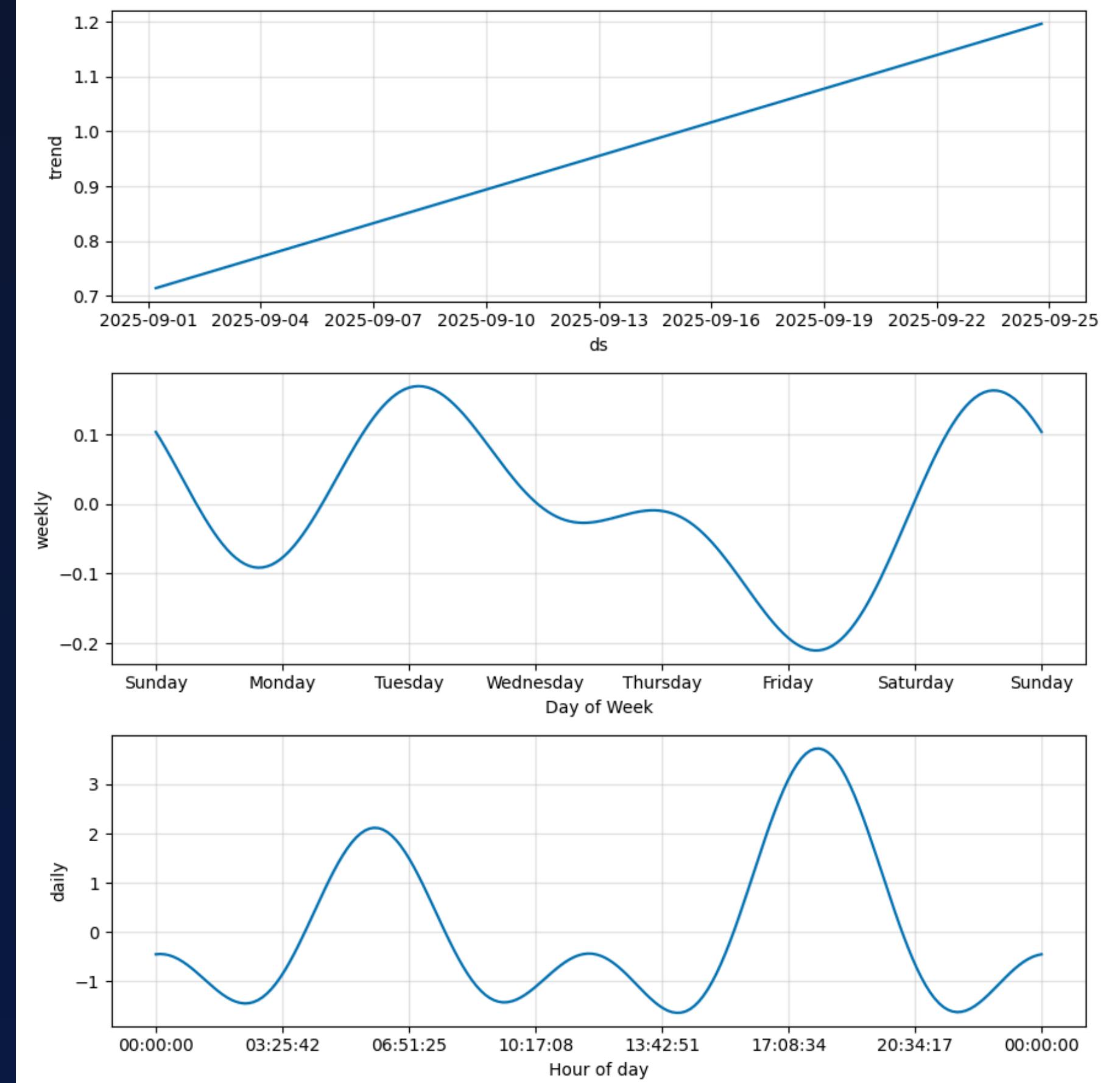
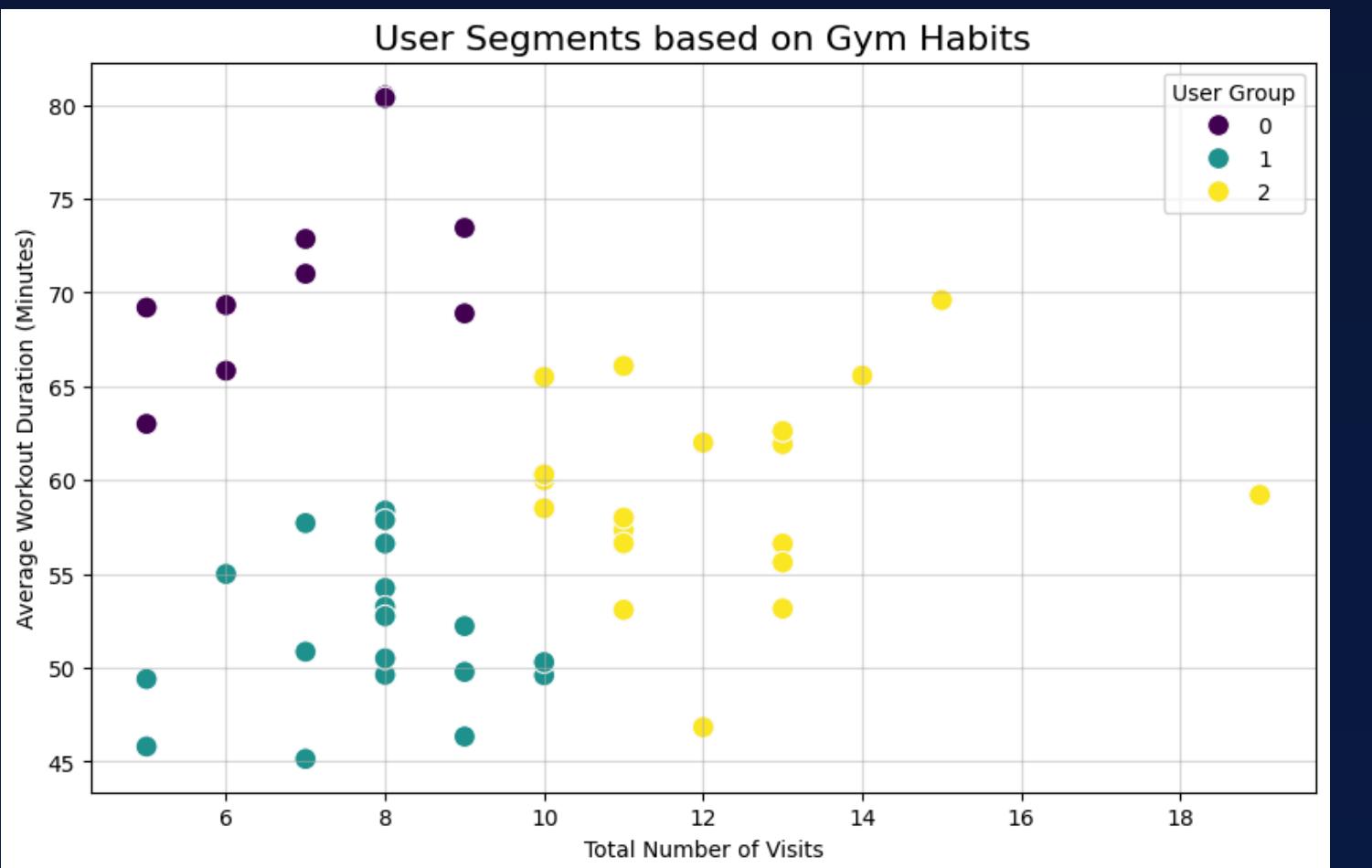
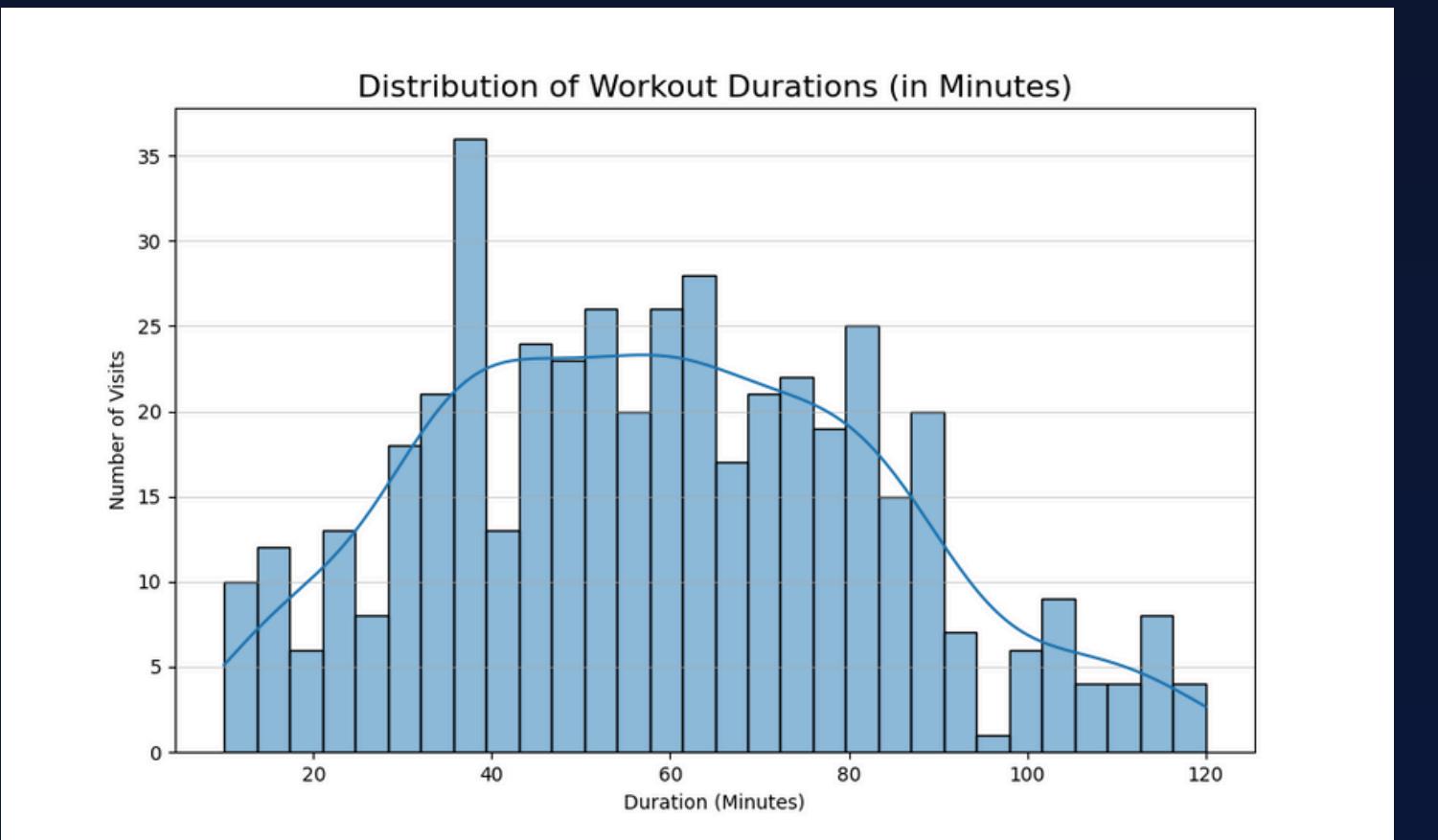
1	User_ID	Date	Check_In_Time	Check_Out_Time	Duration_Minutes	Day_of_Week	Workout_Type
2	1047	2025-09-01	05:22:00	05:54:00	32	Monday	Cardio
3	1006	2025-09-01	05:33:00	06:51:00	78	Monday	Cardio
4	1028	2025-09-01	07:08:00	08:00:00	52	Monday	Strength
5	1035	2025-09-01	07:33:00	08:00:00	27	Monday	Strength
6	1050	2025-09-01	07:45:00	08:00:00	15	Monday	Strength
7	1032	2025-09-01	07:55:00	08:00:00	5	Monday	Cardio
8	1016	2025-09-01	17:06:00	18:05:00	59	Monday	Cardio
9	1037	2025-09-01	17:37:00	18:52:00	75	Monday	Cardio
10	1015	2025-09-01	17:38:00	18:09:00	31	Monday	Strength



# ANALYSIS & MODELS

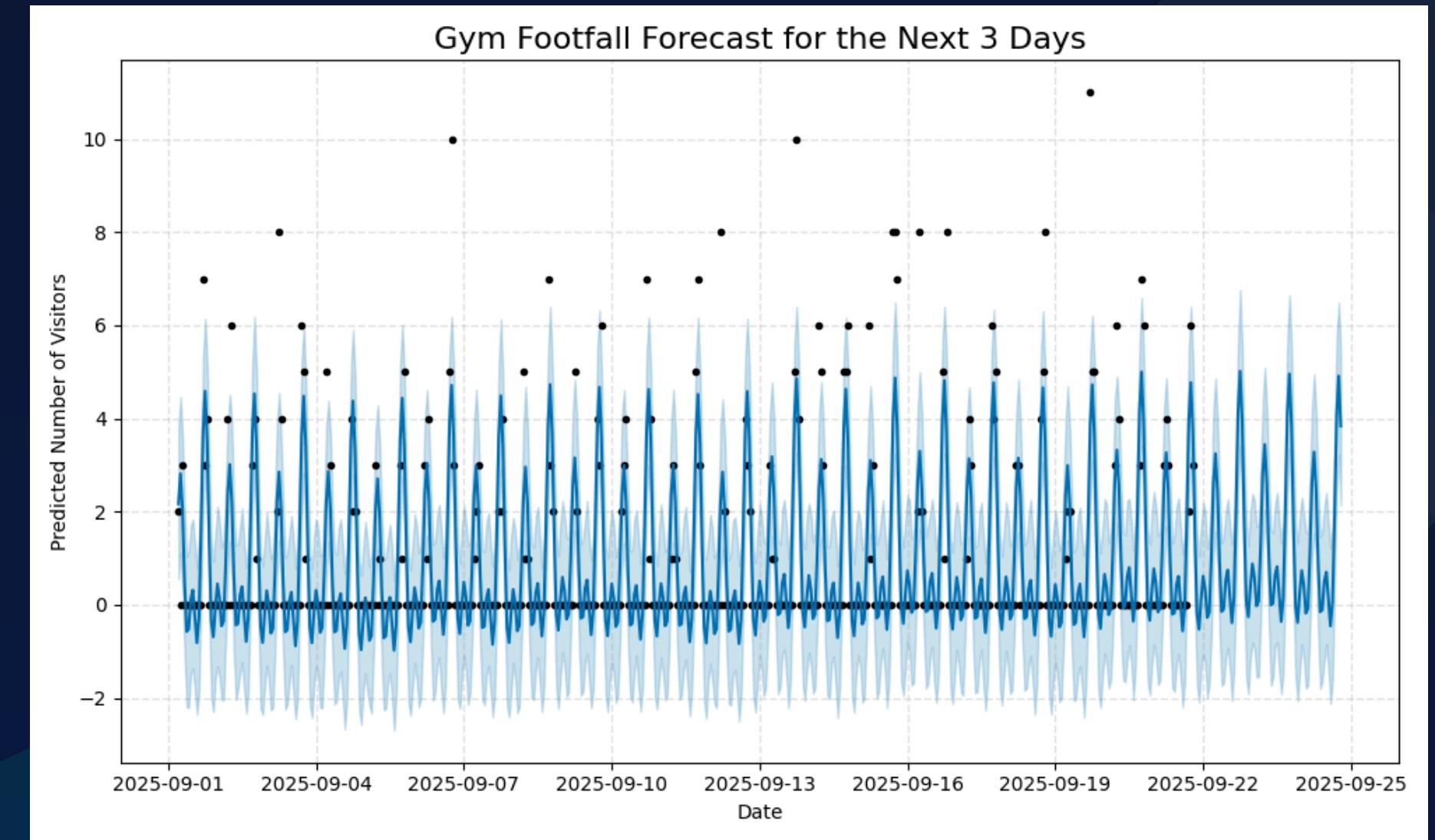
- Exploratory Data Analysis (EDA): Histograms, heatmaps
- Clustering (K-Means): Regular, Heavy, Occasional users
- Time-Series Forecasting (Prophet): Predicted daily gym footfall



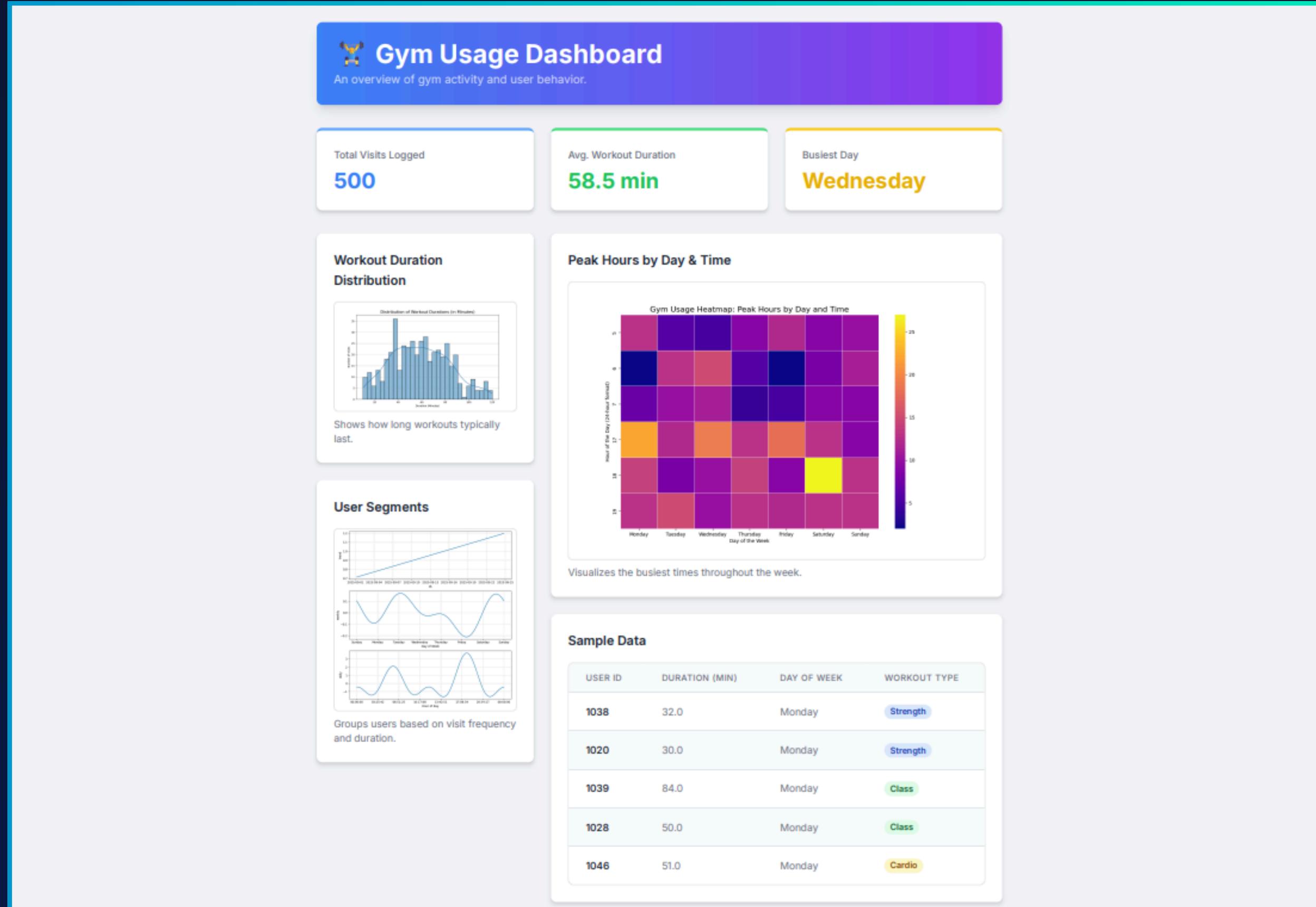


# RESULTS & INSIGHTS

- Peak hours: Evenings (around 6 PM)
- Average workout duration: ~60 mins
- Clear weekly usage pattern
- Forecast accuracy (MAE, MAPE)
- Clustering quality via Silhouette Score



# Gym Usage Dashboard



# CONCLUSION & FUTURE WORK

- Data analytics enhances gym management
- Enables better resource planning & scheduling
- Future enhancements:
- Add IoT-based real-time tracking
- Include workout-type data
- Deploy interactive dashboards



# THANK YOU FOR YOUR ATTENTION +

