



Eleven Strategy x Europ-park

# The Endless Line

## Turn Wait Times into Play Times!

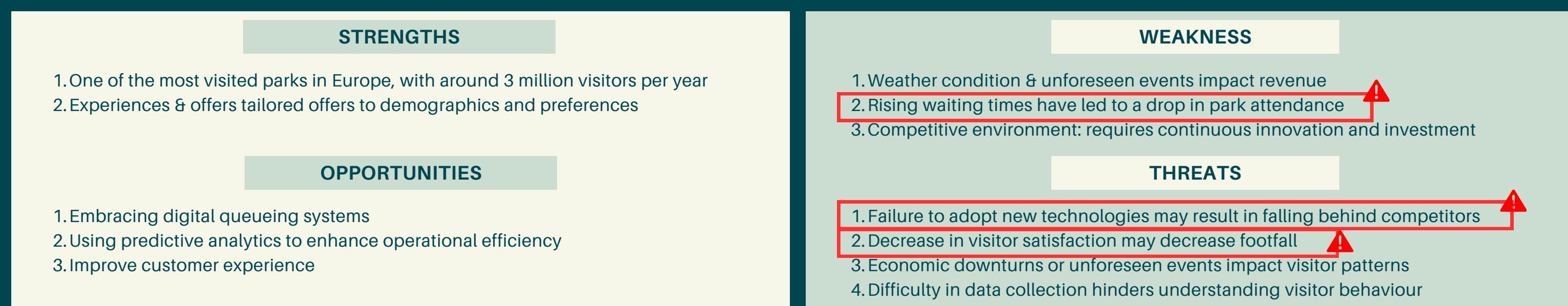
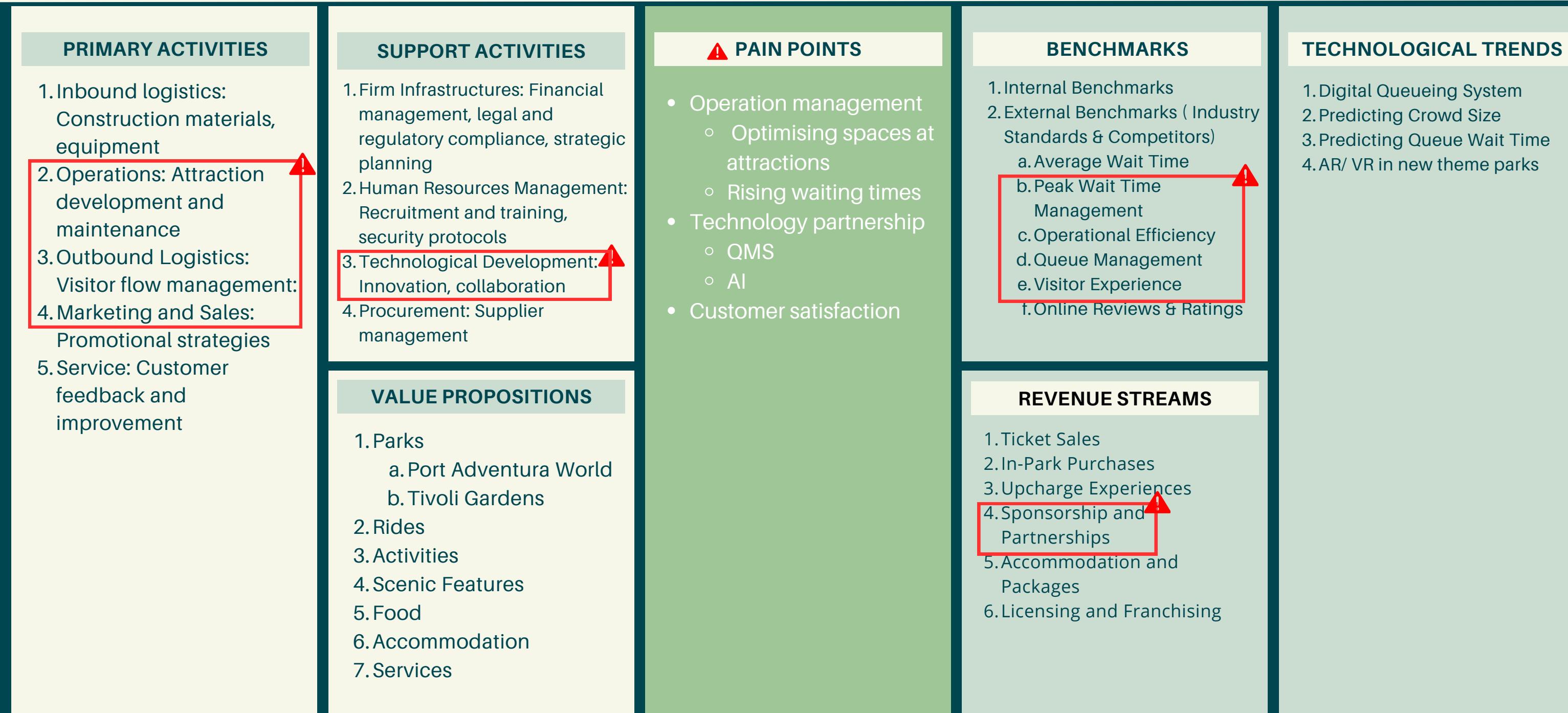
Boost Satisfaction & Revenue with Smart Queue Solutions



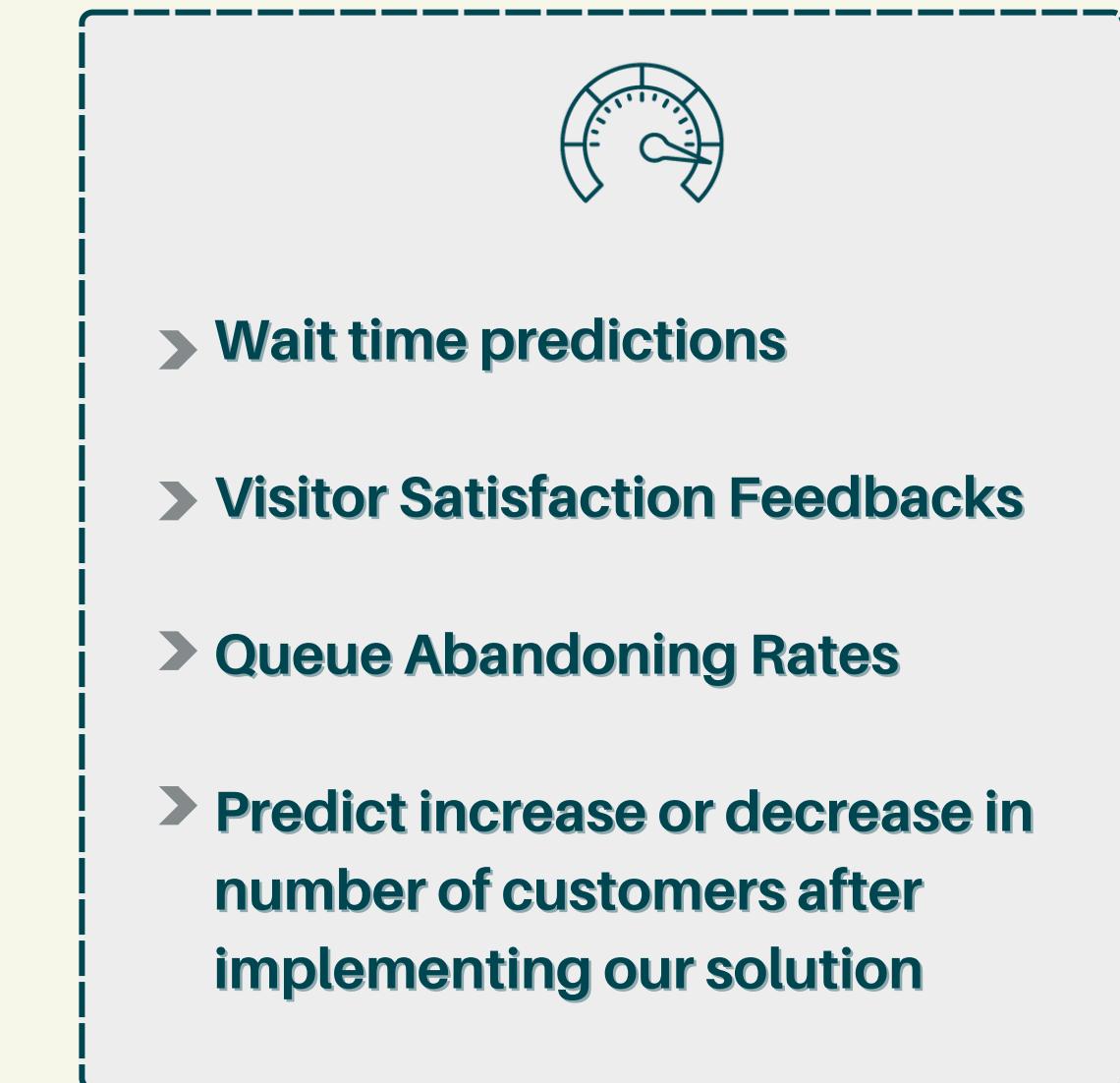
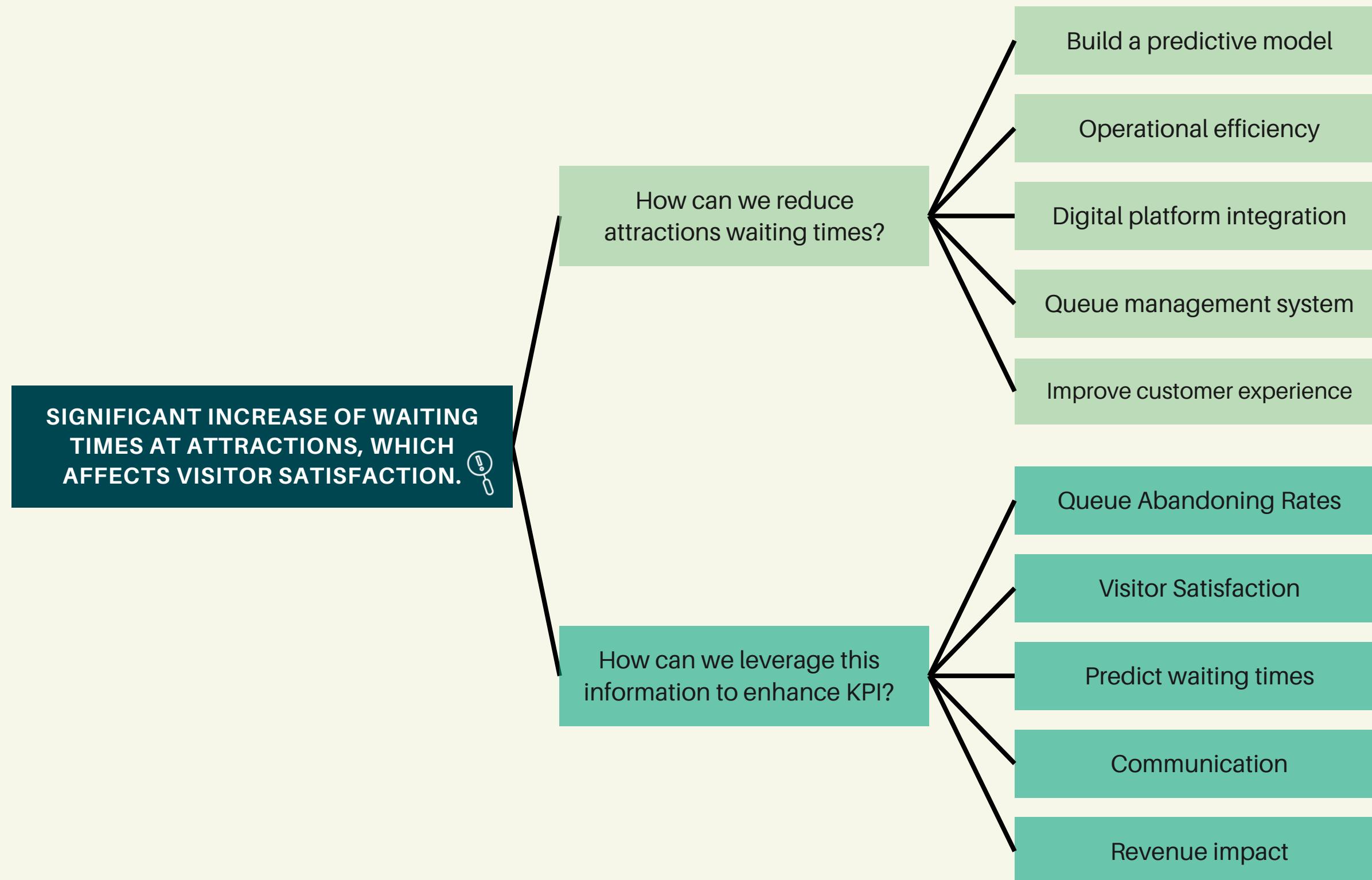
# Agenda

1. Insights to Euro-park's Business Model
2. Analysing Key Objectives & KPIs
3. Blueprint for Victory: Europark's Key Success Factors
4. Roadmap: Turn Wait Times into Play Times
5. EDA & Analysis
6. Forecasting Models
7. Approach, Cost & Implementation
8. Impact
9. Let's Talk Numbers
10. Demo
11. The Champions: Meet Our Team
12. Q&A

# BUSINESS MODEL



## OBJECTIVES & KPIs



## KEY SUCCESS FACTORS

## WHY?

## HOW?

1

Efficient queue management systems

Reduce wait times and optimise customer experience

Establish strategic partnerships to implement virtual queuing and real-time wait time tracking systems

2

Operational efficiency through advanced data analytics and AI

Anticipate peak times to ensure smoother visitor flow, optimise park operations and attraction capacity

Develop a real-time predictive mode and integrate the model to provide live updates and actionable insights

3

Accurate Wait Time & Crowd Forecasting

Realtime management during peak times and optimise staff & operations

Digitally integrate a real-time predictive model to provide visitors with live updates on waiting times & crowd prediction

4

Customer-centric focus

Build and maintain customer loyalty, valuable insights for making continuous improvements

Collect feedback from visitors through clear and accessible channels and continuously improve based on their preferences

5

Onboard the different teams early

Understand the objectives and benefits of the project, aligning their efforts and facilitate the adoption of new systems

Communicate and develop training programs with a clear documentation for staff

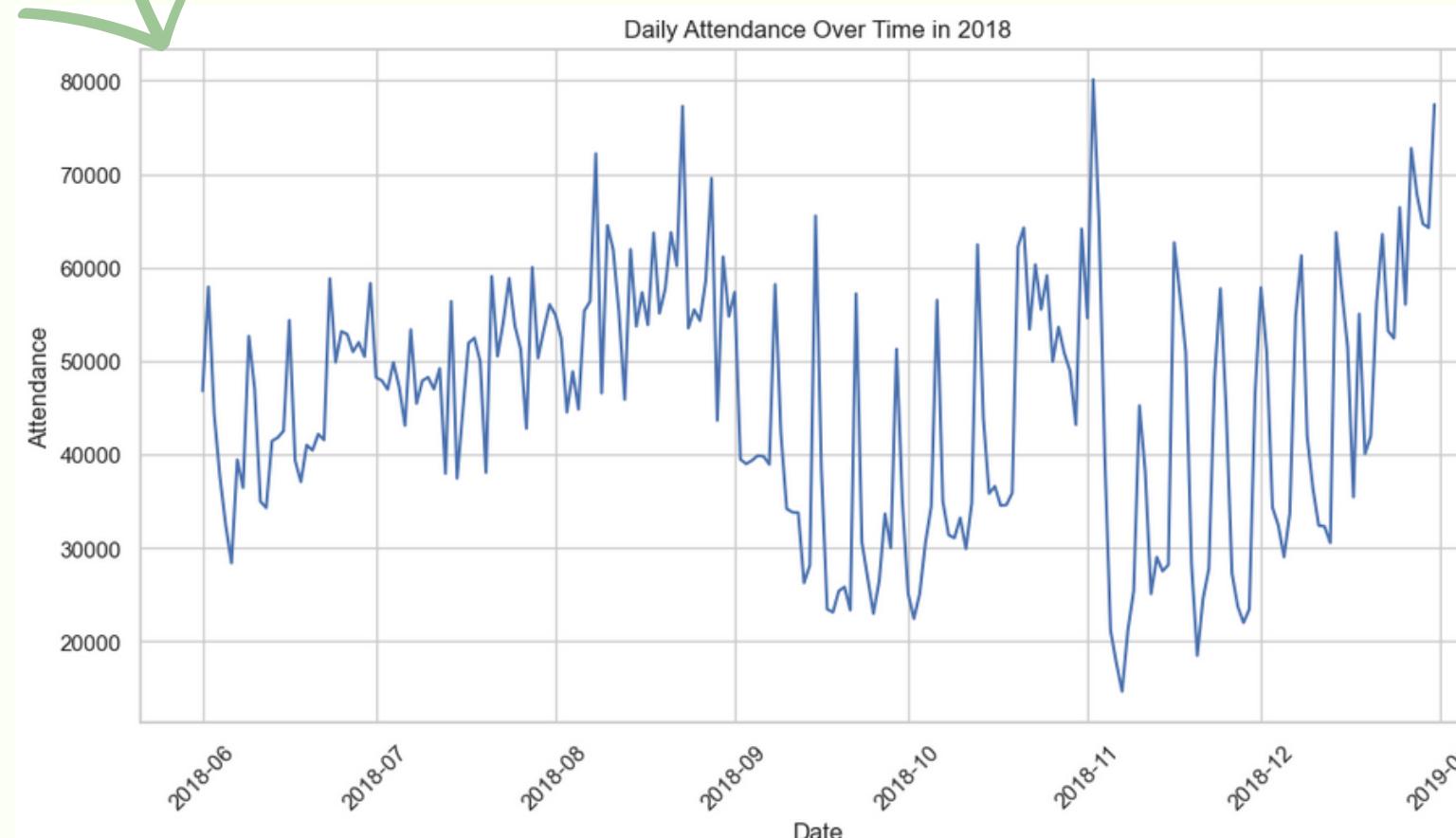
# ROADMAP: TURN WAIT TIMES INTO PLAY TIMES!

OBJECTIVES	PHASE 1 (2 WEEKS) Collect & Explore	PHASE 2 (1 MONTH) Test & Assess Feasibility	PHASE 3 (6 MONTHS) Implement & Industrialize
ELEMENTS OF METHODOLOGY	<ul style="list-style-type: none"><li>1: Data Collection Rides, waiting, attendance, weather, historical trends, visitor pattern, customer reviews, customer satisfaction, operations</li><li>2: Business Context Business Canvas Model, SWOT, KPIs, Key Success Factors</li></ul>	<ul style="list-style-type: none"><li>1: Understanding &amp; utilising the impact of different elements in the wait time</li><li>2: Testing &amp; optimising model accuracy</li></ul>	<ul style="list-style-type: none"><li>1: Digital Integrations with App &amp; Web</li><li>2: Operational optimization</li><li>3: Exploring new monetization opportunities</li></ul>
PRACTICAL IMPLEMENTATION	<ul style="list-style-type: none"><li>1: Data cleaning &amp; analysis</li><li>2: Identifying key contributing factors</li><li>3. Identifying pain points &amp; defining objectives</li><li>4: Formulating a model for said objectives</li></ul>	<ul style="list-style-type: none"><li>1: Test different prediction models &amp; improve accuracy</li><li>2: Integrate results to a dashboard for use &amp; ease of understanding</li></ul>	<ul style="list-style-type: none"><li>1: Development team</li><li>2: Data team</li><li>3: Business team</li><li>4: Operational team</li><li>5: Training team for existing staff</li><li>6: Partnership</li></ul>
DELIVERABLES	<ul style="list-style-type: none"><li>1: Model to predict crowd attendance in coming months</li><li>2: Model to predict average wait time in queues for all rides</li></ul>	<ul style="list-style-type: none"><li>1: A dashboard offering real time prediction of crowd and queue waiting times</li></ul>	<ul style="list-style-type: none"><li>1: A functioning app with realtime queue prediction, virtual queueing system, and other endless options</li><li>2: Crowd prediction during ticket bookings</li></ul>
IMPACT	<ul style="list-style-type: none"><li>1: Utilising decades of data to change the way your business operates</li><li>2: Defining new business objectives to stand out in the industry</li></ul>	<ul style="list-style-type: none"><li>1: Improve operational efficiency by estimating upcoming crowd</li><li>2: Improve visitor satisfaction by efficient queue management &amp; relieving their pain points</li></ul>	<ul style="list-style-type: none"><li>1: Increase in visitor satisfaction</li><li>2: Increase in customer Engagement</li><li>3: Increase in revenue</li><li>4: Monetise on new "Free Time" generated by optimising the waiting time</li></ul>



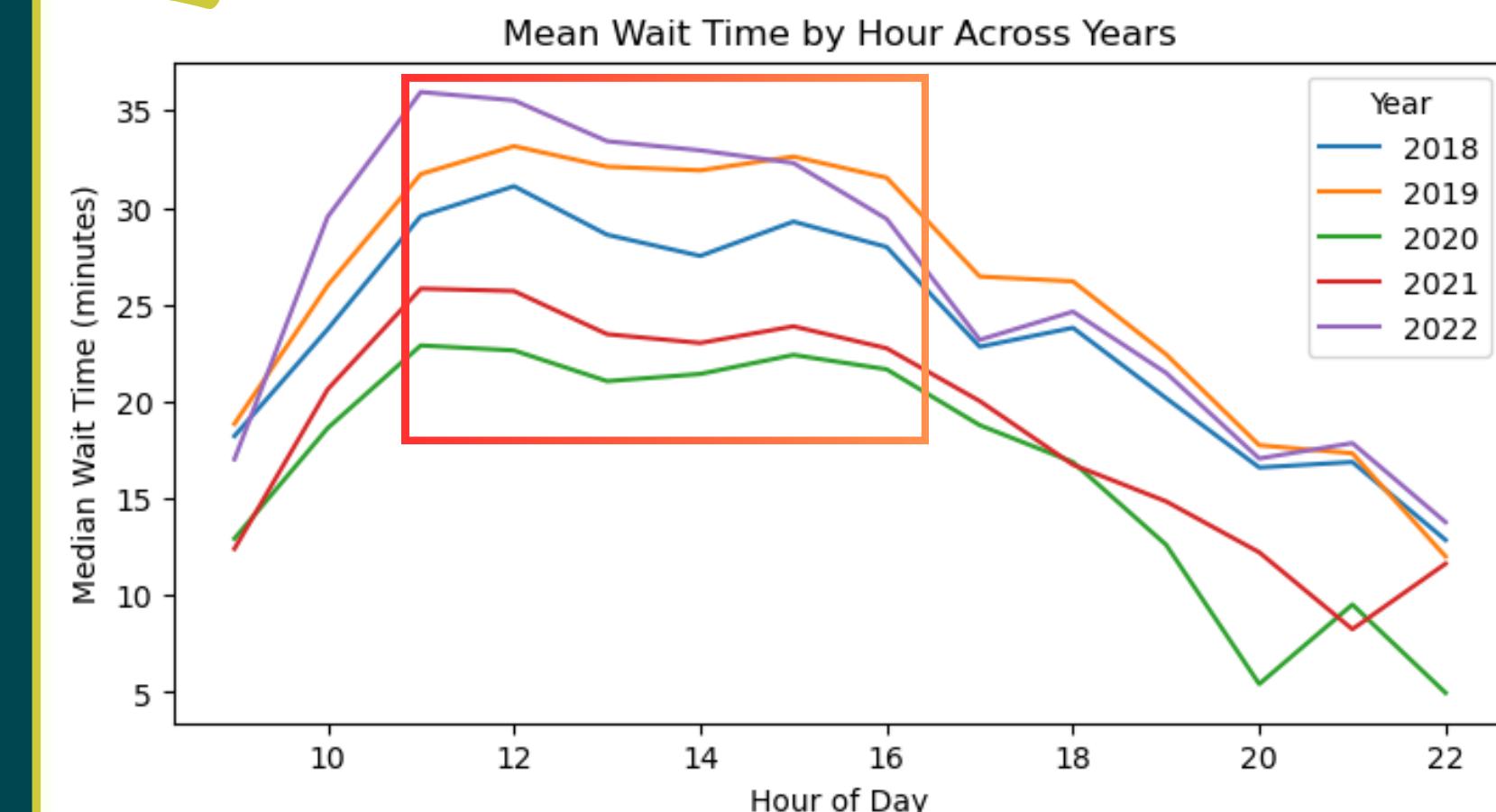
## Crowd Prediction

1. Covid had a significant impact on attendance & the data of this period is **excluded** when building the model
2. Attendance varies with **weather & temperature** conditions
3. There is a **seasonal trend** in attendance, with a noticeable increase during **summer** & a significant decrease in the **winter**
4. Park **opening hours** vary with seasons, affecting the final attendance prediction results



## Wait Time Prediction

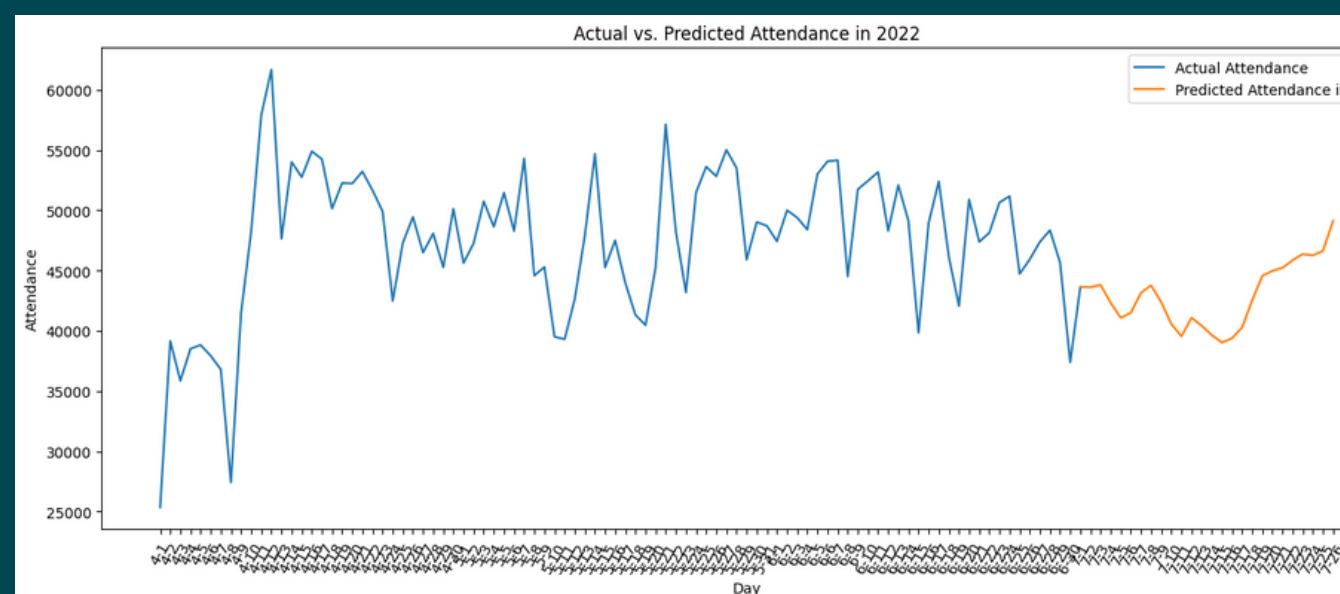
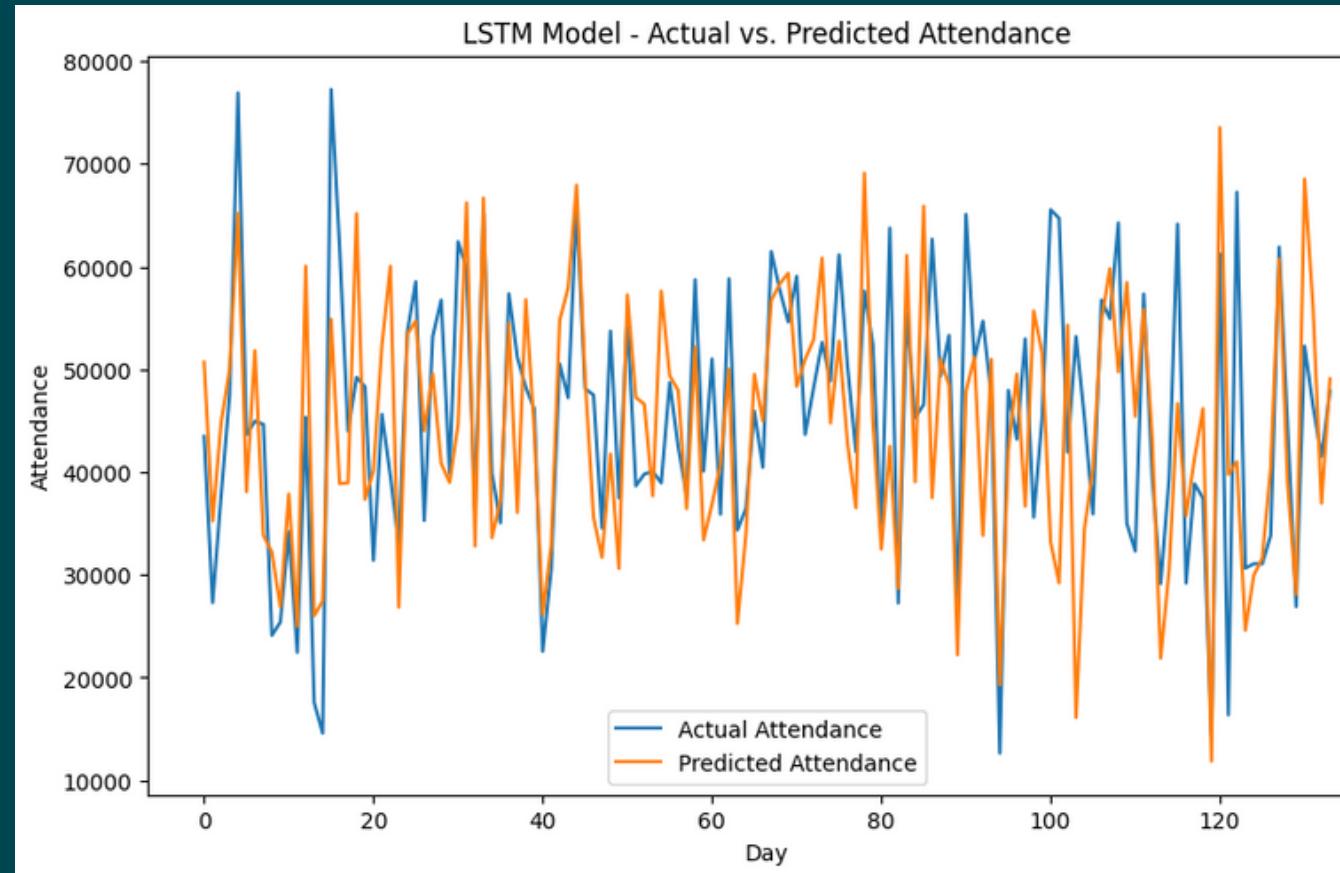
1. Post-covid wait time is significantly higher than pre-covid, especially during peak hours
2. Traffic at **peak hour** (11am - 5pm) is **almost twice** than off peak hours
3. Average wait time differs significantly between **weekdays & weekends**
4. Correlation between Features:
  - a. **Temperature** directly impact attendance
  - b. **Month & Hour** contribute to attendance
  - c. **Wait time for different attractions** is a key factor in the predictive model





## Attendance Model

Accuracy: Mean Squared Error < 0.023

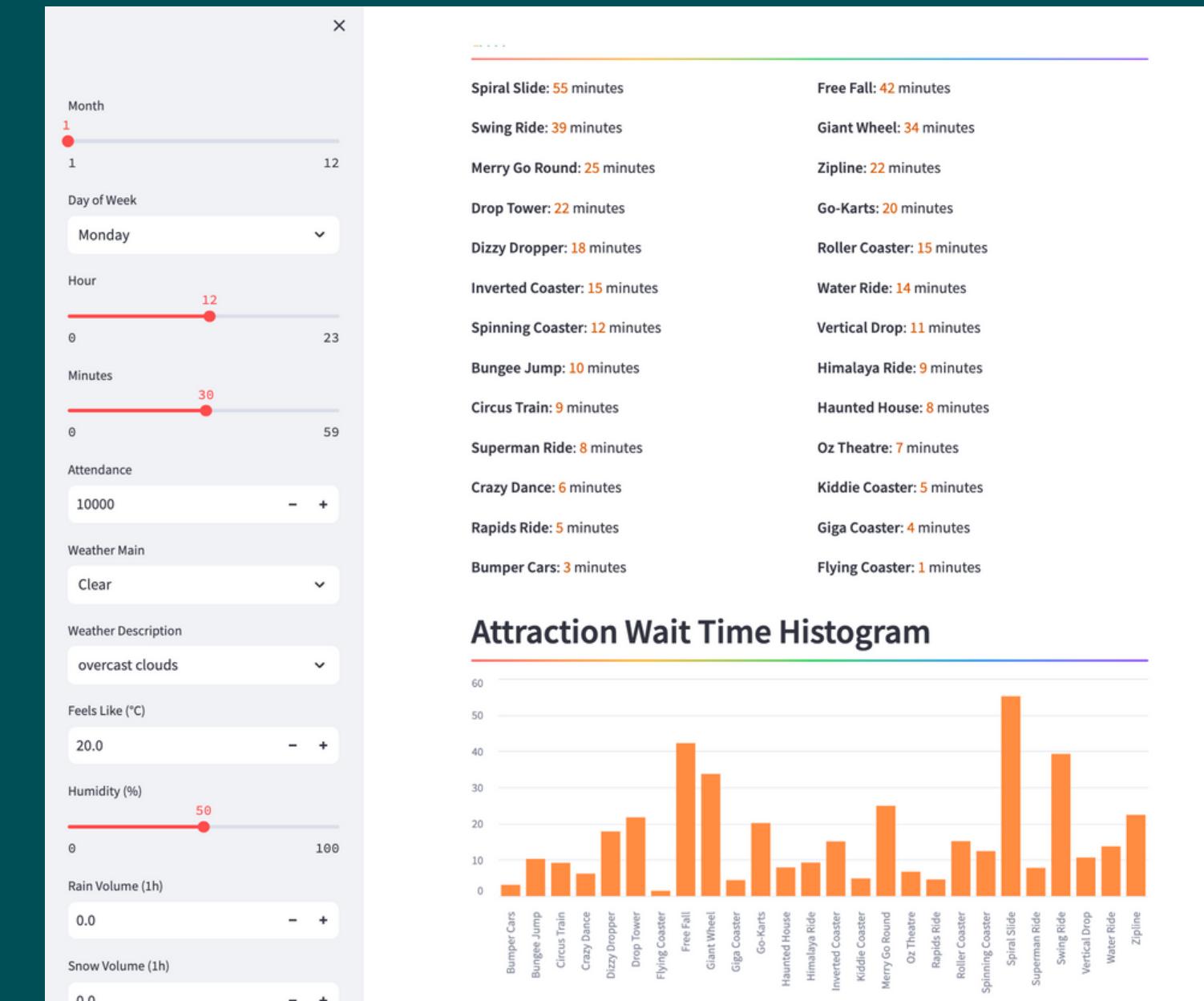


## Wait Time Model

Predicting Wait Time with 90% Accuracy  
(Difference between Actual & Predicted Value is less than 5 mins)

### Top 8 Important Features:

- Attendance
- Wait Time for Spiral Slide Ride
- Number of units running in the attraction
- Wait Time for Free Fall Ride
- Wait Time for Swing Ride
- Wait Time for Giant Wheel
- "Feels Like" Weather
- Adjust Capacity for each attraction



# Approach, Cost & Implementation

## Queue management systems



### lineberty

#### Cost

- Average price of €100,000 for the implementation
- Maintenance costs of €3,000/year

#### Advantages

- Already have customers in the theme park sector, such as **Futuroscope**
- Also manages **ticket purchases** and the park map
- Sends **statistical reports**
- Single rider to improve attraction capacity

### WAVETEC

#### Cost

- Average price of €120,000 for the implementation
- Maintenance costs of €7,000/year

#### Advantages

- Deliver targeted messages** and inform customers of available offers
- Schedule, reschedule and cancel appointments digitally to **manage customer traffic** and **reduce operational costs**

### QLESS<sup>®</sup>

#### Cost

- Average price of €80,000 for the implementation
- Maintenance costs of €15,000/year

#### Advantages

- Powerful Analytics**
- Appointment scheduling**
- Timely updates** on estimated wait times and their place in line

## Dashboard implementation

### eleven

#### Cost

- €100,000 for the implementation

#### Support

- Support for employee skills development**
- Collecting feedback** on the dashboard
- Continuous improvement** of the dashboard
- Passing on to Euro-park teams :
  - First 3-day dashboard training course
  - Meeting every month during the first year, every 6 months during the second and third year
  - Every year thereafter



### Data analyst

#### Cost

- €32,594 gross per year on average

#### Role

- Engaged in analysing data** from the dashboard
- Responsibilities**
  - Ensuring data accuracy and relevance**
  - Collaborating with business** teams for specific analytical needs
  - Generating **regular reports** to aid **decision-making**

## Program training

### Phases

#### 1. Training on the application

*Objective: Familiarise Euro-park teams with the features and functionalities of the QMS*

##### Content:

- Overview** of the **interface navigation**
- In-depth **exploration** of key features and modules
- Hands-on exercises** to practice using the system
- Troubleshooting and basic maintenance procedures

##### Duration:

Initially covered in the 3-day training course included in the implementation cost

##### Delivery:

Led by experienced trainers from the QMS company

#### 2. Collect feedback from employees

*Objective: Gather insights from Euro-park teams to assess the effectiveness of the training and identify areas for improvement*

##### Methods:

- Focus group discussions** for more in-depth insights
- Direct feedback channels** for immediate concerns or suggestions

##### Timing:

Immediately after the initial training and continue periodically

# Forecasting Solutions for Attendance in coming Weeks/ Months

**Mack INTERNATIONAL**

Tickets    Ticket exchange    Annual passes    Vouchers    Information    HOTELS

Step 2 of 2  
Please choose your preferred date

**Expected Crowd**

- High Attendance
- Average Attendance
- Low Attendance

**April 2024**

Mon	Tue	Wed	Thu	Fri	Sat	Sun
1 59,50 € <sup>1</sup>	2 59,50 € <sup>1</sup>	3 59,50 € <sup>1</sup>	4 59,50 € <sup>1</sup>	5 59,50 € <sup>1</sup>	6 59,50 € <sup>1</sup>	7 59,50 € <sup>1</sup>
8 52,00 € <sup>1</sup>	9 52,00 € <sup>1</sup>	10 52,00 € <sup>1</sup>	11 52,00 € <sup>1</sup>	12 52,00 € <sup>1</sup>	13 52,00 € <sup>1</sup>	14 52,00 € <sup>1</sup>
15 52,00 € <sup>1</sup>	16 52,00 € <sup>1</sup>	17 52,00 € <sup>1</sup>	18 52,00 € <sup>1</sup>	19 52,00 € <sup>1</sup>	20 52,00 € <sup>1</sup>	21 52,00 € <sup>1</sup>
22 52,00 € <sup>1</sup>	23 52,00 € <sup>1</sup>	24 52,00 € <sup>1</sup>	25 52,00 € <sup>1</sup>	26 52,00 € <sup>1</sup>	27 52,00 € <sup>1</sup>	28 52,00 € <sup>1</sup>
29 52,00 € <sup>1</sup>	30 52,00 € <sup>1</sup>					

Pre-Opening Sunday 17.03.2024 - Official start of the season  
23.03.2024

Please note: The entry price varies depending on your visiting date.  
The individual total price will be displayed after you have selected  
your preferred dates.  
Days marked red in the calendar are sold out. Tickets can no longer  
be booked for these dates - not even through our Guest Services.

**Integration with Ticket Booking  
Calendar for Visitors**

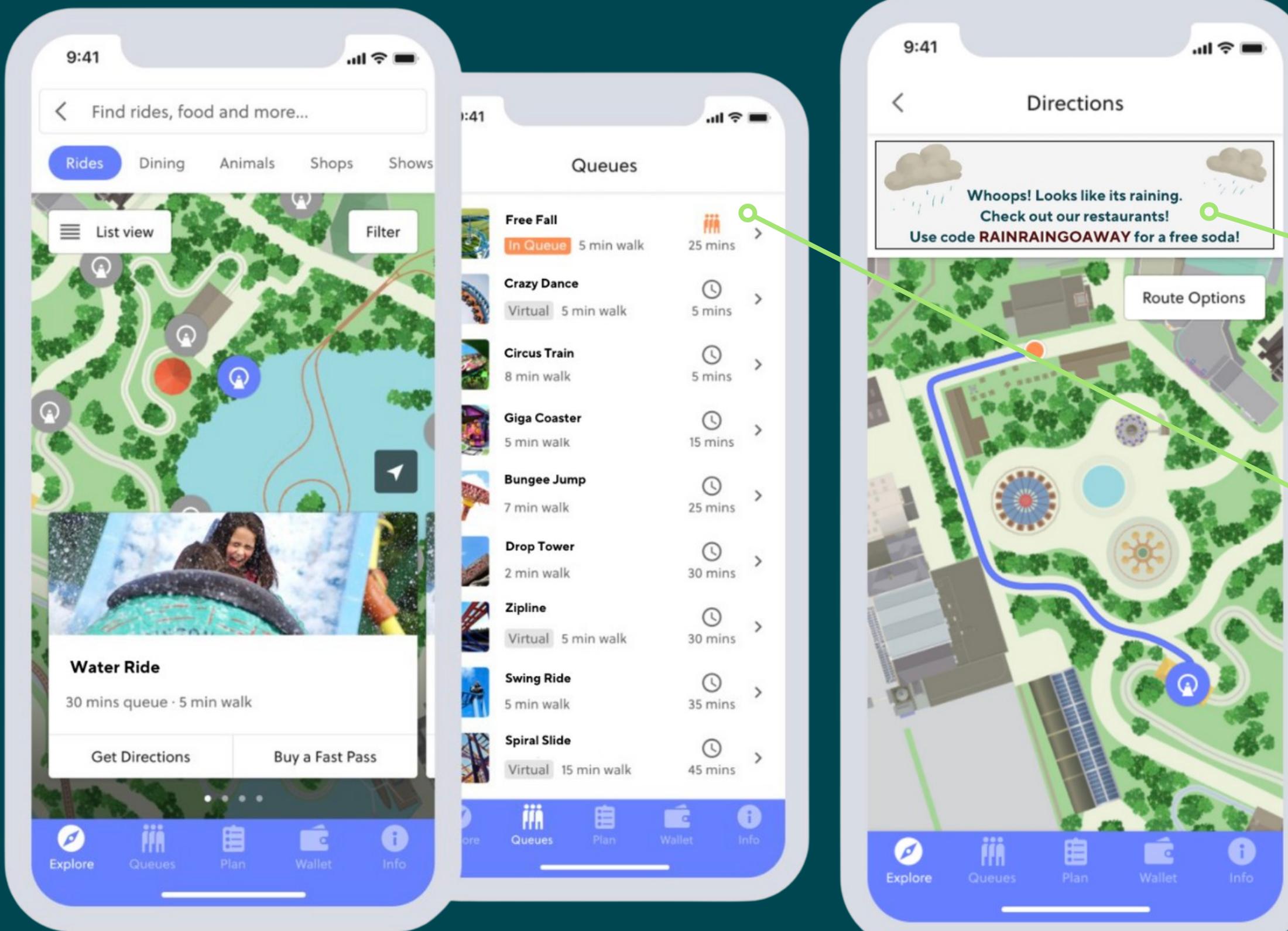
**Improve operational planning**

**Suggest weekdays with lesser  
attendance & waiting**

**Offer discounts for visiting the  
park in later hours of the day**

**Price model based on crowd  
prediction**

# Solutions using Realtime Forecasts



 Redirect visitors to other revenue streams in this created "Free Time" 

## Integration on Digital Platforms

### Real-time App Alerts

1. Parade/ Night Show Alerts
2. Rainy or Windy Weather
  - a. Suggest safer ride options
  - b. Suggest indoor attractions
  - c. Offer time-limited discounts for indoor activities

### Virtual Queuing Systems

### Fast Passes and Express Lanes

### Distract to Your Benefit!!

Add minimal games related to the rides to the app for visitors to play in the waiting line that won't seem endless anymore

**90%**  
FORECAST WAITING TIME  
ACCURACY

**29%**  
REDUCE AVERAGE  
WAITING TIMES

**28%**  
INCREASE VISITOR  
SATISFACTION

**18%**  
BOOST REVENUE FROM  
ATTENDANCE

**64%**  
ROI

Dashboard  
implementation

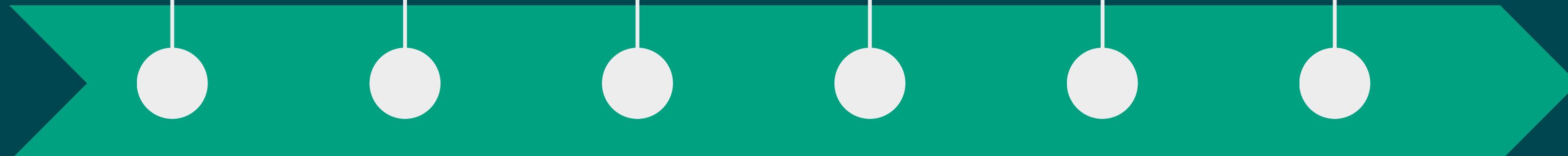
QMS  
implementation

Training  
program

Collect  
feedbacks

Continuous  
improvement

Objectives  
achieved



# Demo

# OUR TEAM MEMBERS

eleven



Charlotte Cupillard



Aditi Agrawal



Hongyang YE



Chia Tien, Tang

**Business Growth Experts**

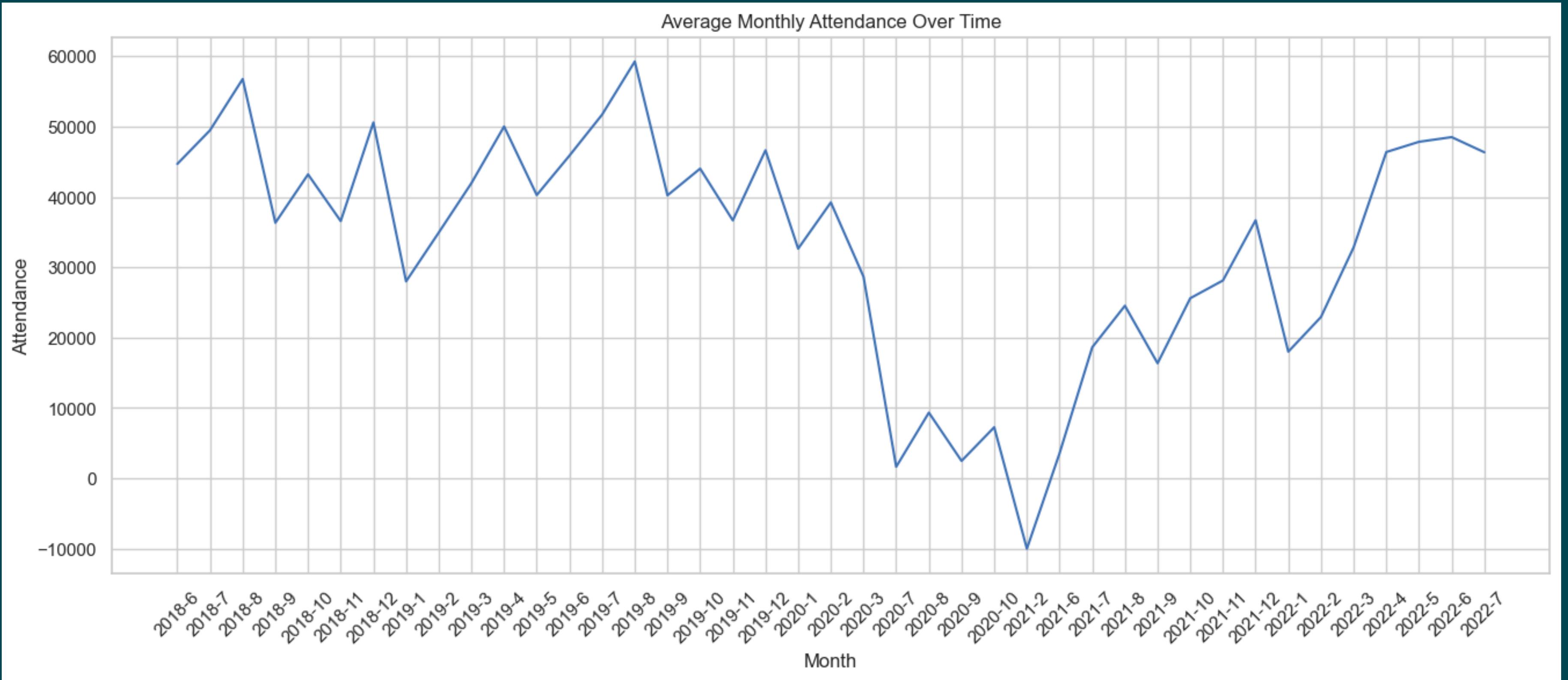
**Tech Savvys**

# THANK YOU

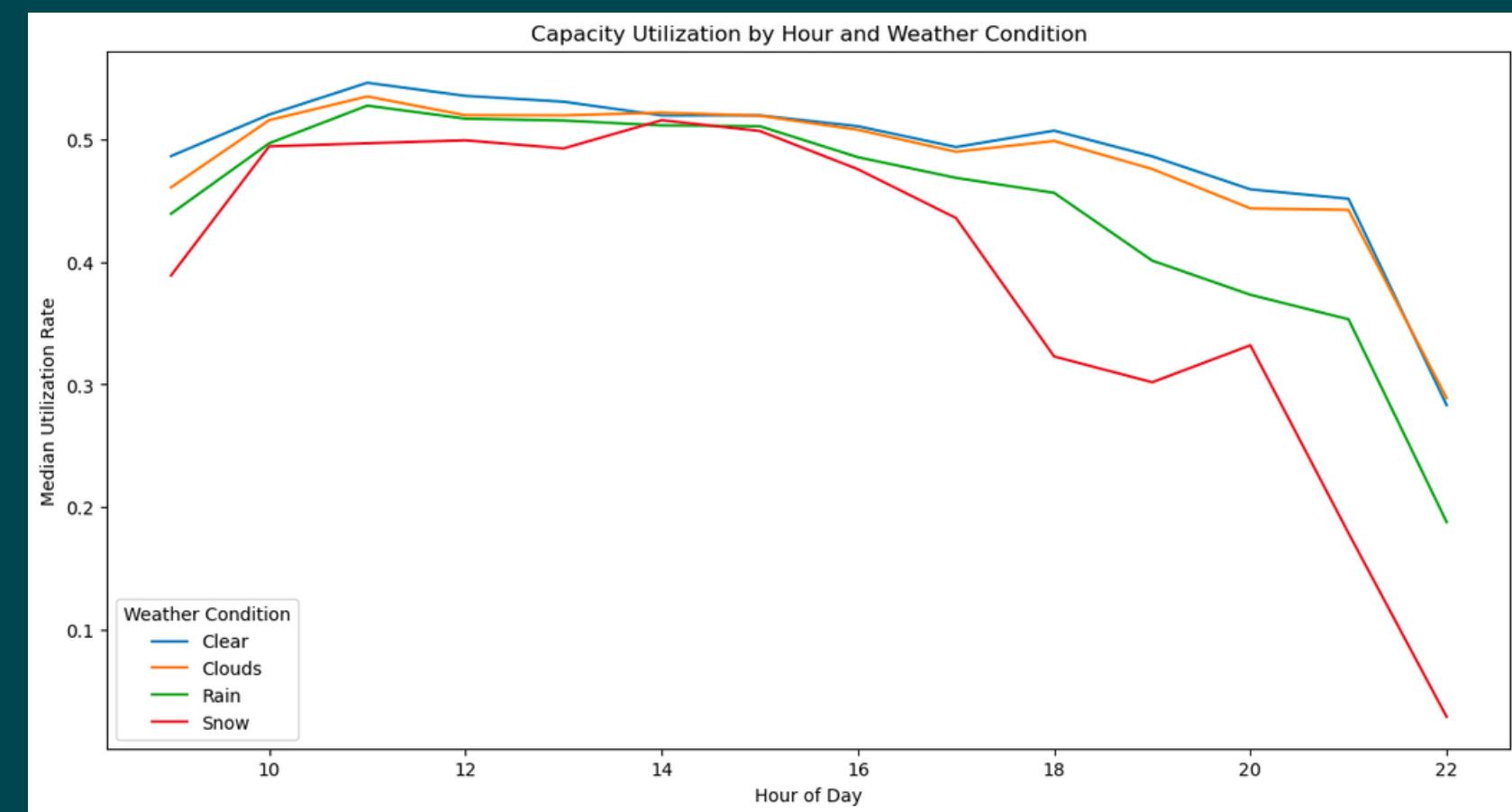
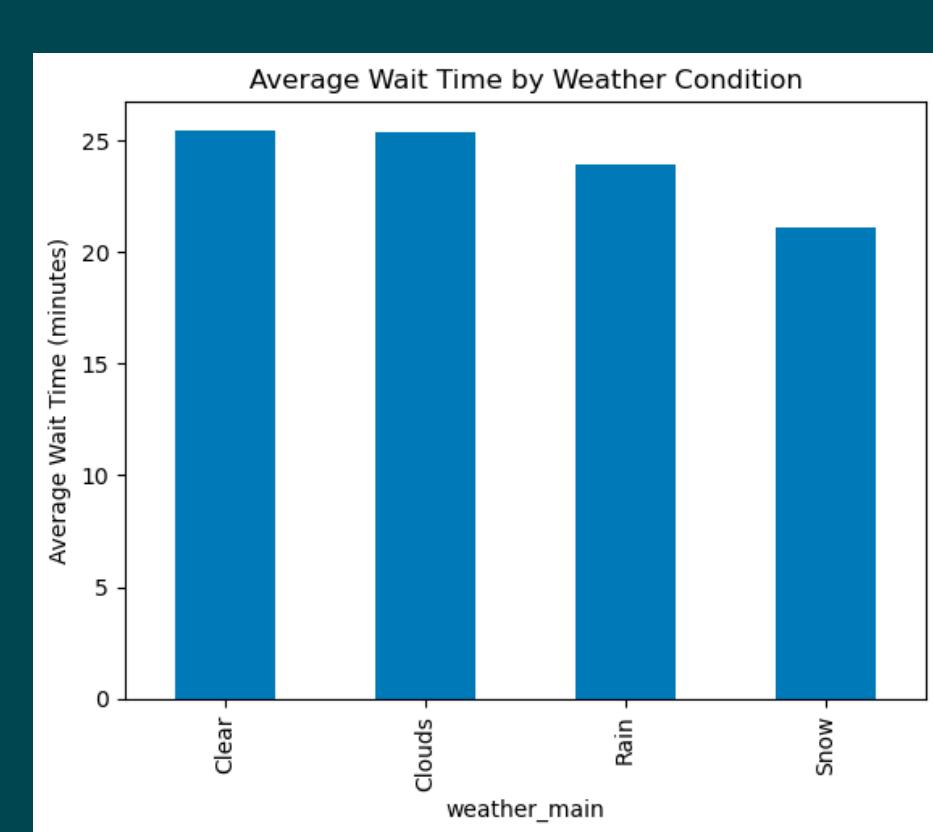
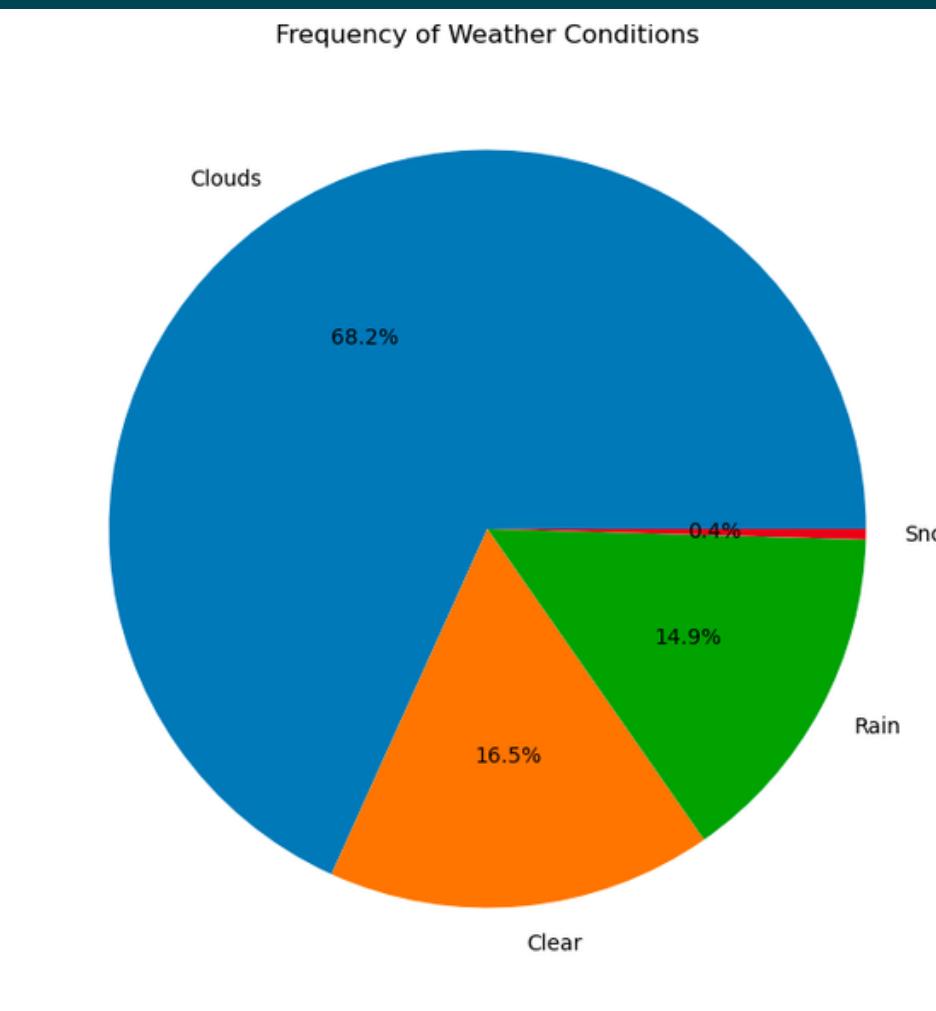
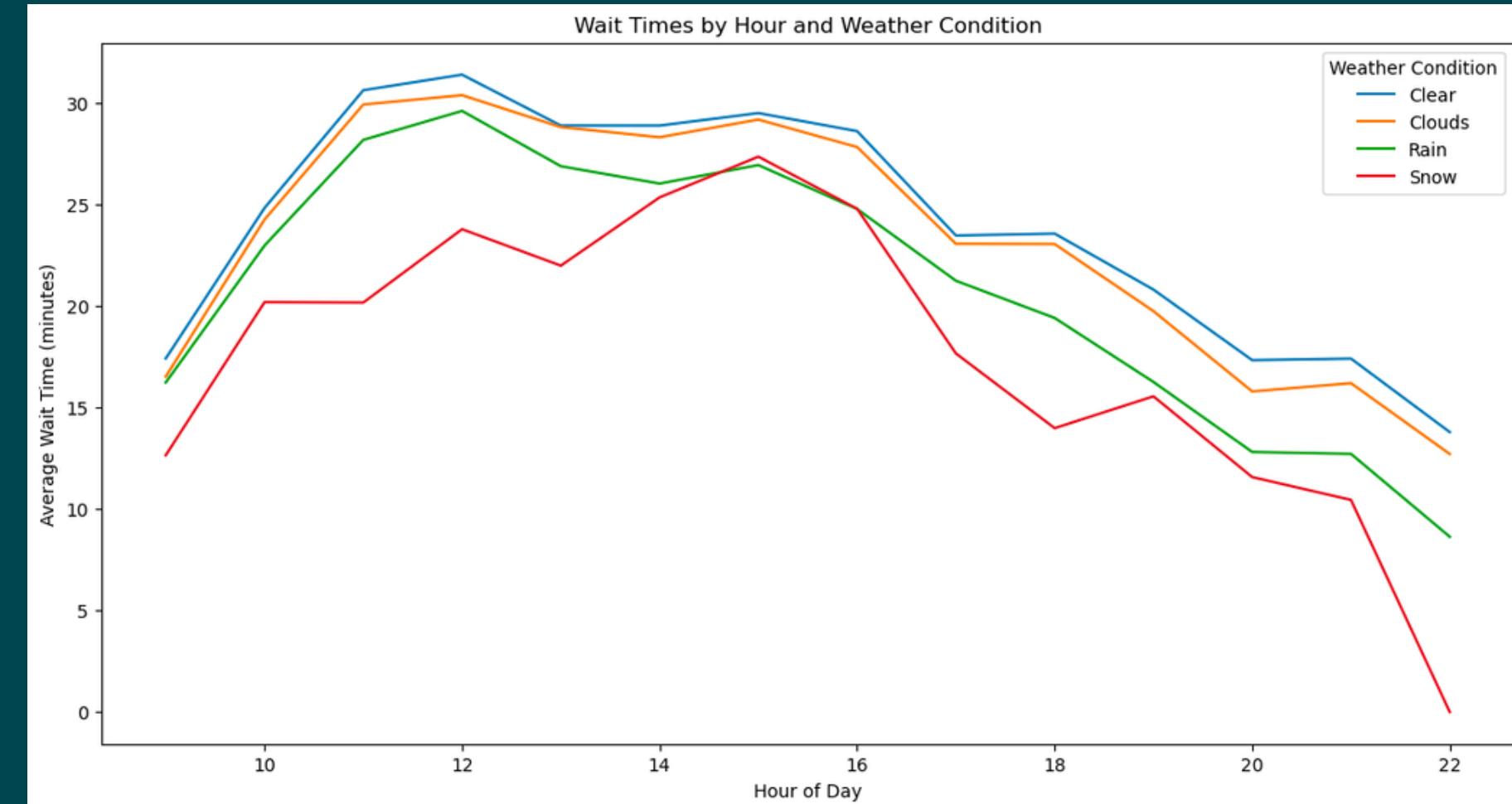
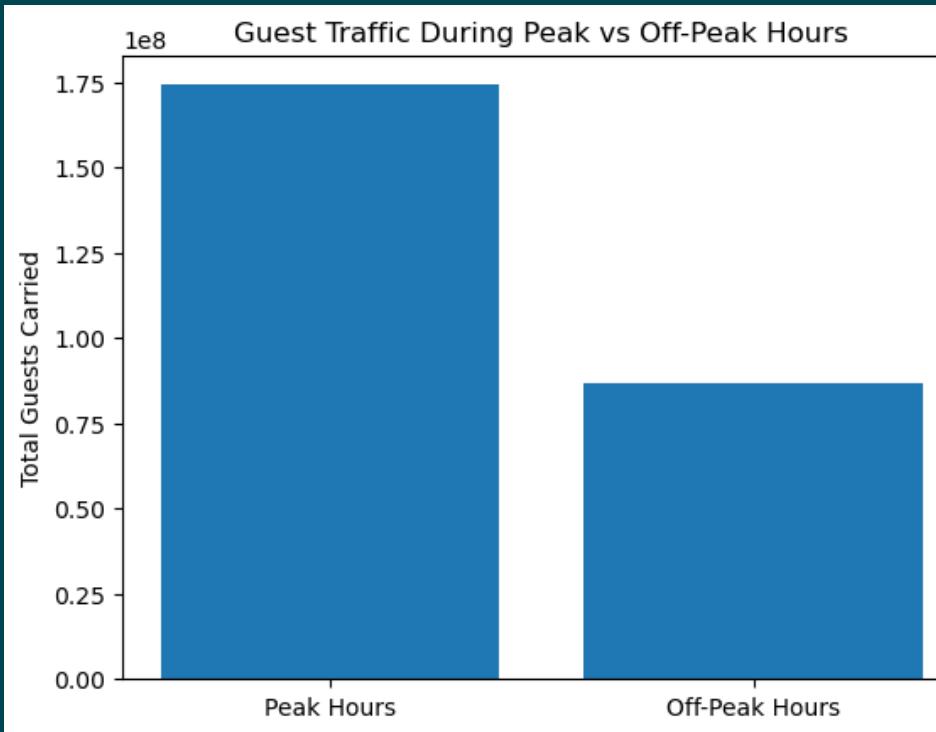
# Q&A

# Appendix

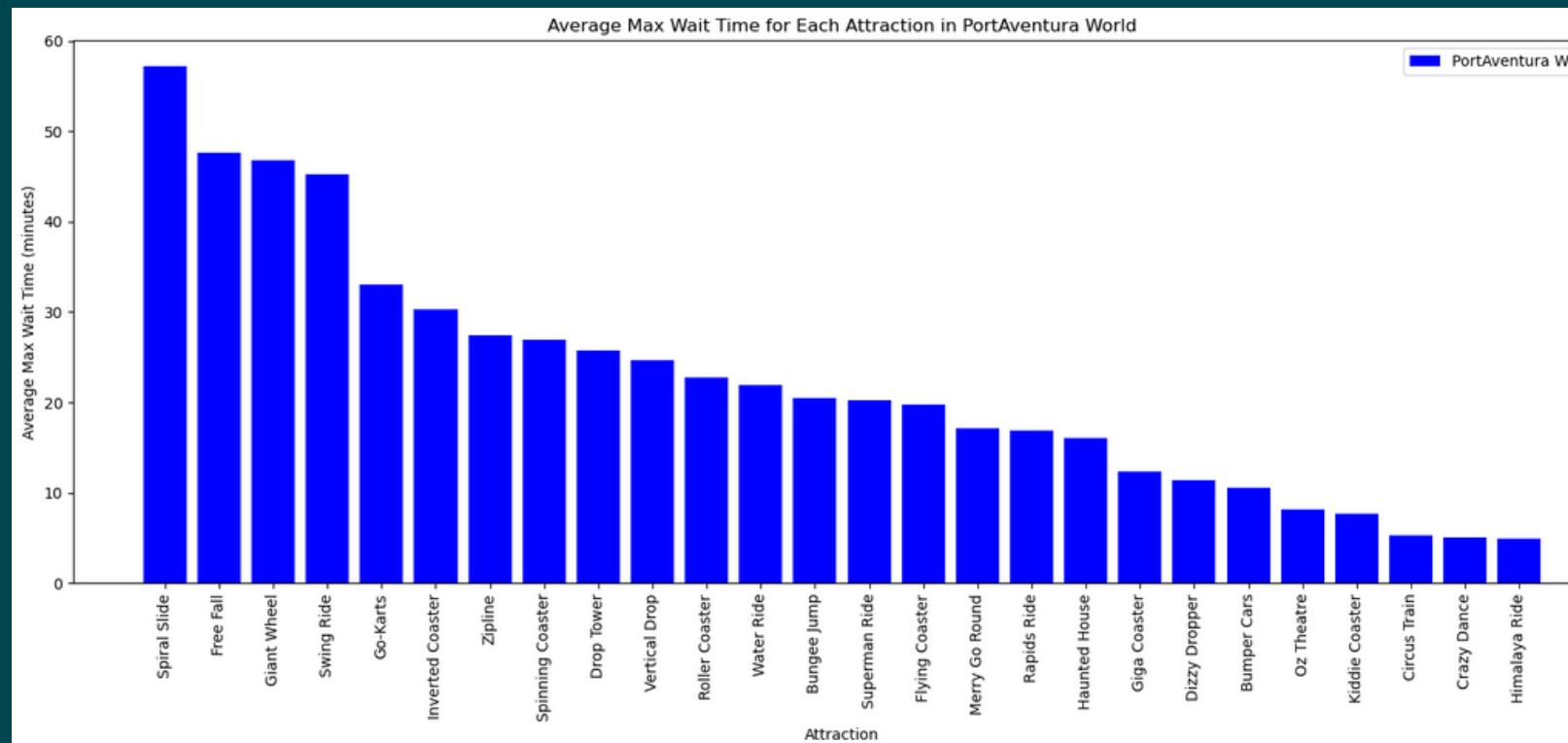
# Exploratory Data Analysis



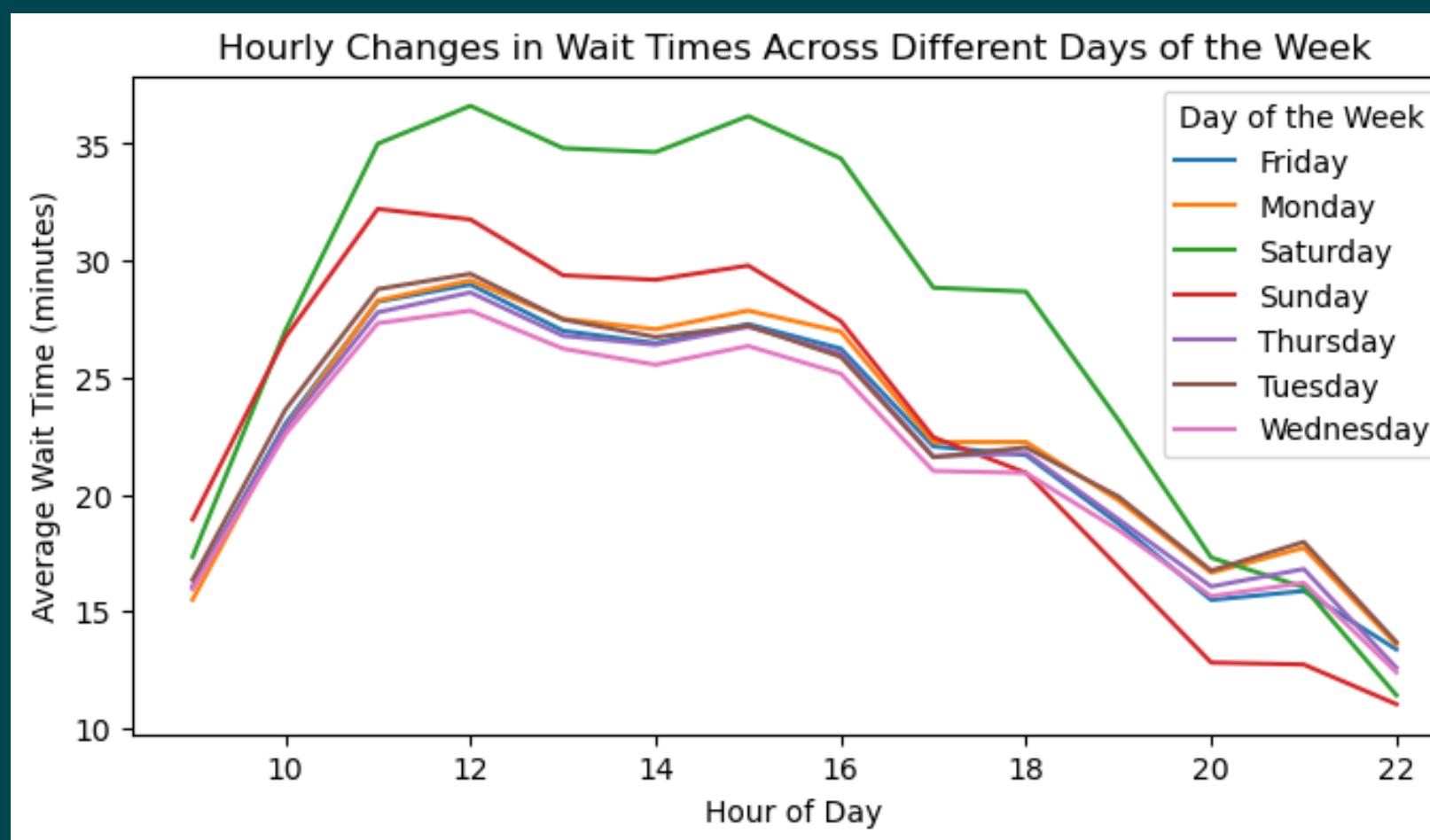
# Exploratory Data Analysis



# Exploratory Data Analysis

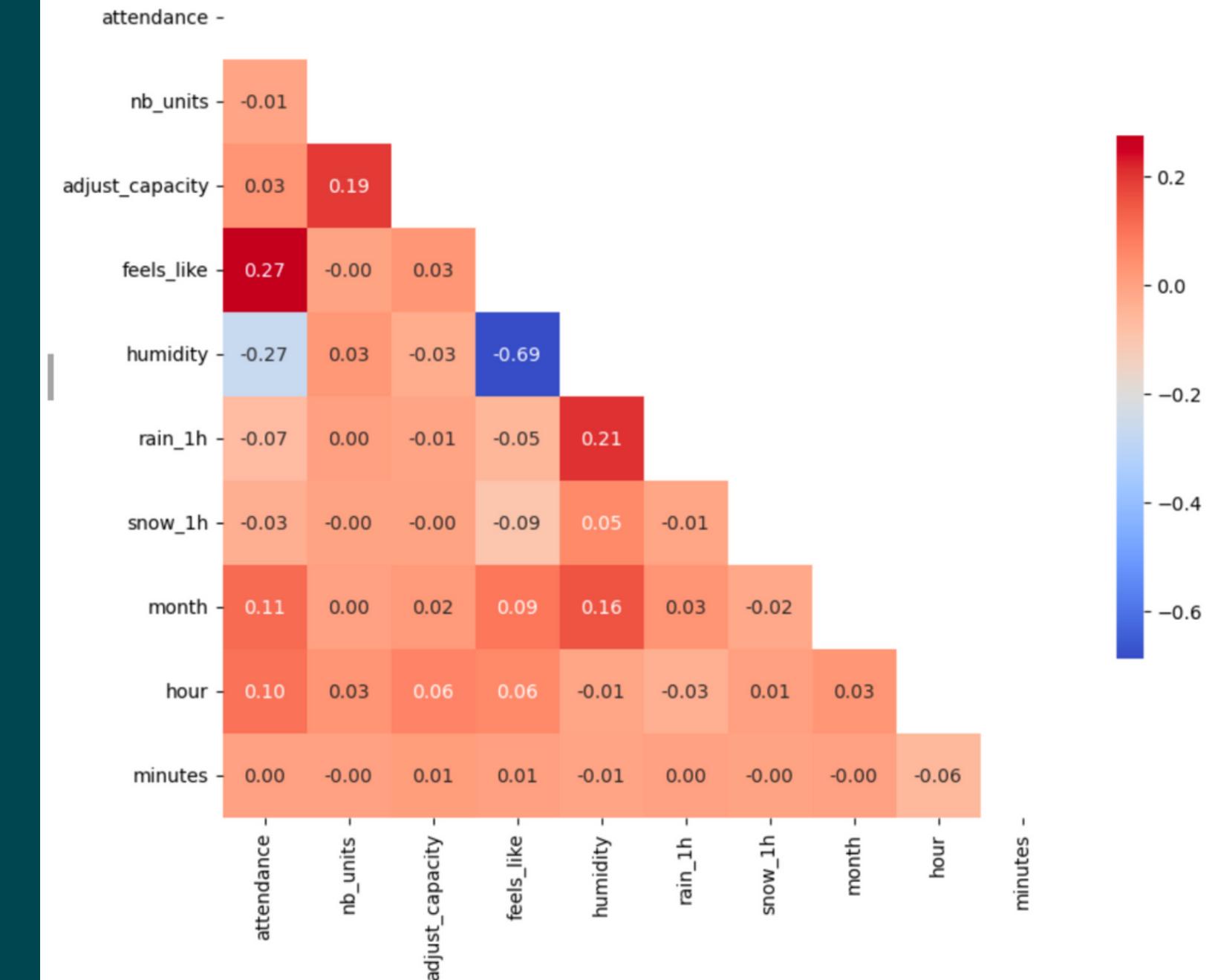


Distribution of wait time for attractions in PortAventura World corresponds strongly to the weight of importance in the model. Flying Coaster, Giga Coaster, Go-Karts are top 3 attractions which carry the most guests in all-time.



## Correlation Matrix

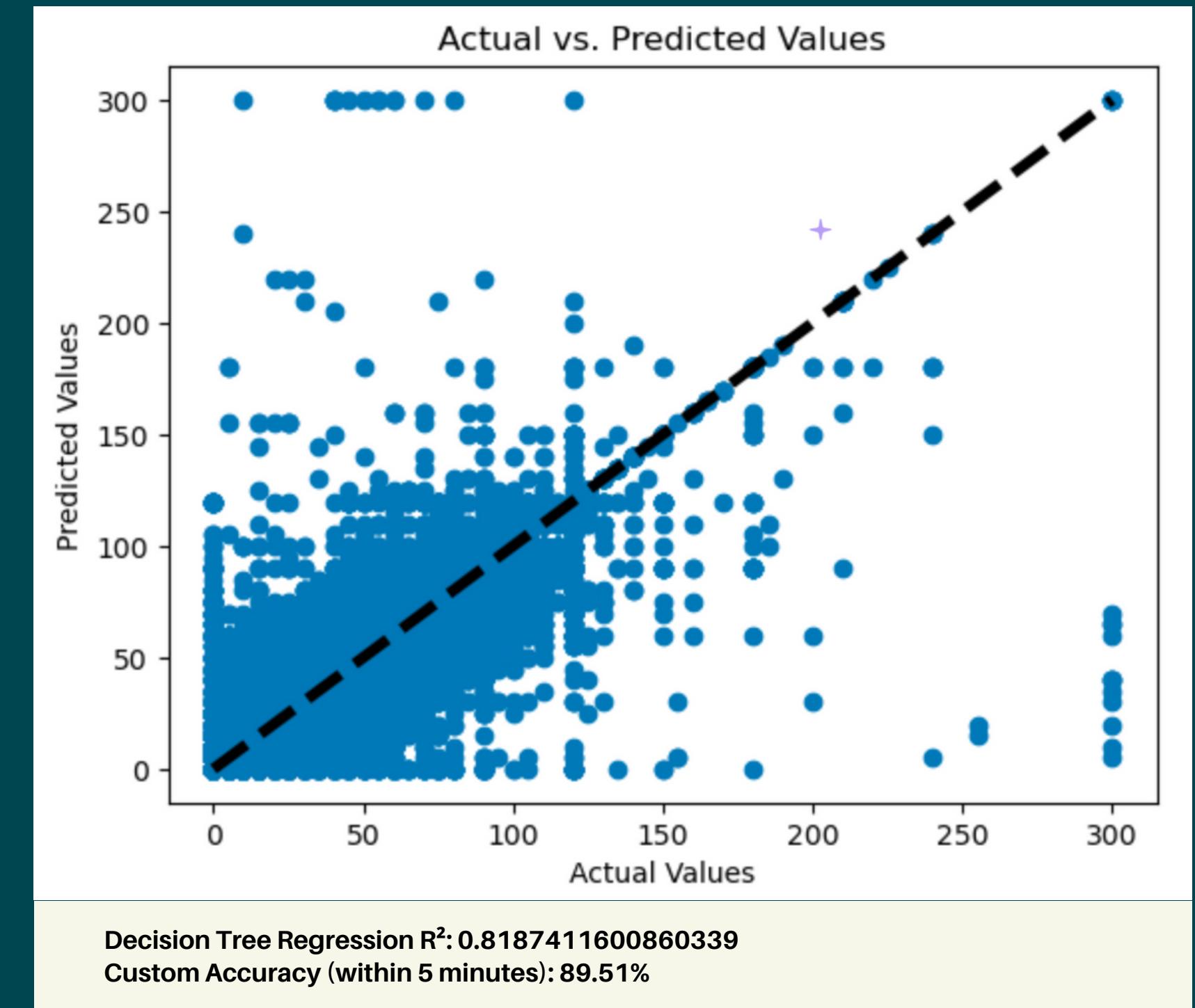
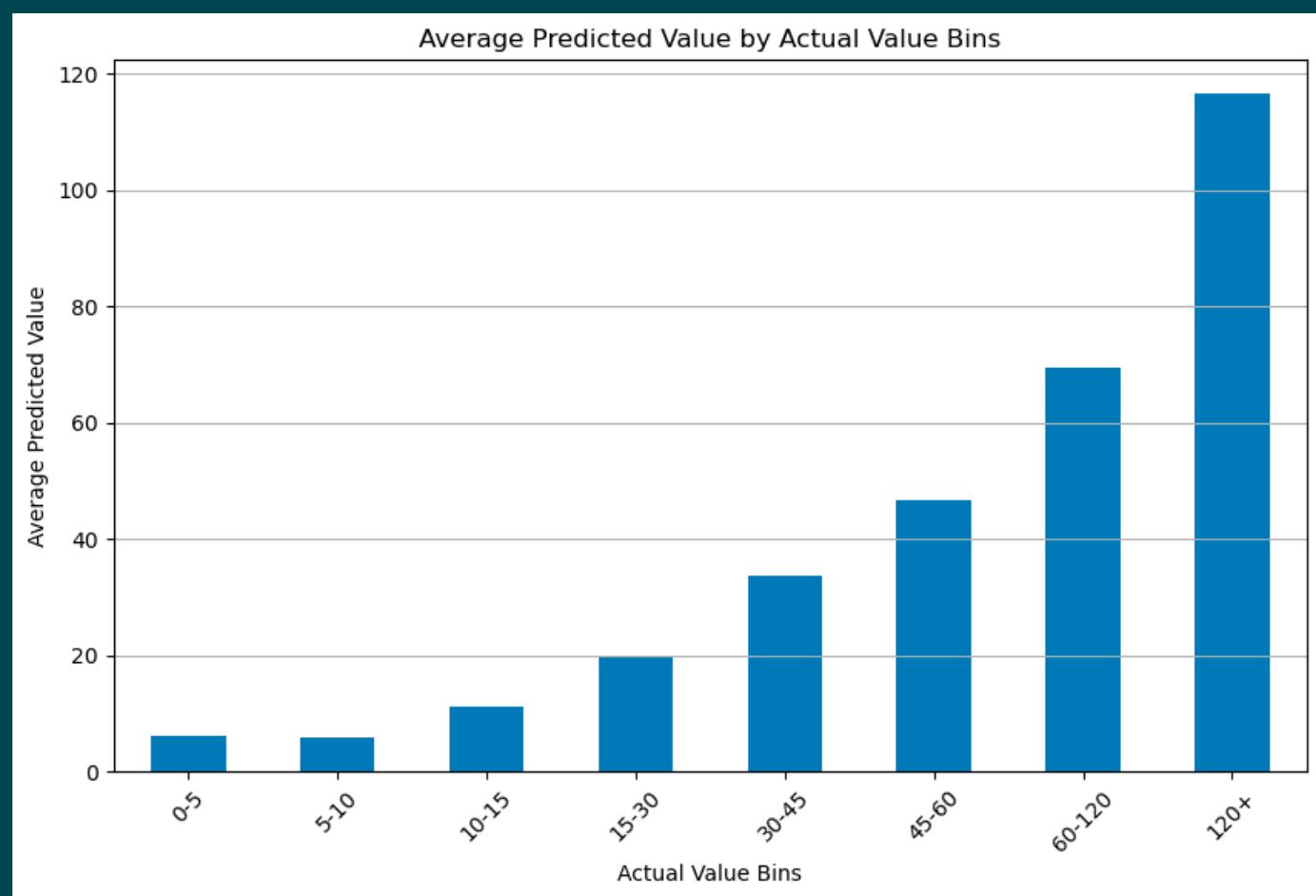
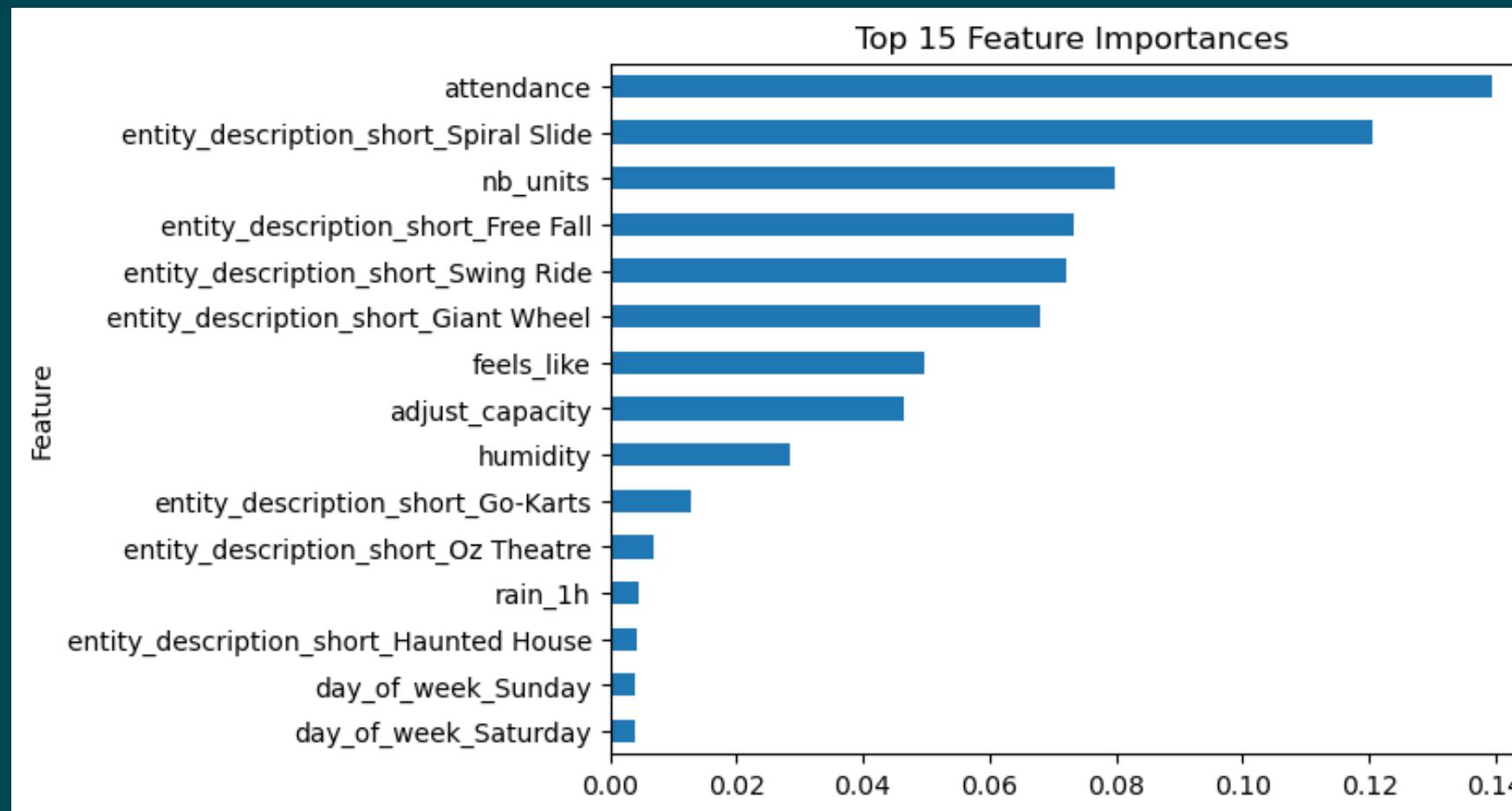
Feature Correlation Matrix - Lower Triangle



### Cleaning:

1. Dropping Unnecessary Columns
2. Cleaning COVID Time Data from March 1, 2020, to August 1, 2021
3. Filling Missing Values in Weather Columns
4. Creating Binary Columns for Events
5. Dropping Less Relevant Columns

# Forecasting Wait Time



## KPI's Calculation

Attractions	Reduction	Percentage
Spiral Slide	-38.72	62%
Free Fall	-27.26	54%
Giant Wheel	-25.80	52%
Swing Ride	-25.11	52%
Go-Karts	-11.86	34%
Zipline	-5.79	20%
Drop Tower	-3.91	14%
Spinning Coaster	-3.53	13%
Inverted Coaster	-3.48	13%
Vertical Drop	-0.38	2%
Water Ride	-0.08	0%

Reduction of Waiting Time  
(Average among attractions)

13mins (29%)

Impact of Waiting time on Tourist Satisfaction:

$$\text{Tourist Satisfaction} = -0.213 * \text{Perceived waiting time} + 0.232 * \text{Waiting environment}$$

Reference: Impact of Waiting on Tourists Satisfaction in a Theme Park: An Empirical Investigation (W., 2010)

Tourist Satisfaction  = 13mins (29%) \* 0.213 = 27.69%

## KPI's Calculation

### Average Seasonal Attendance

Maximum Capacity = 80000  
Pricing Window = [40, 60]

Season	Attendance	Occupancy	Dynamic Pricing	Gross Revenue from tickets
Spring	43140	54%	51	2200174
Summer	51293	64%	57	2923691
Autumn	39505	49%	45	1777717
Winter	38672	48%	42	1624224
				<b>8525807</b>

**Occupancy Increase = 10%**

Spring	51140	64%	51	2608174
Summer	59292	74%	57	3379691
Autumn	47504	59%	45	2137717
Winter	46672	58%	42	1960224
				<b>10085807</b>



**18.297%**

## KPI's Calculation

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After Tax Gross Revenue:

936,000

Cost

Queue Management System	Attendance
DashBoard	43140
Data Team	51293
Training Program	39505
Marketing	38672
Others	50000
	570000

ROI

**64.21%**