

EE4211 Q3

Q3.1

At this point, you understand the data well. For your group proposed project, you must explore some aspects of machine learning models. You must use the dataset given but you may use additional datasets to supplement your analysis (e.g., weather data), look at unaggregated data, look at the difference in carpark availability for carparks with free parking, etc. Note that you are not limited to the initial proposal and are free to expand on it.

Introduction of Proposal

As outlined in Question 1, we propose leveraging both existing datasets and additional data sources to enhance the prediction of individual car park availability. By focusing on specific car parks within certain areas, we can analyze their availability in greater detail rather than relying on aggregated data for overall car park trends. This detailed analysis is crucial for identifying unique patterns and behaviors associated with specific car parks, such as peak usage times, seasonal variations, or the impact of local events.

To achieve this, we have decided to implement machine learning models as part of our analysis and approach. By applying machine learning, we can continuously monitor and predict the availability of car parks in specific areas with high accuracy. These predictions will enable proactive management of parking resources, ensuring optimal allocation and reducing congestion.

Our decision to use machine learning is driven by its ability to handle multiple features that influence car park availability. These include historical usage data, time-based trends (e.g., daily or weekly cycles), weather conditions, and external factors such as public holidays or nearby events. By incorporating these variables into the model, we can generate dynamic, real-time predictions tailored to each car park in the area.

The ultimate goal of this initiative is to develop a recommendation system that not only predicts car park availability but also provides users with actionable insights. The system will recommend car parks based on their predicted availability, distance from the user's destination, and other user-specific preferences. This personalized approach will significantly enhance the user

experience by reducing the time spent searching for parking and improving overall satisfaction.

In summary, by using machine learning models to monitor and predict car park availability in targeted areas, we aim to create a highly effective, data-driven parking management system. This system will not only benefit individual users by offering tailored recommendations but also contribute to better urban planning and traffic flow management, addressing critical challenges in modern cities.

Datasets used

HDB Carpark

[Information&page=1&query=carpark&resultId=d_23f946fa557947f93a804](#):

| Attributes | Possible Usage |
|-----|-----| |**Car Park address**|to help users find the location of Car Park easily using navigation app such as google map| |**X and Y coordinate**|to enable users to find the Car Park that is closest to their current location|| |**Car Park type**|to make it possible for users to select the most suitable Car Park based on the exact types of Car Park they prefer| |**Short term parking**|to help users to check the opening hour of their selected Car Park |

2-hour Weather Forecast

Attributes	Possible Usage
forecast	Possible values for forecast include: Fair (Day) Fair (Night),Partly Cloudy , Hazy , Windy, Mist, Fog, Light, Rain, Moderate, Rain Heavy Rain

Carpark Availability

Returns lots availability.

Attributes	Possible Usage
carpark number	i.e Expressway, AYE, APE
lots available	Start point of this current segment
total lots	End point of this current segment

In this question, there will be 2 separate parts

- 1. **Part I Implement Machine Learning models for certain areas' carparks**
- 2. **Part II Implement a recommendation system by incorporating machine learning models.**

We have decided to narrow down the car park area to a specific region for focused analysis. The image below highlights the selected area we intend to inspect. 4 star marks shows the region we want to inspect. Using the dataset HDBCarparkInfo.csv, which contains the coordinates of all the car parks, we can efficiently filter out and identify the car parks located within this specific region. This approach ensures that our analysis remains targeted and relevant to the chosen area.

- top left : 1.3253800 , 103.7551340
- top right : 1.3253800 , 103.8216340
- bottom right : 1.2712260 , 103.8216340
- bottom left : 1.2712260 , 103.7551340



Abstract of 2 parts

- **In machine Learning model part**, we train all the carparks within this coordinates (173 car parks) based on its one hour before, one day before, one week before data and the weather data. we use the 2024 July and 2023 August data as training set and 2024 August data as testing set as we plan to design the machine learning model to predict only the 2024 August data which will also be integrated with the recommendation system application.
- **In the recommendation system application algorithm**, we collect user inputs such as destination postcode, current postcode, weather, and departure time. Using the OneMap API, we process this data to recommend nearby car parks based on distance. Additionally, we integrate a machine learning model to predict car park availability at the user's estimated arrival time. The results are presented in a summarized table for the user, along with an interactive map to enhance visualization and user experience.

Part I Machine Learning Model

Import Libraries

```
In [64]: #import packages and mount drive
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
from sklearn.preprocessing import LabelEncoder, StandardScaler
import csv
```

```
import urllib.request
import json
```

Import Dataset

```
In [65]: # import dataset from drive
jul_carpark_2024 = pd.read_csv('data/jul_2024_data.csv')
aug_carpark_2023 = pd.read_csv('data/aug_2023_data.csv')
aug_carpark_2024 = pd.read_csv('data/aug_2024_data.csv')
aug_weather_2023 = pd.read_csv('data/aug_2023_weather.csv')
aug_weather_2024 = pd.read_csv('data/aug_2024_weather.csv')
jul_weather_2024 = pd.read_csv('data/jul_2024_weather.csv')
carpark_info = pd.read_csv('data/HDBCarparkInformation.csv')
```

Locating target region

```
In [66]: # Helper function to convert degrees, minutes, seconds to decimal degrees
def dms_to_dd(d, m, s):
    # Ensure all inputs are floats and handle degrees being provided as a string
    d = float(d)
    m = float(m)
    s = float(s)
    return d + m/60 + s/3600

# Sample input coordinates in DMS format
coordinates = [
    ("1°19'31.368\"N", "103°45'18.4824\"E"),
    ("1°16'16.4136\"N", "103°45'18.4824\"E"),
    ("1°19'31.368\"N", "103°49'17.8824\"E"),
    ("1°16'16.4136\"N", "103°49'17.8824\"E"),
]

# Convert DMS to Decimal Degrees
decimal_coordinates = []
for lat, lng in coordinates:
    d, m, s = lat[:-1].split('°')[0], lat[:-1].split('°')[1].split('\'')[0],
    lat_dd = dms_to_dd(d, m, s)
    d, m, s = lng[:-1].split('°')[0], lng[:-1].split('°')[1].split('\'')[0],
    lng_dd = dms_to_dd(d, m, s)
    decimal_coordinates.append((lat_dd, lng_dd))

# Print converted coordinates
for coord in decimal_coordinates:
    print("Latitude: {}, Longitude: {}".format(coord[0], coord[1]))

# Assuming WGS to SVY conversion
url = "https://tasks.arcgisonline.com/ArcGIS/rest/services/Geometry/Geometry"
inSR = "4326"
outSR = "3414"

# Sample coordinates converted to decimal degrees
decimal_coordinates = [
    (1.32538, 103.755134),
```

```

        (1.271226, 103.755134),
        (1.32538, 103.821634),
        (1.271226, 103.821634),
    ]

# Prepare output
output = [[ "X", "Y", "Lat", "Lng"]]

# Process each coordinate
for lat, lng in decimal_coordinates:
    geometries = json.dumps({
        "geometryType": "esriGeometryPoint",
        "geometries": [{"x": lng, "y": lat}]
    })
    params = {
        'f': 'json',
        'inSR': inSR,
        'outSR': outSR,
        'geometries': geometries,
    }
    query_string = urllib.parse.urlencode(params, quote_via=urllib.parse.quote)
    full_url = f"{url}?{query_string}"

try:
    with urllib.request.urlopen(full_url) as response:
        contents = json.load(response)
        Xout = contents['geometries'][0]['x']
        Yout = contents['geometries'][0]['y']
        output.append([Xout, Yout, lat, lng])
        print("Converted: ", Xout, Yout)
except urllib.error.HTTPError as e:
    error_message = e.read().decode()
    print("HTTP Error:", e.code, error_message)
    print("Faulty URL:", full_url)
except Exception as e:
    print("An error occurred:", e)

# Print the output for verification
print(output)

# Write the output to a CSV file
with open("data/output.csv", "w", newline="") as f:
    writer = csv.writer(f)
    writer.writerow(output)

```

```
Latitude: 1.32538, Longitude: 103.755134
Latitude: 1.271226, Longitude: 103.755134
Latitude: 1.32538, Longitude: 103.821634
Latitude: 1.271226, Longitude: 103.821634
Converted: 19298.8426826806 34179.44080348494
Converted: 19298.657506880314 28191.36498826045
Converted: 26699.624262399386 34179.30650922603
Converted: 26699.59655845365 28191.236177500577
[['X', 'Y', 'Lat', 'Lng'], [19298.8426826806, 34179.44080348494, 1.32538, 103.755134], [19298.657506880314, 28191.36498826045, 1.271226, 103.755134], [26699.624262399386, 34179.30650922603, 1.32538, 103.821634], [26699.59655845365, 28191.236177500577, 1.271226, 103.821634]]
```

Filter out carparks in the region

```
In [67]: x_min, x_max = 19298.657506880314, 26699.624262399386
y_min, y_max = 28191.36498826045, 34179.30650922603

# Filter the dataset
carpark_filtered = carpark_info[
    (carpark_info['x_coord'] >= x_min) & (carpark_info['x_coord'] <= x_max)
    (carpark_info['y_coord'] >= y_min) & (carpark_info['y_coord'] <= y_max)
]

carpark_filtered.to_csv("data/filtered_carparks.csv", index=False)

print("Filtered carpark data has been saved to 'data/filtered_carparks.csv'.")

carpark_filtered
```

Filtered carpark data has been saved to 'data/filtered_carparks.csv'.

Out[67]:

	car_park_no	address	x_coord	y_coord	car_park_type	ty
23	AR1L	3 AND 5 DOVER ROAD	22359.0217	31801.6379	SURFACE CAR PARK	
24	AR1M	BLK 2A DOVER ROAD	22474.2050	31687.9608	MULTI-STORY CAR PARK	
25	AR2L	BLK 26 AND 27 DOVER CRESCENT	22194.6359	32026.8288	SURFACE CAR PARK	
26	AR2M	BLK 28 DOVER CRESCENT	22252.4860	31896.9749	MULTI-STORY CAR PARK	
27	AR5M	BLK 19A DOVER CRESCENT	22562.8641	32184.9758	MULTI-STORY CAR PARK	
...
1663	TB29	BLK 45 & 79 ALONG TELOK BLANGAH DRIVE	25069.1970	28402.4038	SURFACE CAR PARK	
1664	TB3	BLK 12/22 TELOK BLANGAH CRESCENT	26458.5039	28811.9141	SURFACE CAR PARK	
1667	TB7	BLK 29/32 TELOK BLANGAH RISE	26673.4648	28437.3189	SURFACE CAR PARK	
1668	TB8	BLK 30/31 TELOK BLANGAH RISE	26601.7550	28348.0370	SURFACE CAR PARK	
1697	THM	BLK 37B COMMONWEALTH DRIVE	24057.5790	31174.2517	MULTI-STORY CAR PARK	

214 rows × 12 columns

In [68]:

```
unique_carpark_numbers = carpark_filtered['car_park_no'].unique()

# Count the number of unique values
num_unique_carparks = len(unique_carpark_numbers)

print(f"There are {num_unique_carparks} unique carpark numbers.")
```

There are 214 unique carpark numbers.

In [69]:

```
jul_carpark_2024 = jul_carpark_2024[
    jul_carpark_2024['carpark_number'].isin(carpark_filtered['car_park_no'])
]
aug_carpark_2024 = aug_carpark_2024[
    aug_carpark_2024['carpark_number'].isin(carpark_filtered['car_park_no'])
]
aug_carpark_2023 = aug_carpark_2023[
    aug_carpark_2023['carpark_number'].isin(carpark_filtered['car_park_no'])
]
jul_carpark_2024
```

Out[69]:

	carpark_number	update_datetime	total_lots	lot_type	lots_available
0	HE12	2024-06-30T23:59:31	105	C	2
2	RHM	2024-06-30T23:59:31	329	C	12
3	BM29	2024-06-30T23:59:49	97	C	7
4	Q81	2024-06-30T23:59:51	97	C	7
5	C20	2024-06-30T23:59:47	176	C	11
...
1319498	SAM	2024-07-31T22:54:39	327	C	21
1319509	C19M	2024-07-31T22:54:18	84	Y	6
1319514	Q41	2024-07-31T22:59:26	90	C	1
1319519	C2M	2024-07-31T23:00:11	765	C	35
1319535	DWSP	2024-07-31T22:52:04	604	C	34

117374 rows × 5 columns

```
In [70]: unique_carpark_numbers = jul_carpark_2024['carpark_number'].unique()

# Count the number of unique values
num_unique_carparks = len(unique_carpark_numbers)

print(f"There are {num_unique_carparks} unique carpark numbers.")
```

There are 175 unique carpark numbers.

Data Cleaning

Drop out of range data

```
In [71]: # We noticed that some update time is not in the correct time frame, so we can drop them
jul_carpark_2024['update_datetime'] = pd.to_datetime(jul_carpark_2024['update_datetime'])
jul_carpark_2024 = jul_carpark_2024[jul_carpark_2024['update_datetime'].between('2024-01-01 00:00:00', '2024-12-31 23:59:59')]
aug_carpark_2024['update_datetime'] = pd.to_datetime(aug_carpark_2024['update_datetime'])
aug_carpark_2024 = aug_carpark_2024[aug_carpark_2024['update_datetime'].between('2024-01-01 00:00:00', '2024-12-31 23:59:59')]
aug_carpark_2023['update_datetime'] = pd.to_datetime(aug_carpark_2023['update_datetime'])
aug_carpark_2023 = aug_carpark_2023[aug_carpark_2023['update_datetime'].between('2023-01-01 00:00:00', '2023-12-31 23:59:59')]
```

Drop Duplicate

```
In [72]: # drop the duplicate rows
jul_carpark_2024 = jul_carpark_2024.drop_duplicates()
aug_carpark_2024 = aug_carpark_2024.drop_duplicates()
aug_carpark_2023 = aug_carpark_2023.drop_duplicates()
```

Drop Anomaly

```
In [73]: # drop rows where lots_available is greater than total_lots
jul_carpark_2024 = jul_carpark_2024[jul_carpark_2024['lots_available'] <= ju
jul_carpark_2024.reset_index(drop=True, inplace=True)
aug_carpark_2024 = aug_carpark_2024[aug_carpark_2024['lots_available'] <= au
aug_carpark_2024.reset_index(drop=True, inplace=True)
aug_carpark_2023 = aug_carpark_2023[aug_carpark_2023['lots_available'] <= au
aug_carpark_2023.reset_index(drop=True, inplace=True)
```

Drop NA

```
In [74]: # drop the NAN values(if any)
jul_carpark_2024 = jul_carpark_2024.dropna(subset=['total_lots', 'lots_avail
print(jul_carpark_2024.info())
aug_carpark_2024 = aug_carpark_2024.dropna(subset=['total_lots', 'lots_avail
print(aug_carpark_2024.info())
aug_carpark_2023 = aug_carpark_2023.dropna(subset=['total_lots', 'lots_avail
print(aug_carpark_2023.info())
```

```

<class 'pandas.core.frame.DataFrame'>
RangeIndex: 115531 entries, 0 to 115530
Data columns (total 5 columns):
 #   Column           Non-Null Count  Dtype  
--- 
 0   carpark_number    115531 non-null   object  
 1   update_datetime   115531 non-null   datetime64[ns]
 2   total_lots        115531 non-null   int64   
 3   lot_type          115531 non-null   object  
 4   lots_available    115531 non-null   int64   
dtypes: datetime64[ns](1), int64(2), object(2)
memory usage: 4.4+ MB
None
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 118403 entries, 0 to 118402
Data columns (total 5 columns):
 #   Column           Non-Null Count  Dtype  
--- 
 0   carpark_number    118403 non-null   object  
 1   update_datetime   118403 non-null   datetime64[ns]
 2   total_lots        118403 non-null   int64   
 3   lot_type          118403 non-null   object  
 4   lots_available    118403 non-null   int64   
dtypes: datetime64[ns](1), int64(2), object(2)
memory usage: 4.5+ MB
None
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 109074 entries, 0 to 109073
Data columns (total 5 columns):
 #   Column           Non-Null Count  Dtype  
--- 
 0   carpark_number    109074 non-null   object  
 1   update_datetime   109074 non-null   datetime64[ns]
 2   total_lots        109074 non-null   int64   
 3   lot_type          109074 non-null   object  
 4   lots_available    109074 non-null   int64   
dtypes: datetime64[ns](1), int64(2), object(2)
memory usage: 4.2+ MB
None

```

```

In [75]: unique_carpark_numbers = jul_carpark_2024['carpark_number'].unique()
print(unique_carpark_numbers)

# Convert the list to a DataFrame
df_unique_carpark = pd.DataFrame(unique_carpark_numbers, columns=["CarPark_N"]

# Save the DataFrame to a CSV file
output_file = "data/unique_carpark_list.csv"
df_unique_carpark.to_csv(output_file, index=False)

# Count the number of unique values
num_unique_carparks = len(unique_carpark_numbers)

print(f"There are {num_unique_carparks} unique carpark numbers.")

```

```
[ 'HE12' 'RHM' 'BM29' 'Q81' 'C20' 'FR3M' 'C32' 'C6' 'BM3' 'TB14' 'C7' 'C17'
'C20M' 'BM1' 'BM2' 'BM26' 'BWM' 'TBMT' 'BM28' 'BM30' 'SAM2' 'TBM2' 'FR4M'
'STAM' 'TB2' 'FR2C' 'GM1A' 'AR5M' 'AR9' 'C5' 'C9' 'C8' 'C3M' 'C4M' 'C24'
'C27' 'Q84' 'Q87' 'Q89' 'BM5' 'TB1' 'TB3' 'TBC3' 'C26' 'C25' 'C22M'
'C21M' 'C13M' 'C12' 'C14M' 'C10' 'TBM3' 'TBM4' 'MLM' 'CLM' 'BM14' 'BM19'
'BM20' 'BM4' 'BM6' 'HCM' 'HE19' 'HE24' 'JRTM' 'LBM' 'RHM2' 'RHM3' 'RHM4'
'RHS' 'CLNA' 'Q86' 'Q19' 'MLM1' 'STM1' 'STM2' 'STM3' 'Q88' 'Q8' 'CDM'
'HE17' 'TB22' 'TB23' 'TB28' 'TB7' 'TB8' 'TBCM' 'Q68' 'Q65' 'AR1M' 'TB19'
'Q77M' 'Q80' 'Q85' 'TB17' 'TBM5' 'TBM6' 'TBM7' 'Q17' 'Q96' 'Q75M' 'C18A'
'C16' 'C18' 'AR2M' 'AR7M' 'Q16' 'AR2L' 'AV1' 'BM31' 'Q73' 'Q70' 'Q67'
'GM2' 'GM3' 'GM5' 'GM2A' 'GM6B' 'HE9' 'C11' 'C29' 'C30' 'C31' 'C33' 'C34'
'C35' 'C36' 'C37' 'C38' 'CTM1' 'AR7L' 'TBM' 'Q94' 'Q66' 'TB18' 'AR1L'
'DWSV' 'CAM' 'DWST' 'C21L' 'SMM' 'TBC2' 'DRM1' 'DRM3' 'DRM4' 'DRM5' 'DRS'
'DRM2' 'C29A' 'CLRG' 'CLTR' 'GM1M' 'DWSO' 'DSR1' 'DSR2' 'DSRL' 'C40M'
'C40L' 'GM6A' 'C15M' 'BM10' 'BM13' 'HRM' 'C28M' 'TBL' 'TBM8' 'C3ML'
'DWVT' 'PDQ5' 'SAM' 'C19M' 'Q41' 'C2M' 'DWSP' ]
```

There are 173 unique carpark numbers.

Feature Engineering

Extract day/hour

```
In [76]: jul_carpark_2024['date'] = jul_carpark_2024['update_datetime'].dt.date
jul_carpark_2024.loc[:, 'date'] = jul_carpark_2024['update_datetime'].dt.date
jul_carpark_2024['day'] = jul_carpark_2024['update_datetime'].dt.day
jul_carpark_2024['hour'] = jul_carpark_2024['update_datetime'].dt.hour
jul_carpark_2024['minute'] = jul_carpark_2024['update_datetime'].dt.minute
jul_carpark_2024.head()
```

```
Out[76]:   carpark_number update_datetime total_lots lot_type lots_available date
0          HE12      2024-07-01 01:00:02        105         C            27 2024-07-01
1          RHM       2024-07-01 01:00:02        329         C           124 2024-07-01
2          BM29      2024-07-01 00:59:51        97          C            77 2024-07-01
3          Q81       2024-07-01 00:59:51        97          C            82 2024-07-01
4          C20       2024-07-01 01:00:18       176          C           122 2024-07-01
```

```
In [77]: aug_carpark_2024['date'] = aug_carpark_2024['update_datetime'].dt.date
aug_carpark_2024.loc[:, 'date'] = aug_carpark_2024['update_datetime'].dt.date
aug_carpark_2024['day'] = aug_carpark_2024['update_datetime'].dt.day
aug_carpark_2024['hour'] = aug_carpark_2024['update_datetime'].dt.hour
aug_carpark_2024['minute'] = aug_carpark_2024['update_datetime'].dt.minute
aug_carpark_2024.head()
```

Out[77]:

	carpark_number	update_datetime	total_lots	lot_type	lots_available	date
0	HE12	2024-08-01 00:00:05	105	C	27	2024-08-01
1	RHM	2024-08-01 00:00:05	329	C	144	2024-08-01
2	BM29	2024-08-01 00:00:15	97	C	67	2024-08-01
3	Q81	2024-08-01 00:00:15	97	C	84	2024-08-01
4	FR3M	2024-08-01 00:00:15	228	C	176	2024-08-01

In [78]:

```
aug_carpark_2023['date'] = aug_carpark_2023['update_datetime'].dt.date
aug_carpark_2023.loc[:, 'date'] = aug_carpark_2023['update_datetime'].dt.date
aug_carpark_2023['day'] = aug_carpark_2023['update_datetime'].dt.day
aug_carpark_2023['hour'] = aug_carpark_2023['update_datetime'].dt.hour
aug_carpark_2023['minute'] = aug_carpark_2023['update_datetime'].dt.minute
aug_carpark_2023.head()
```

Out[78]:

	carpark_number	update_datetime	total_lots	lot_type	lots_available	date
0	BM29	2023-08-01 00:59:28	97	C	87	2023-08-01
1	Q81	2023-08-01 00:59:26	96	C	84	2023-08-01
2	C20	2023-08-01 00:59:39	176	C	134	2023-08-01
3	FR3M	2023-08-01 00:59:13	228	C	166	2023-08-01
4	C32	2023-08-01 00:59:36	289	C	157	2023-08-01

Add availability column for each carpark

In [79]:

```
datasets = [jul_carpark_2024, aug_carpark_2024, aug_carpark_2023]
for dataset in datasets:
    dataset["availability"] = dataset["lots_available"] / dataset["total_lots"]
jul_carpark_2024.head()
```

Out[79]:

	carpark_number	update_datetime	total_lots	lot_type	lots_available	date
0	HE12	2024-07-01 01:00:02	105	C	27	2024-07-01
1	RHM	2024-07-01 01:00:02	329	C	124	2024-07-01
2	BM29	2024-07-01 00:59:51	97	C	77	2024-07-01
3	Q81	2024-07-01 00:59:51	97	C	82	2024-07-01
4	C20	2024-07-01 01:00:18	176	C	122	2024-07-01

Add in weather data

In [80]:

```
jul_weather_2024 = jul_weather_2024[jul_weather_2024["area"] == "Queenstown"]
aug_weather_2024 = aug_weather_2024[aug_weather_2024["area"] == "Queenstown"]
aug_weather_2023 = aug_weather_2023[aug_weather_2023["area"] == "Queenstown"]
jul_weather_2024.head()
```

Out[80]:

	area	forecast	timestamp	start_time	end_time
30	Queenstown	Cloudy	2024-07-01T00:00:00+08:00	2024-07-01T00:00:00+08:00	2024-07-01T02:00:00+08:00
77	Queenstown	Cloudy	2024-07-01T01:00:00+08:00	2024-07-01T01:00:00+08:00	2024-07-01T03:00:00+08:00
124	Queenstown	Cloudy	2024-07-01T02:00:00+08:00	2024-07-01T02:00:00+08:00	2024-07-01T04:00:00+08:00
171	Queenstown	Cloudy	2024-07-01T03:00:00+08:00	2024-07-01T03:00:00+08:00	2024-07-01T05:00:00+08:00
218	Queenstown	Cloudy	2024-07-01T04:00:00+08:00	2024-07-01T04:00:00+08:00	2024-07-01T06:00:00+08:00

Group wather into four categories

In [81]:

```
unique_forecast_values = jul_weather_2024["forecast"].unique()
print(unique_forecast_values)
```

['Cloudy' 'Partly Cloudy (Day)' 'Thundery Showers' 'Partly Cloudy (Night)'
 'Light Rain' 'Showers' 'Windy' 'Heavy Thundery Showers' 'Light Showers'
 'Heavy Thundery Showers with Gusty Winds' 'Fair (Night)' 'Fair (Day)']

In [82]:

```
forecast_mapping = {
    'Fair (Night)': 'Fair',
    'Fair (Day)': 'Fair',
    'Windy': 'Fair',
    'Light Showers': 'LightRain',
    'Light Rain': 'LightRain',
    'Showers': 'LightRain',
    'Thundery Showers': 'LightRain',
```

```

    'Cloudy' : 'Cloudy',
    'Partly Cloudy (Day)': 'Cloudy',
    'Partly Cloudy (Night)': 'Cloudy',
    'Heavy Thundery Showers': 'HeavyRain',
    'Heavy Thundery Showers with Gusty Winds': 'HeavyRain'
}

# Apply the mapping to the 'forecast' column
jul_weather_2024["forecast"] = jul_weather_2024["forecast"].map(forecast_map)
aug_weather_2024["forecast"] = aug_weather_2024["forecast"].map(forecast_map)
aug_weather_2023["forecast"] = aug_weather_2023["forecast"].map(forecast_map)

# Display the updated unique values in the 'forecast' column
print(jul_weather_2024["forecast"].unique())

```

['Cloudy' 'LightRain' 'Fair' 'HeavyRain']

Combine two datasets

```

In [83]: jul_weather_2024['timestamp'] = pd.to_datetime(jul_weather_2024['timestamp'])
jul_carpark_2024['update_datetime'] = pd.to_datetime(jul_carpark_2024['update_datetime'])

jul_weather_2024['timestamp'] = jul_weather_2024['timestamp'].dt.tz_localize(None)
jul_carpark_2024['update_datetime'] = jul_carpark_2024['update_datetime'].dt.tz_localize(None)

jul_weather_2024['hour'] = jul_weather_2024['timestamp'].dt.floor('h')
jul_carpark_2024['hour'] = jul_carpark_2024['update_datetime'].dt.floor('h')

jul_carpark_2024 = pd.merge(jul_carpark_2024, jul_weather_2024[['hour', 'forecast']])

jul_carpark_2024 = jul_carpark_2024.dropna(subset=['forecast'])
jul_carpark_2024['hour'] = jul_carpark_2024['update_datetime'].dt.hour

jul_carpark_2024.head()

```

	carpark_number	update_datetime	total_lots	lot_type	lots_available	date
0	HE12	2024-07-01 01:00:02	105	C	27	2024-07-01
1	RHM	2024-07-01 01:00:02	329	C	124	2024-07-01
2	BM29	2024-07-01 00:59:51	97	C	77	2024-07-01
3	Q81	2024-07-01 00:59:51	97	C	82	2024-07-01
4	C20	2024-07-01 01:00:18	176	C	122	2024-07-01

```

In [84]: unique_carpark_numbers = jul_carpark_2024['carpark_number'].unique()

# Count the number of unique values
num_unique_carparks = len(unique_carpark_numbers)

```

```
print(f"There are {num_unique_carparks} unique carpark numbers.")
```

There are 173 unique carpark numbers.

```
In [85]: unique_jul_carpark_2024 = jul_carpark_2024["forecast"].unique()  
print(unique_jul_carpark_2024)  
  
['Cloudy' 'LightRain' 'Fair' 'HeavyRain']
```

```
In [86]: aug_weather_2024['timestamp'] = pd.to_datetime(aug_weather_2024['timestamp'])  
aug_carpark_2024['update_datetime'] = pd.to_datetime(aug_carpark_2024['update_datetime'])  
  
aug_weather_2024['timestamp'] = aug_weather_2024['timestamp'].dt.tz_localize('UTC')  
aug_carpark_2024['update_datetime'] = aug_carpark_2024['update_datetime'].dt.tz_localize('UTC')  
  
aug_weather_2024['hour'] = aug_weather_2024['timestamp'].dt.floor('h')  
aug_carpark_2024['hour'] = aug_carpark_2024['update_datetime'].dt.floor('h')  
  
aug_carpark_2024 = pd.merge(aug_carpark_2024, aug_weather_2024[['hour', 'forecast']])  
aug_carpark_2024 = aug_carpark_2024.dropna(subset=['forecast'])  
aug_carpark_2024['hour'] = aug_carpark_2024['update_datetime'].dt.hour  
  
aug_carpark_2024.head()
```

```
Out[86]:
```

	carpark_number	update_datetime	total_lots	lot_type	lots_available	date
0	HE12	2024-08-01 00:00:05	105	C	27	2024-08-01
1	HE12	2024-08-01 00:00:05	105	C	27	2024-08-01
2	RHM	2024-08-01 00:00:05	329	C	144	2024-08-01
3	RHM	2024-08-01 00:00:05	329	C	144	2024-08-01
4	BM29	2024-08-01 00:00:15	97	C	67	2024-08-01

```
In [87]: aug_weather_2023['timestamp'] = pd.to_datetime(aug_weather_2023['timestamp'])  
aug_carpark_2023['update_datetime'] = pd.to_datetime(aug_carpark_2023['update_datetime'])  
  
aug_weather_2023['timestamp'] = aug_weather_2023['timestamp'].dt.tz_localize('UTC')  
aug_carpark_2023['update_datetime'] = aug_carpark_2023['update_datetime'].dt.tz_localize('UTC')  
  
aug_weather_2023['hour'] = aug_weather_2023['timestamp'].dt.floor('h')  
aug_carpark_2023['hour'] = aug_carpark_2023['update_datetime'].dt.floor('h')  
  
aug_carpark_2023 = pd.merge(aug_carpark_2023, aug_weather_2023[['hour', 'forecast']])  
aug_carpark_2023 = aug_carpark_2023.dropna(subset=['forecast'])  
aug_carpark_2023['hour'] = aug_carpark_2023['update_datetime'].dt.hour  
aug_carpark_2023 = aug_carpark_2023.dropna(subset=['forecast'])
```

```
aug_carpark_2023.head()
```

Out[87]:

	carpark_number	update_datetime	total_lots	lot_type	lots_available	date
0	BM29	2023-08-01 00:59:28	97	C	87	2023-08-01
1	Q81	2023-08-01 00:59:26	96	C	84	2023-08-01
2	C20	2023-08-01 00:59:39	176	C	134	2023-08-01
3	FR3M	2023-08-01 00:59:13	228	C	166	2023-08-01
4	C32	2023-08-01 00:59:36	289	C	157	2023-08-01

In [88]:

```
aug_carpark_2023 = aug_carpark_2023[['carpark_number', 'day', 'hour', 'availability', 'forecast']]
aug_carpark_2024 = aug_carpark_2024[['carpark_number', 'day', 'hour', 'availability', 'forecast']]
jul_carpark_2024 = jul_carpark_2024[['carpark_number', 'day', 'hour', 'availability', 'forecast']]
# Display the result
aug_carpark_2023
```

Out[88]:

	carpark_number	day	hour	availability	forecast
0	BM29	1	0	0.896907	Cloudy
1	Q81	1	0	0.875000	Cloudy
2	C20	1	0	0.761364	Cloudy
3	FR3M	1	0	0.728070	Cloudy
4	C32	1	0	0.543253	Cloudy
...
114169	SAM	31	22	0.681957	Fair
114170	C19M	31	22	0.869048	Fair
114171	Q41	31	22	0.288889	Fair
114172	C2M	31	22	0.565722	Fair
114173	DWSP	31	22	0.561258	Fair

107467 rows × 5 columns

One-Hot Encoding

In [89]:

```
aug_carpark_2023 = pd.get_dummies(aug_carpark_2023, columns=['forecast'])
aug_carpark_2024 = pd.get_dummies(aug_carpark_2024, columns=['forecast'])
jul_carpark_2024 = pd.get_dummies(jul_carpark_2024, columns=['forecast'])

aug_carpark_2023.head()
```

Out[89]:

	carpark_number	day	hour	availability	forecast_Cloudy	forecast_Fair	for
0	BM29	1	0	0.896907	True	False	
1	Q81	1	0	0.875000	True	False	
2	C20	1	0	0.761364	True	False	
3	FR3M	1	0	0.728070	True	False	
4	C32	1	0	0.543253	True	False	

Creating lag features

In [90]:

```
aug_carpark_2023['lag_1'] = aug_carpark_2023['availability'].shift(1)
aug_carpark_2023['lag_24'] = aug_carpark_2023['availability'].shift(24)
aug_carpark_2023['lag_168'] = aug_carpark_2023['availability'].shift(168)

aug_carpark_2023.loc[0, 'lag_1'] = aug_carpark_2023.loc[0, 'availability']
aug_carpark_2023.loc[0:23, 'lag_24'] = aug_carpark_2023.loc[0:23, 'availability']
aug_carpark_2023.loc[0:167, 'lag_168'] = aug_carpark_2023.loc[0:167, 'availability']

aug_carpark_2024['lag_1'] = aug_carpark_2024['availability'].shift(1)
aug_carpark_2024['lag_24'] = aug_carpark_2024['availability'].shift(24)
aug_carpark_2024['lag_168'] = aug_carpark_2024['availability'].shift(168)

aug_carpark_2024.loc[0, 'lag_1'] = aug_carpark_2024.loc[0, 'availability']
aug_carpark_2024.loc[0:23, 'lag_24'] = aug_carpark_2024.loc[0:23, 'availability']
aug_carpark_2024.loc[0:167, 'lag_168'] = aug_carpark_2024.loc[0:167, 'availability']

jul_carpark_2024['lag_1'] = jul_carpark_2024['availability'].shift(1)
jul_carpark_2024['lag_24'] = jul_carpark_2024['availability'].shift(24)
jul_carpark_2024['lag_168'] = jul_carpark_2024['availability'].shift(168)

jul_carpark_2024.loc[0, 'lag_1'] = jul_carpark_2024.loc[0, 'availability']
jul_carpark_2024.loc[0:23, 'lag_24'] = jul_carpark_2024.loc[0:23, 'availability']
jul_carpark_2024.loc[0:167, 'lag_168'] = jul_carpark_2024.loc[0:167, 'availability']

jul_carpark_2024.head()
```

Out[90]:

	carpark_number	day	hour	availability	forecast_Cloudy	forecast_Fair	for
0	HE12	1	1	0.257143	True	False	
1	RHM	1	1	0.376900	True	False	
2	BM29	1	0	0.793814	True	False	
3	Q81	1	0	0.845361	True	False	
4	C20	1	1	0.693182	True	False	

Merge to get final train data

In [91]:

```
carpark_train = pd.concat([aug_carpark_2023, jul_carpark_2024], axis=0, ignore_index=True)
```

Out[91]:

	carpark_number	day	hour	availability	forecast_Cloudy	forecast_Fa
0	BM29	1	0	0.896907	True	False
1	Q81	1	0	0.875000	True	False
2	C20	1	0	0.761364	True	False
3	FR3M	1	0	0.728070	True	False
4	C32	1	0	0.543253	True	False
...
221637	SAM	31	22	0.660550	True	False
221638	C19M	31	22	0.773810	True	False
221639	Q41	31	22	0.188889	True	False
221640	C2M	31	23	0.469281	True	False
221641	DWSP	31	22	0.567881	True	False

221642 rows × 11 columns

Model Training

Method 1 Ridge Regression

Train a model for each carpark, with standadization, use ridge regression model and grid search

In [92]:

```

import pickle
from sklearn.linear_model import Ridge
from sklearn.model_selection import GridSearchCV
from sklearn.metrics import mean_squared_error, r2_score
from sklearn.preprocessing import MinMaxScaler
import matplotlib.pyplot as plt
import os
import shutil

features = ['day', 'hour', 'lag_1', 'lag_24', 'lag_168',
            'forecast_Cloudy', 'forecast_Fair',
            'forecast_HeavyRain', 'forecast_LightRain']
target = 'availability'

grouped = carpark_train.groupby('carpark_number')

results = []
for carpark_number, group in grouped:
    print(f"Training model for carpark_number: {carpark_number}")

    # Extract the corresponding test data from aug_carpark_2024
    test_data = aug_carpark_2024[aug_carpark_2024['carpark_number'] == carpa

```

```

if test_data.empty:
    print(f"No test data found for carpark_number {carpark_number}, skipping")
    continue

group['day'] = group['day'].clip(lower=1, upper=31)
group['hour'] = group['hour'].clip(lower=0, upper=23)
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)

X_train = group[features]
y_train = group[target]
X_test = test_data[features]
y_test = test_data[target]

scaler_X = MinMaxScaler()
scaler_y = MinMaxScaler()

X_train_scaled = scaler_X.fit_transform(X_train)
X_test_scaled = scaler_X.transform(X_test)
y_train_scaled = scaler_y.fit_transform(y_train.values.reshape(-1, 1)).flatten()
y_test_scaled = scaler_y.transform(y_test.values.reshape(-1, 1)).flatten()

param_grid = {'alpha': [0.01, 0.1, 1, 10, 100, 1000]}
ridge_model = Ridge()
grid_search = GridSearchCV(ridge_model, param_grid, scoring='neg_mean_squared_error')
grid_search.fit(X_train_scaled, y_train_scaled)

best_ridge = grid_search.best_estimator_
print(f"Best Ridge model for carpark_number {carpark_number}: {best_ridge}")

# Save the model
model_folder = "data/models"
model_name = f"model_{carpark_number}.sav"
model_path = os.path.join(model_folder, model_name)
pickle.dump(best_ridge, open(model_path, 'wb'))
print(f"Model saved as {model_name}")

y_test_pred = best_ridge.predict(X_test_scaled)
y_test_actual = scaler_y.inverse_transform(y_test_pred.reshape(-1, 1))
y_test_actual_true = scaler_y.inverse_transform(y_test_scaled.reshape(-1, 1))

test_mse = mean_squared_error(y_test_actual_true, y_test_actual)
r2 = r2_score(y_test_actual_true, y_test_actual)

print(f"Testing MSE: {test_mse}")
print(f"R-squared: {r2}\n")

results.append({
    'carpark_number': carpark_number,
    'best_model': best_ridge,
    'test_mse': test_mse,
    'r2': r2
})

test_time = pd.to_datetime(
    "2024-08-" + test_data['day'].astype(str) + ' ' + test_data['hour'].astype(str))

```

```

        errors='coerce'
    )

min_time = test_time.min()
max_time = test_time.max()
min_avail = min(y_test_actual_true.min(), y_test_actual.min())
max_avail = max(y_test_actual_true.max(), y_test_actual.max())

plt.figure(figsize=(15, 8))
plt.plot(test_time, y_test_actual_true, "-b", label="Actual Availability")
plt.plot(test_time, y_test_actual, "-r", label="Predicted Availability")
plt.xlabel("Time")
plt.ylabel("Availability")
plt.title(f"Carpark Number: {carpark_number} - Actual vs Predicted Availability")
plt.xlim(min_time, max_time)
plt.ylim(min_avail, max_avail)
plt.legend()
plt.grid()
plt.show()

results_df = pd.DataFrame(results)
print("Summary of results:")
print(results_df)

```

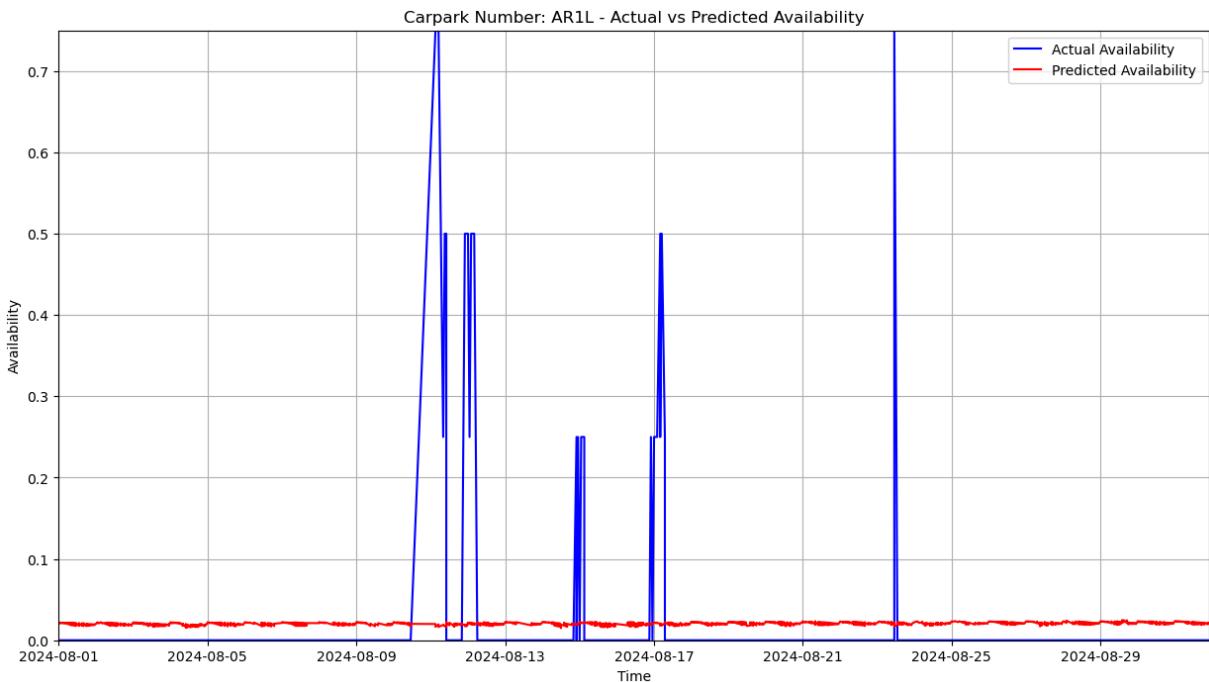
Training model for carpark_number: AR1L
Fitting 3 folds for each of 6 candidates, totalling 18 fits
Best Ridge model for carpark_number AR1L: Ridge(alpha=1000)

Model saved as model_AR1L.sav
Testing MSE: 0.008372359035116765
R-squared: -0.008454565197221875

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: AR1M

Fitting 3 folds for each of 6 candidates, totalling 18 fits

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

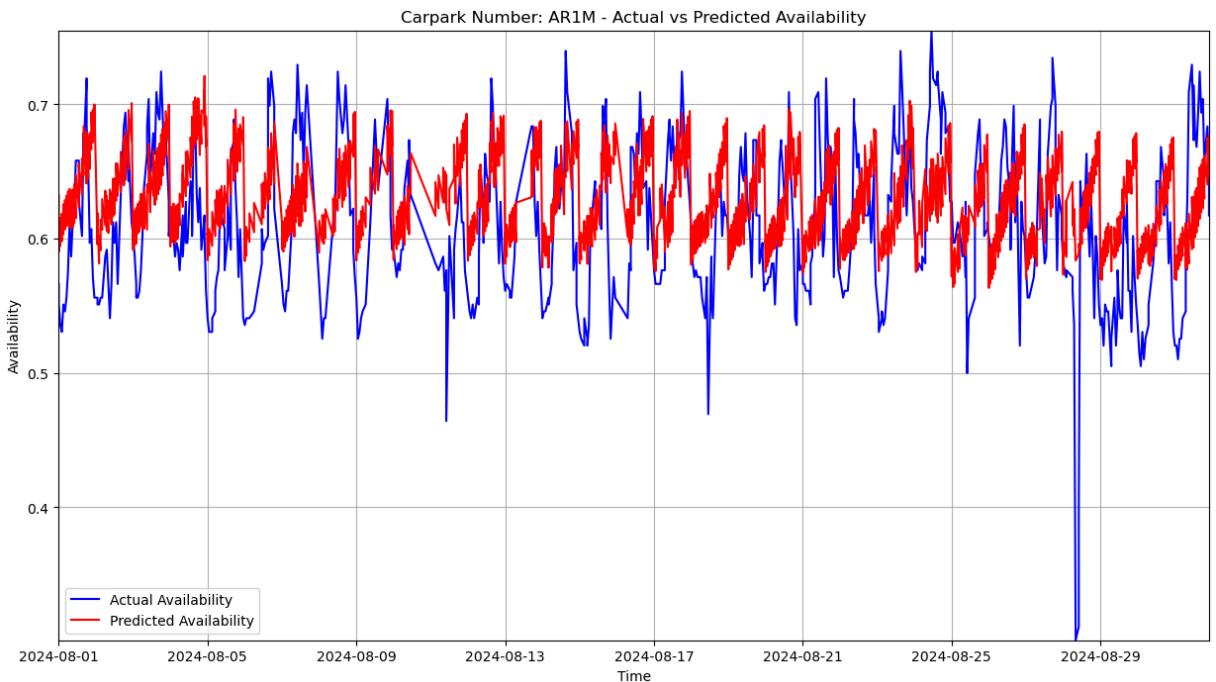
```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Best Ridge model for carpark_number AR1M: Ridge(alpha=0.01)

Model saved as model_AR1M.sav

Testing MSE: 0.003377683821866135

R-squared: -0.022398679971724844



Training model for carpark_number: AR2L

Fitting 3 folds for each of 6 candidates, totalling 18 fits
Best Ridge model for carpark_number AR2L: Ridge(alpha=1000)

Model saved as model_AR2L.sav

Testing MSE: 0.03571147174767966

R-squared: -0.04812956521246825

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

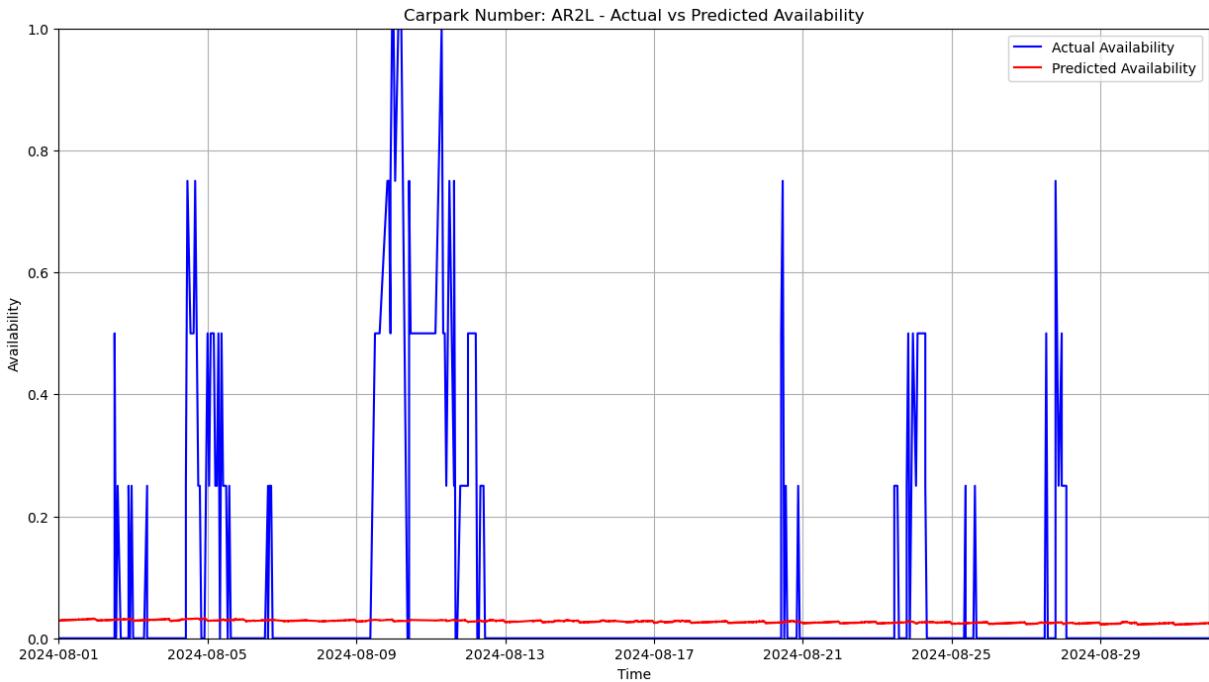
```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.
```

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: AR2M

Fitting 3 folds for each of 6 candidates, totalling 18 fits
Best Ridge model for carpark_number AR2M: Ridge(alpha=10)

Model saved as model_AR2M.sav

Testing MSE: 0.01136770937969323

R-squared: 0.17955623366951656

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

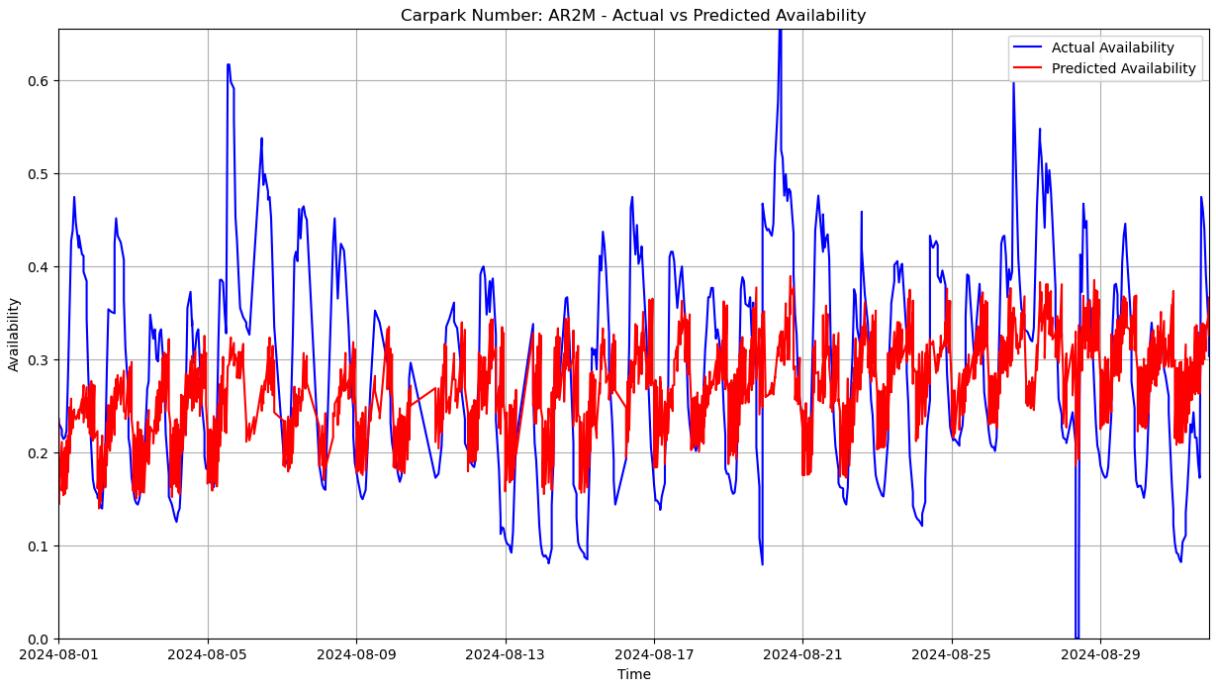
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: AR5M

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number AR5M: Ridge(alpha=10)

Model saved as model_AR5M.sav

Testing MSE: 0.0011918830332291158

R-squared: -16.692490328480464

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

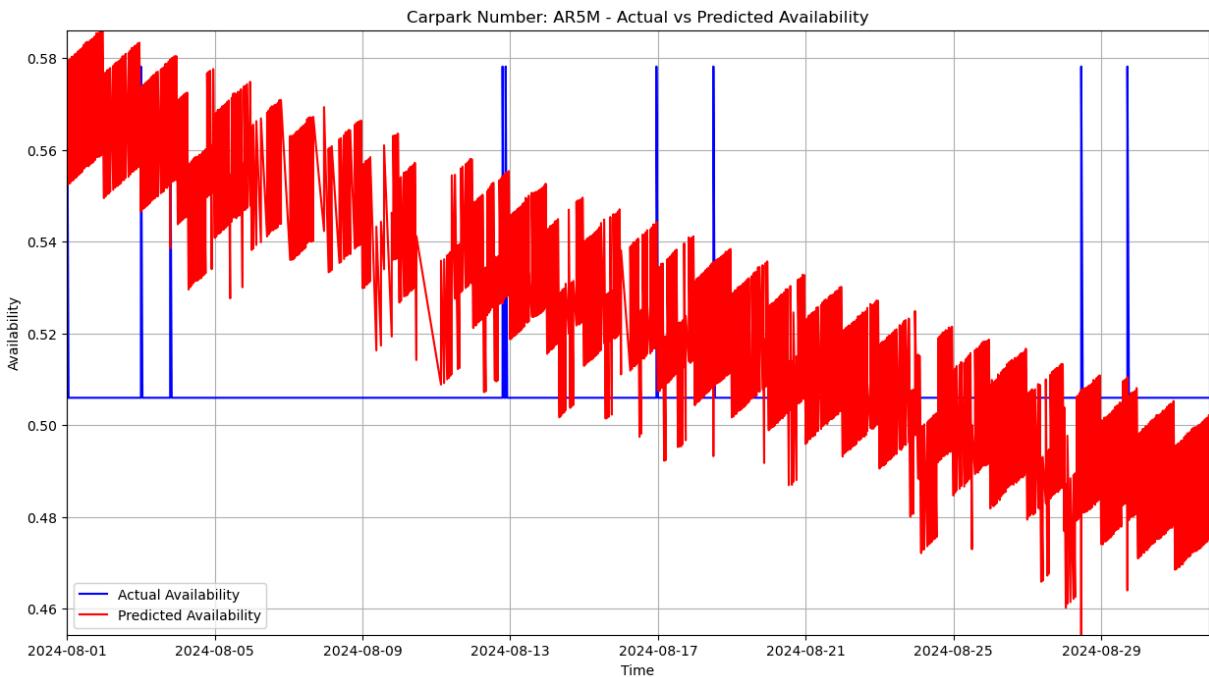
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

```
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



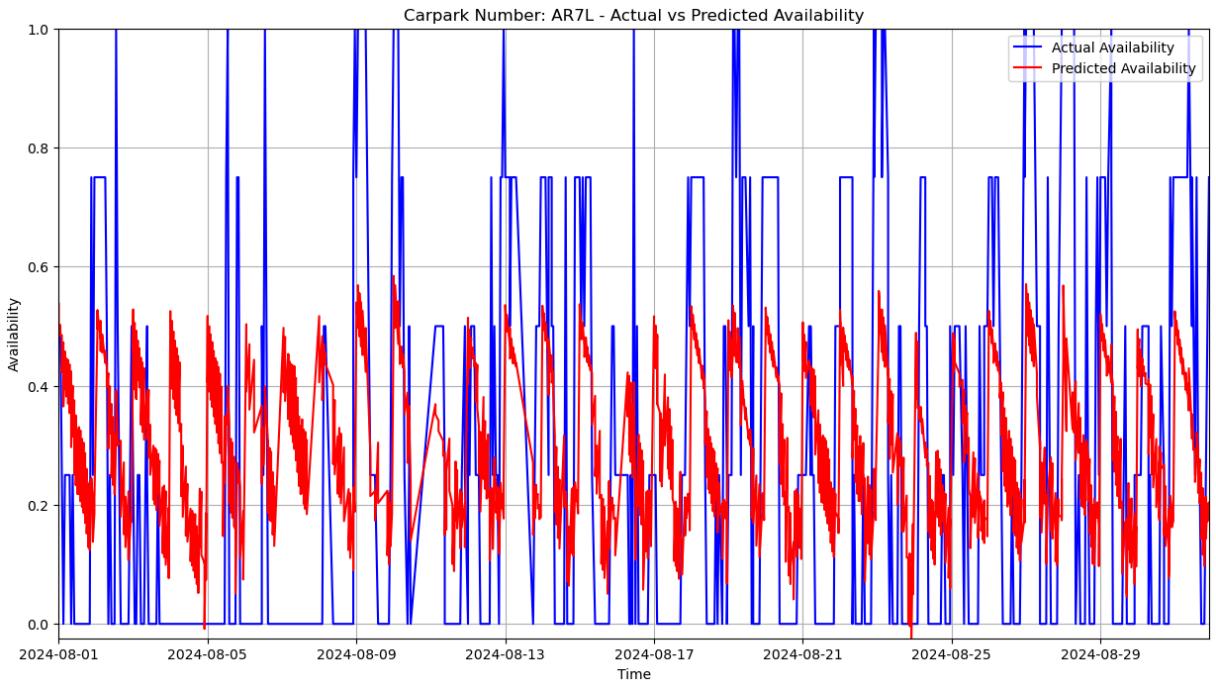
```
Training model for carpark_number: AR7L
Fitting 3 folds for each of 6 candidates, totalling 18 fits
Best Ridge model for carpark_number AR7L: Ridge(alpha=10)
```

```
Model saved as model_AR7L.sav
Testing MSE: 0.08871511634676572
R-squared: 0.24467694360425007
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: AR7M

Fitting 3 folds for each of 6 candidates, totalling 18 fits
Best Ridge model for carpark_number AR7M: Ridge(alpha=10)

Model saved as model_AR7M.sav

Testing MSE: 0.008336027099706314

R-squared: 0.25404297530593134

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

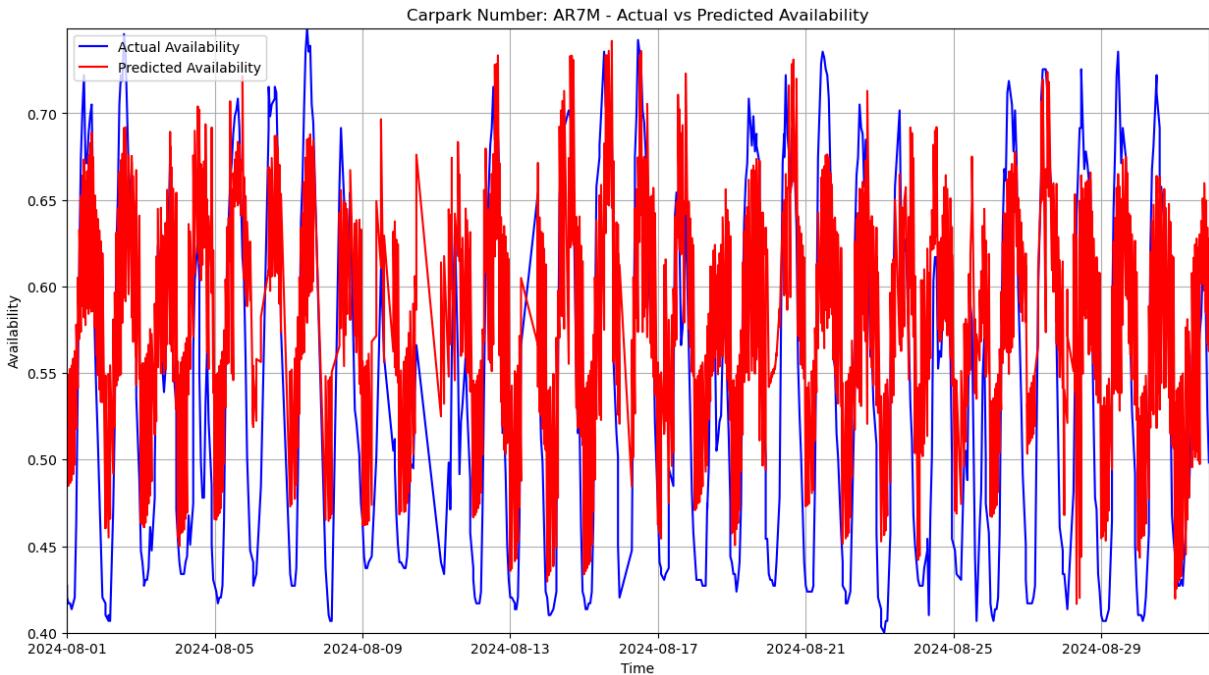
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: AR9

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number AR9: Ridge(alpha=1000)

Model saved as model_AR9.sav

Testing MSE: 0.0041421690402650944

R-squared: 0.0039082272209179925

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

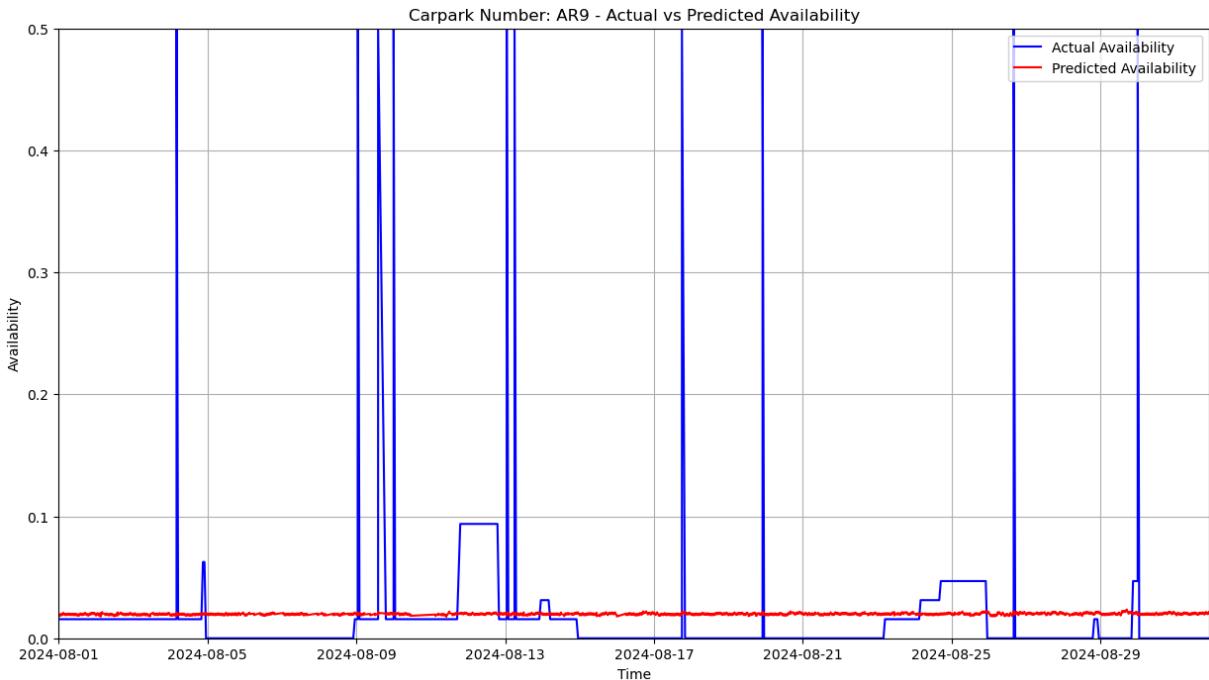
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: AV1

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number AV1: Ridge(alpha=10)

Model saved as model_AV1.sav

Testing MSE: 0.08176120398050121

R-squared: 0.08938324031170408

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

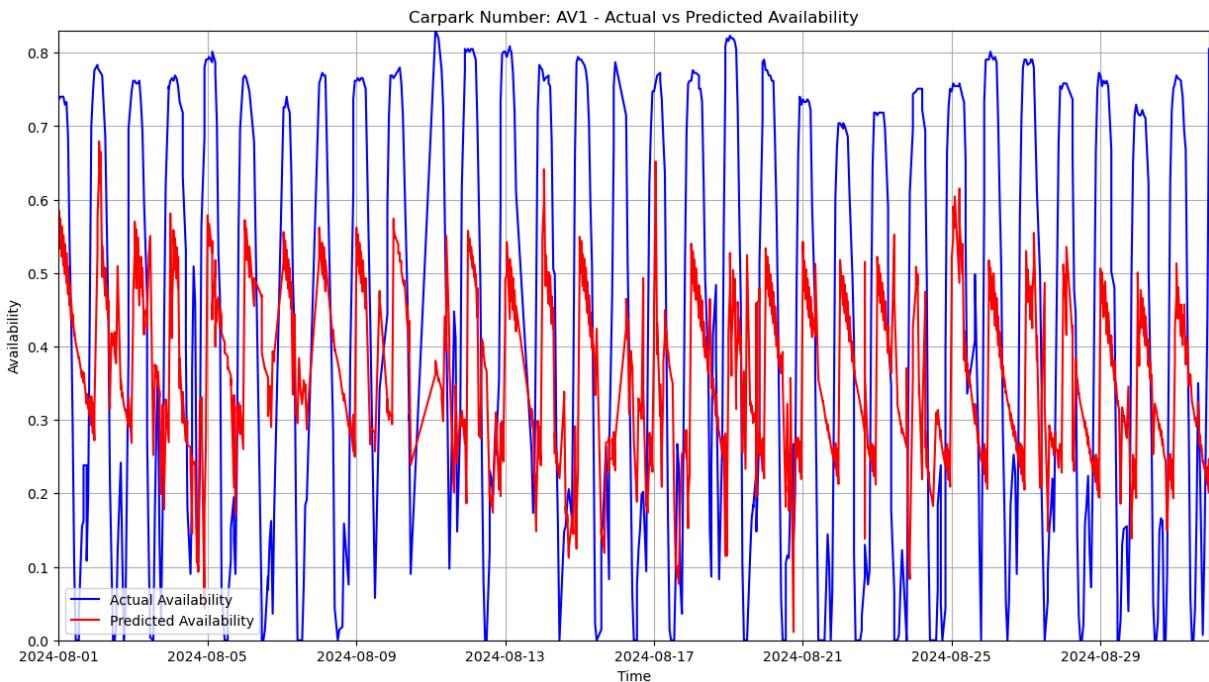
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: BM1

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)  
Fitting 3 folds for each of 6 candidates, totalling 18 fits  
Best Ridge model for carpark_number BM1: Ridge(alpha=0.01)
```

Model saved as model_BM1.sav

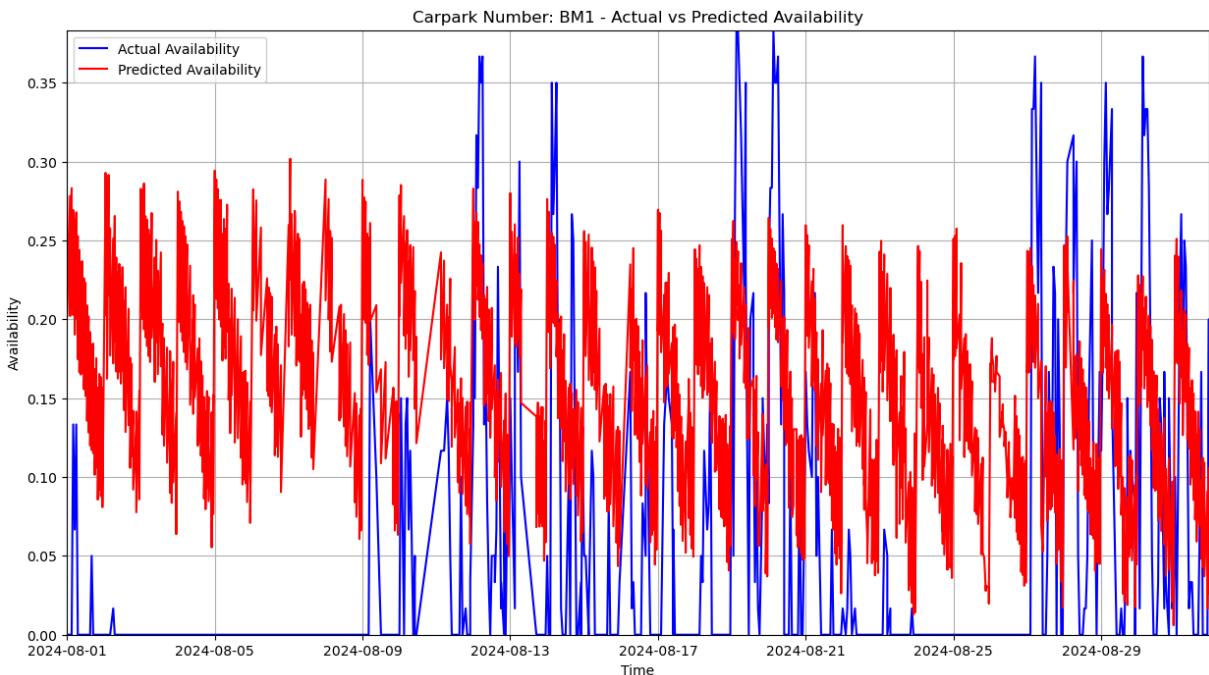
Testing MSE: 0.02011416244676477

R-squared: -1.2535480015109939

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: BM10

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number BM10: Ridge(alpha=1000)

Model saved as model_BM10.sav

Testing MSE: 0.054644108219395617

R-squared: -7.4610886085697565

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

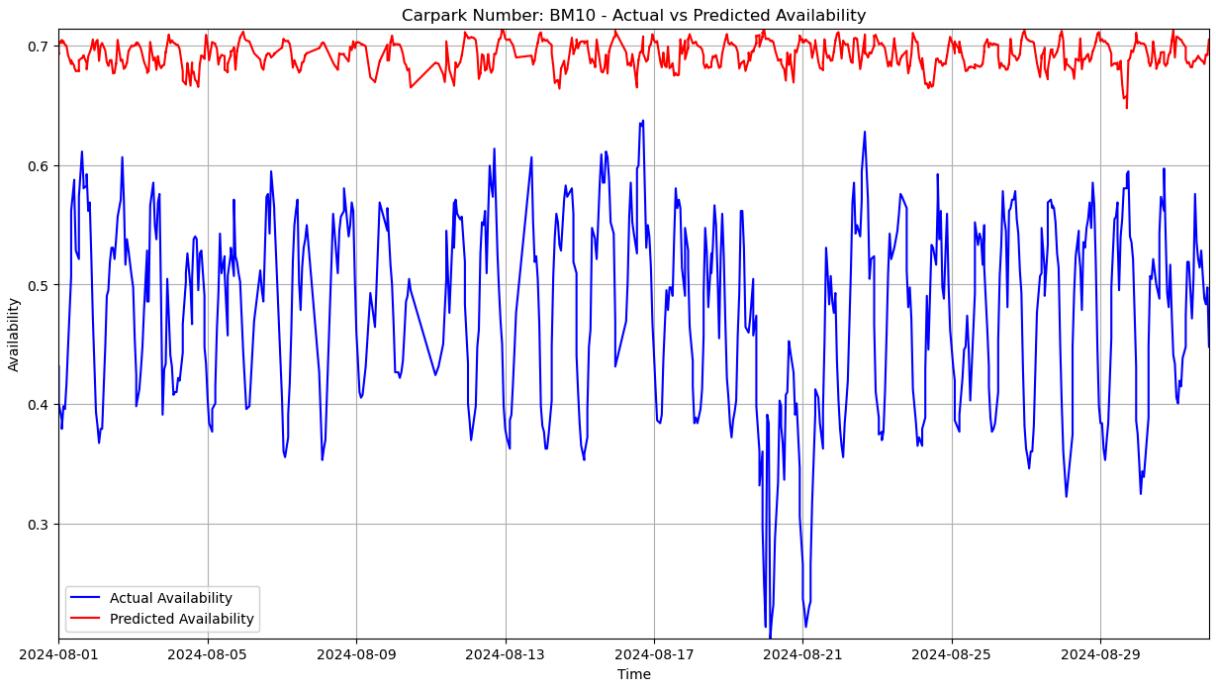
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: BM13

Fitting 3 folds for each of 6 candidates, totalling 18 fits
Best Ridge model for carpark_number BM13: Ridge(alpha=0.01)

Model saved as model_BM13.sav

Testing MSE: 0.04137111555930064

R-squared: -0.8905874262071902

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

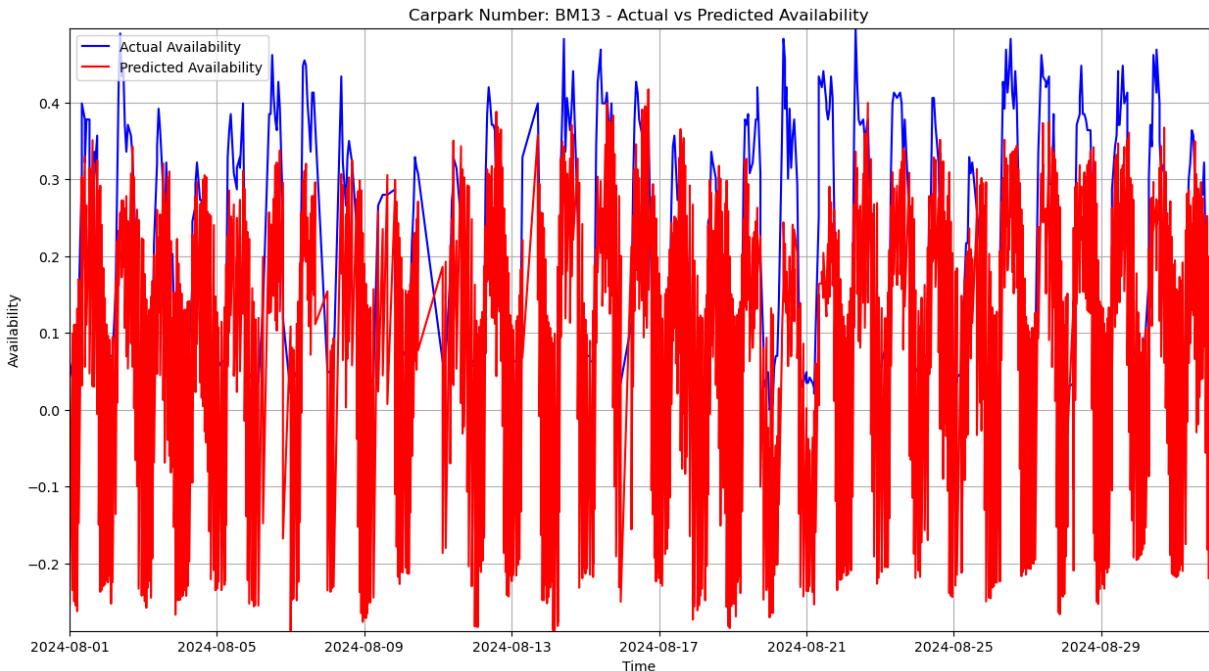
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: BM14

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number BM14: Ridge(alpha=1000)

Model saved as model_BM14.sav

Testing MSE: 0.04293477605796836

R-squared: -56.00857150482529

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

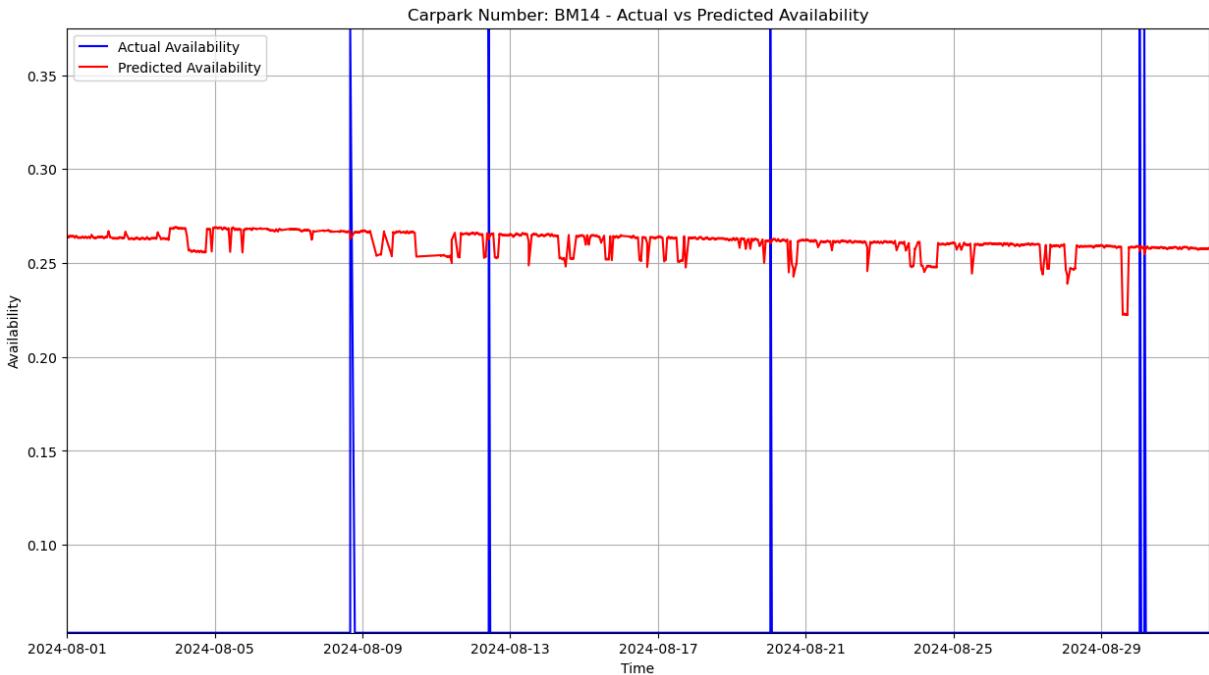
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: BM19

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number BM19: Ridge(alpha=0.01)

Model saved as model_BM19.sav

Testing MSE: 0.006574231091994851

R-squared: -34.063955984377124

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

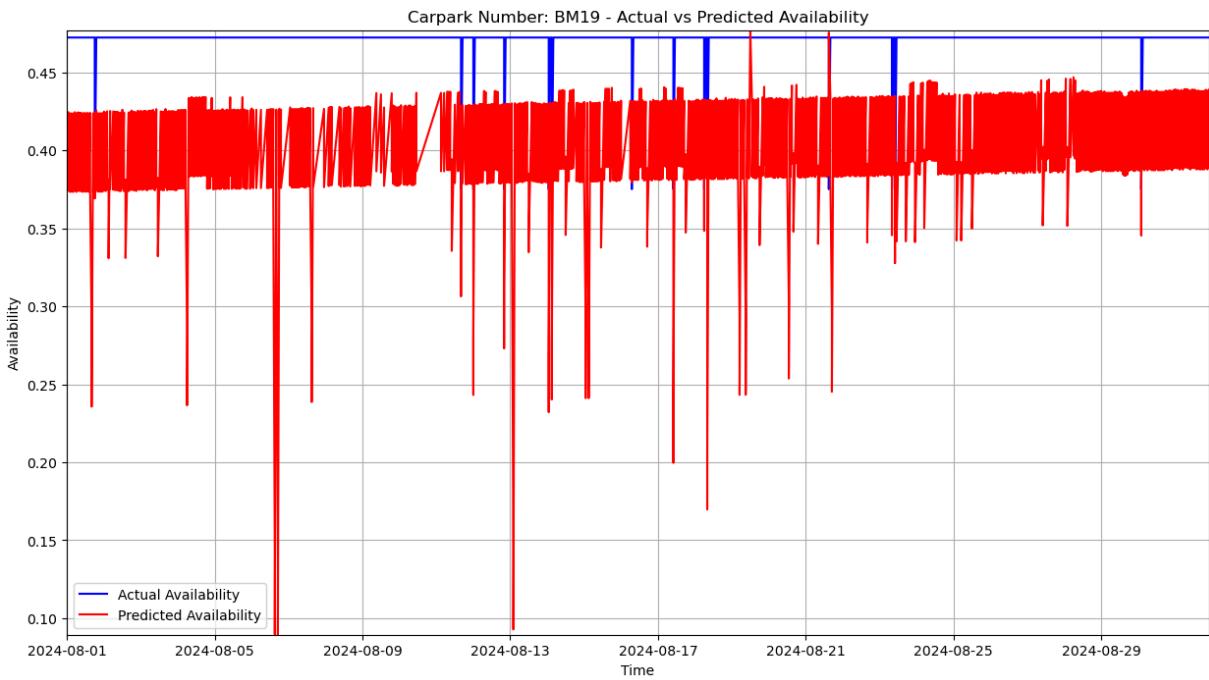
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: BM2

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number BM2: Ridge(alpha=0.01)

Model saved as model_BM2.sav

Testing MSE: 0.023635081684447157

R-squared: -0.5715338100651384

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

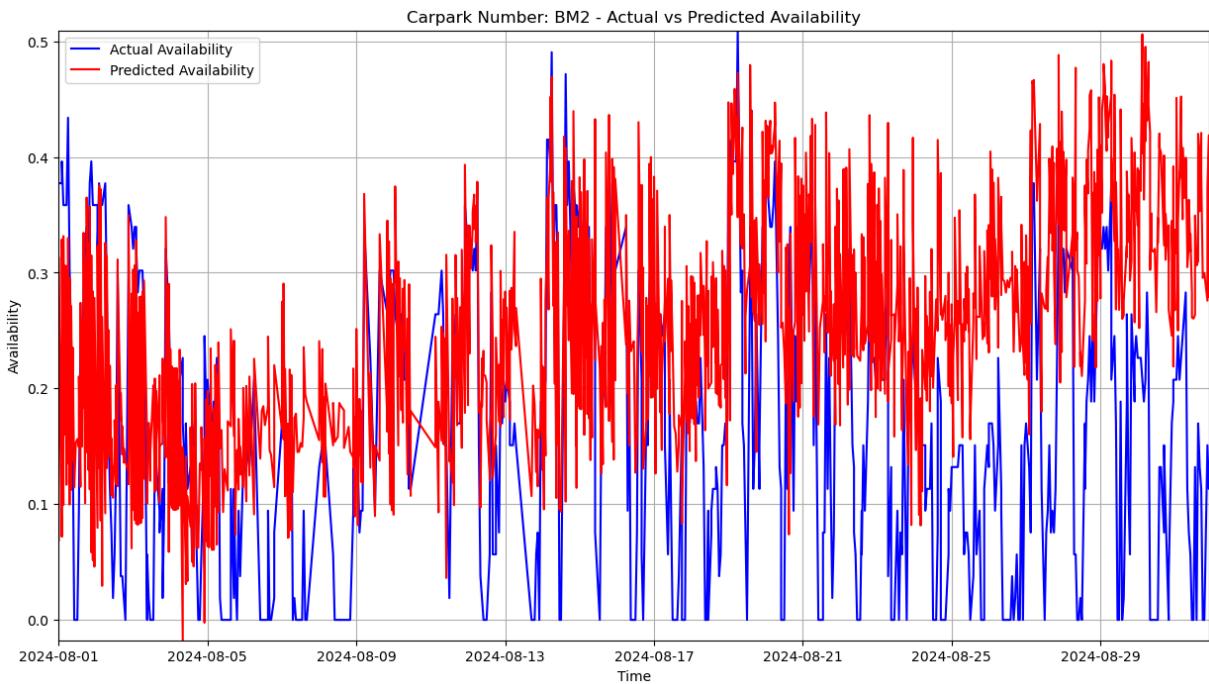
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: BM20

Fitting 3 folds for each of 6 candidates, totalling 18 fits
Best Ridge model for carpark_number BM20: Ridge(alpha=1000)

Model saved as model_BM20.sav

Testing MSE: 0.00025937151030273745

R-squared: 0.0011133832750895856

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

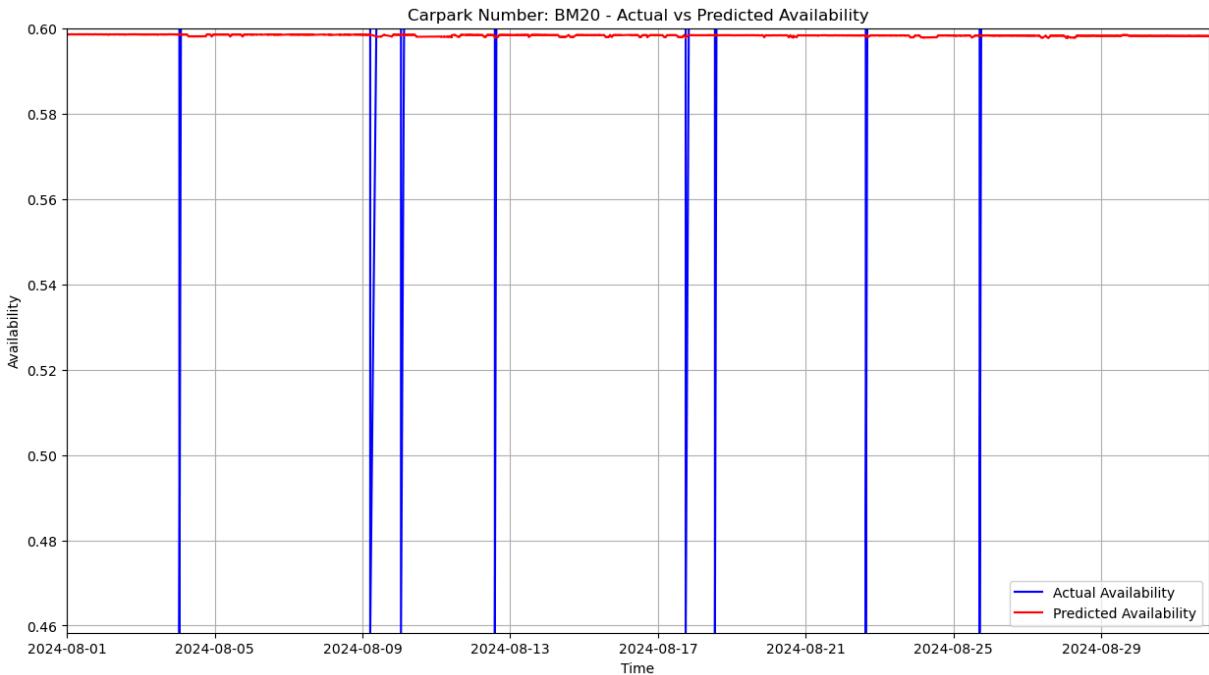
```
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: BM26

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number BM26: Ridge(alpha=1000)

Model saved as model_BM26.sav

Testing MSE: 0.006765854290288343

R-squared: -0.2229723951839615

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

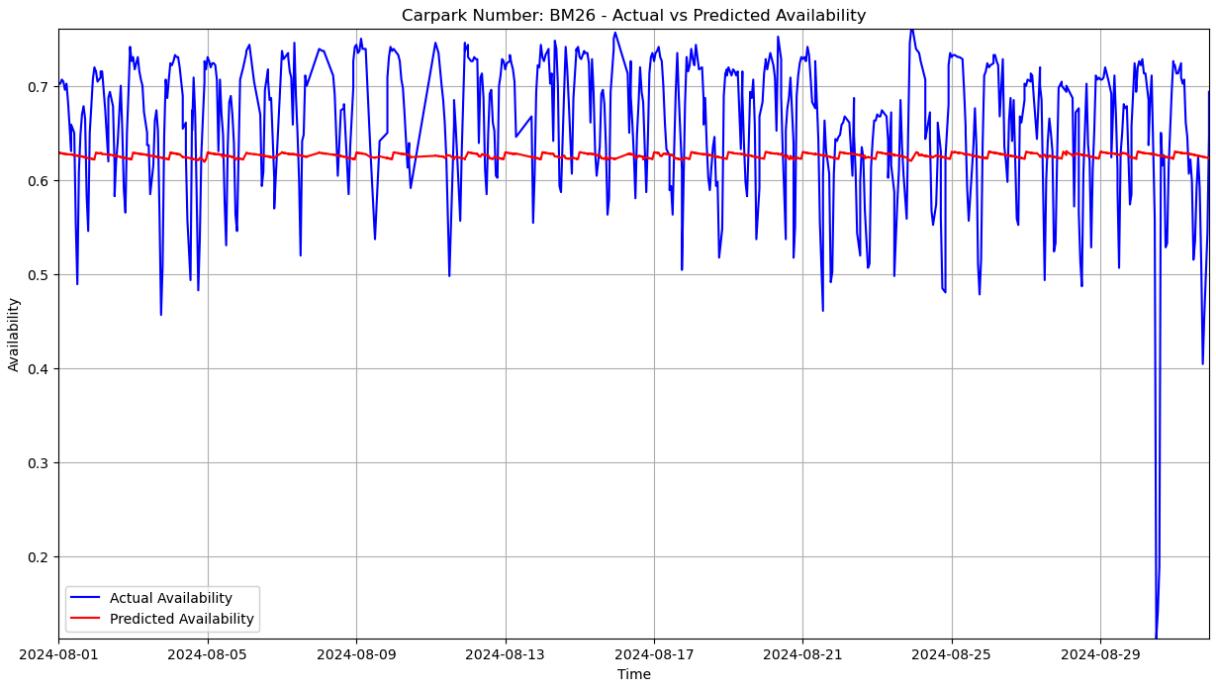
```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.
```

```
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: BM28

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number BM28: Ridge(alpha=0.1)

Model saved as model_BM28.sav

Testing MSE: 0.00511983282116466

R-squared: 0.2686842383912812

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

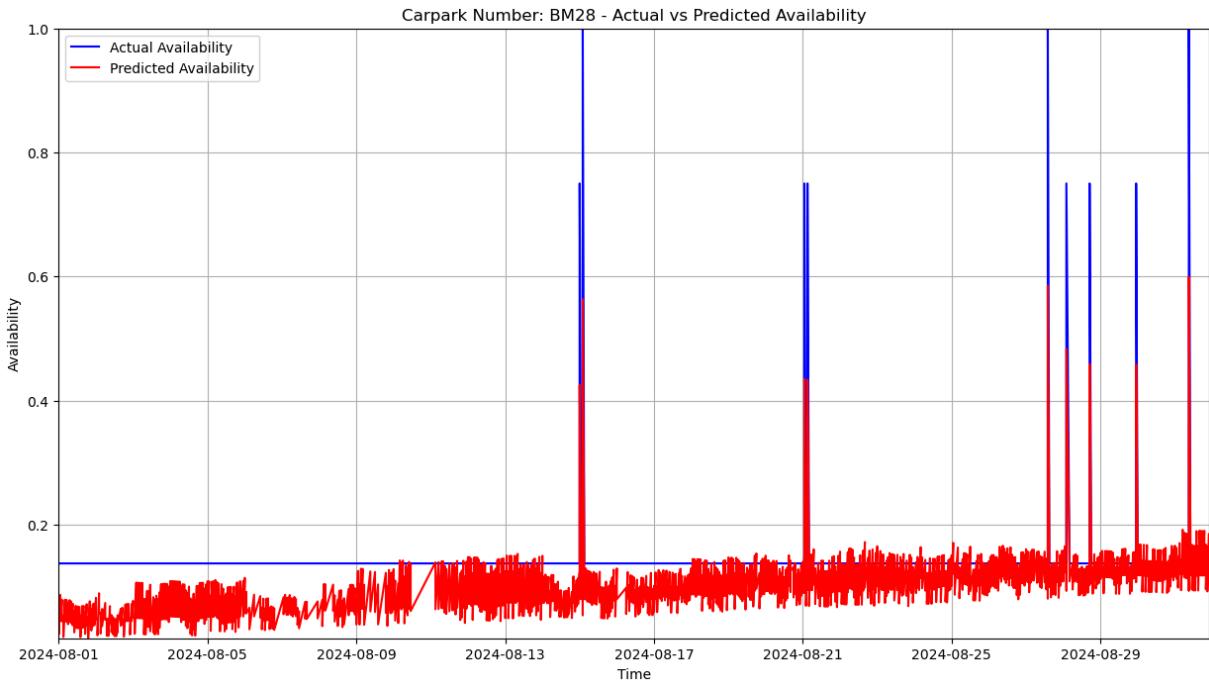
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: BM29

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number BM29: Ridge(alpha=10)

Model saved as model_BM29.sav

Testing MSE: 0.10055285388805267

R-squared: 0.1348357820846332

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

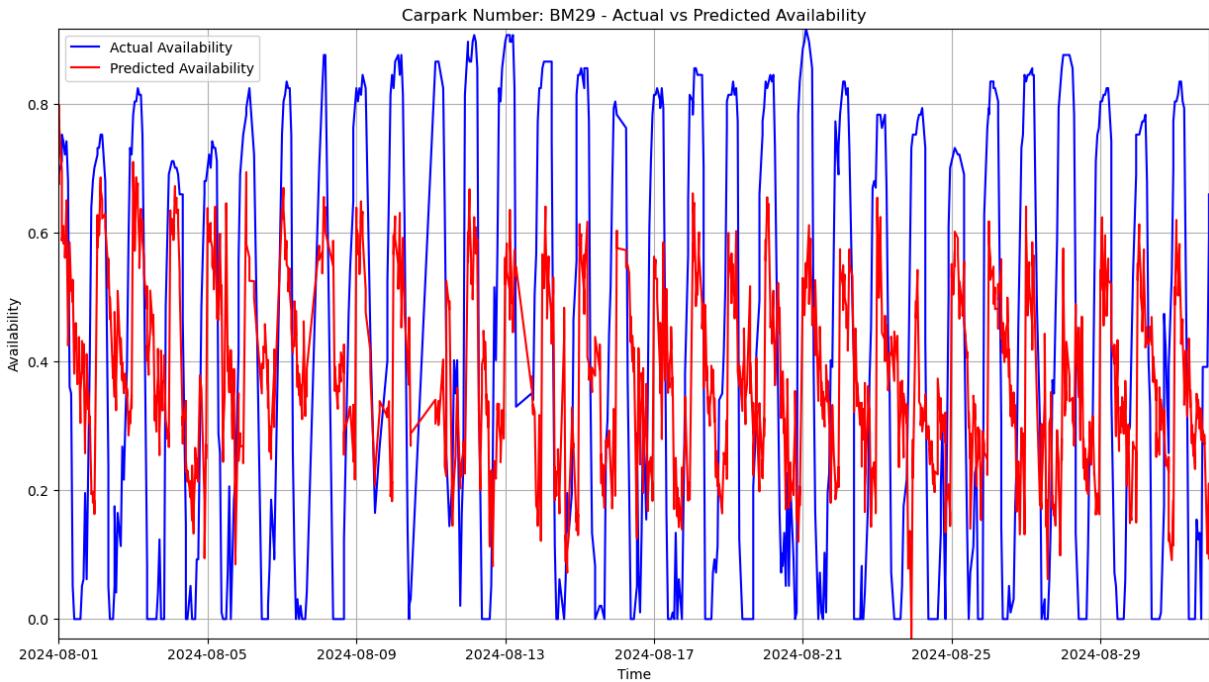
```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.
```

```
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: BM3

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number BM3: Ridge(alpha=1000)

Model saved as model_BM3.sav

Testing MSE: 0.07770537944459494

R-squared: 0.0

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

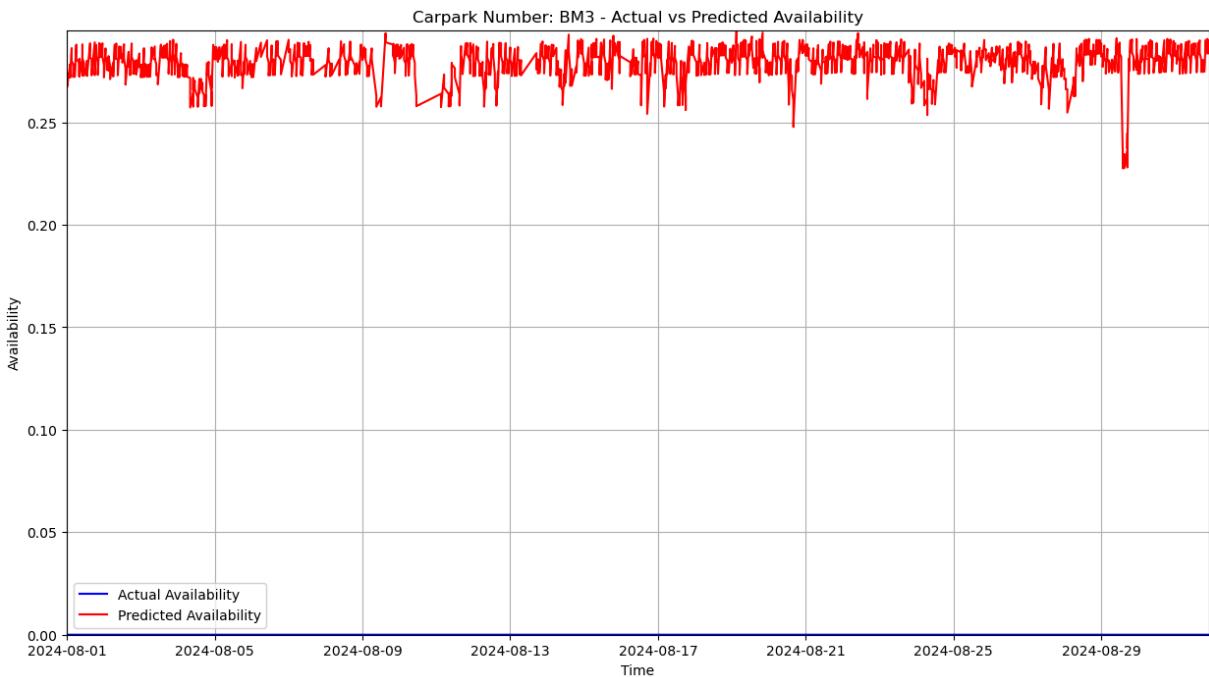
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: BM30

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number BM30: Ridge(alpha=1000)

Model saved as model_BM30.sav

Testing MSE: 0.054182519178907526

R-squared: -0.005650561577640101

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

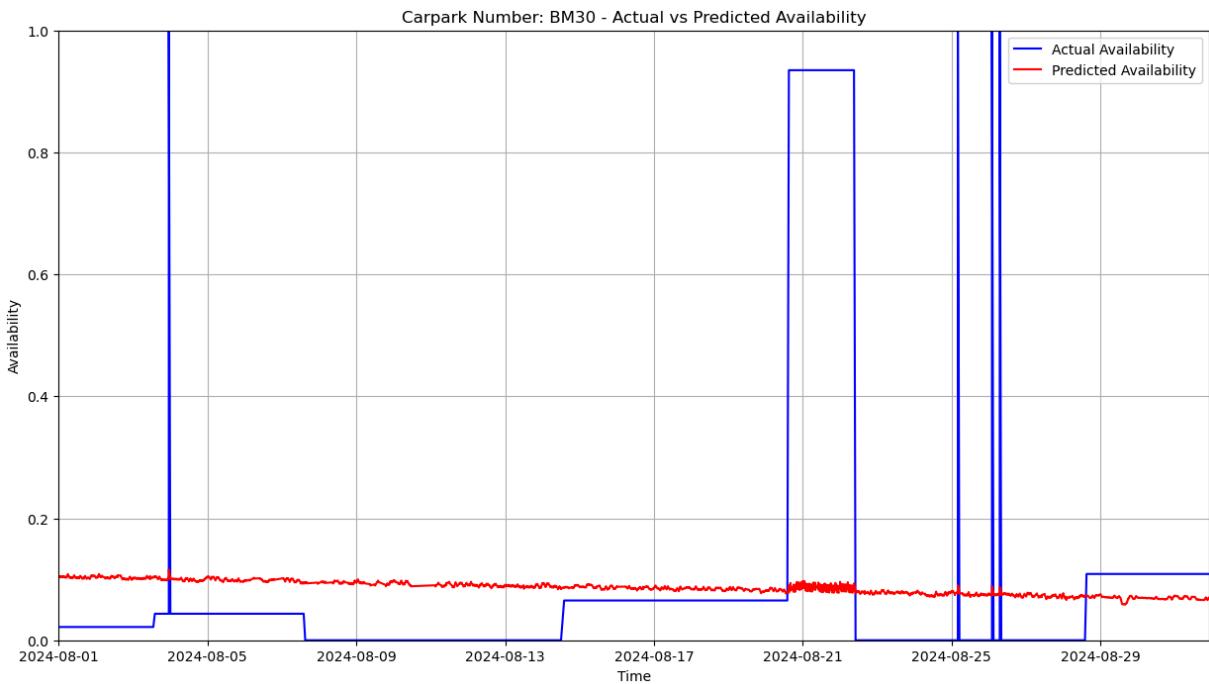
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: BM31
 Fitting 3 folds for each of 6 candidates, totalling 18 fits
 Best Ridge model for carpark_number BM31: Ridge(alpha=10)

Model saved as model_BM31.sav
 Testing MSE: 0.010804708724005239
 R-squared: 0.3298220754388168

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:  

A value is trying to be set on a copy of a slice from a DataFrame.  

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy  

    test_data['day'] = test_data['day'].clip(lower=1, upper=31)  

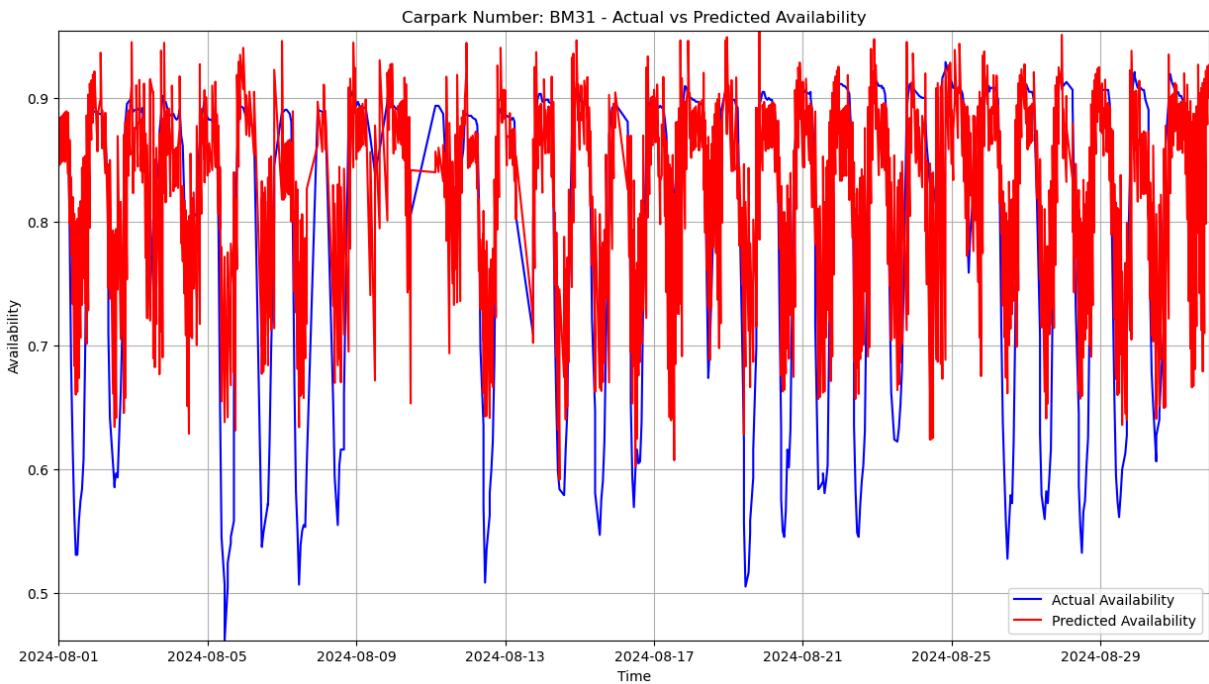
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:  

A value is trying to be set on a copy of a slice from a DataFrame.  

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy  

    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: BM4

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number BM4: Ridge(alpha=0.01)

Model saved as model_BM4.sav

Testing MSE: 0.041002036025598806

R-squared: 0.42860197048479454

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

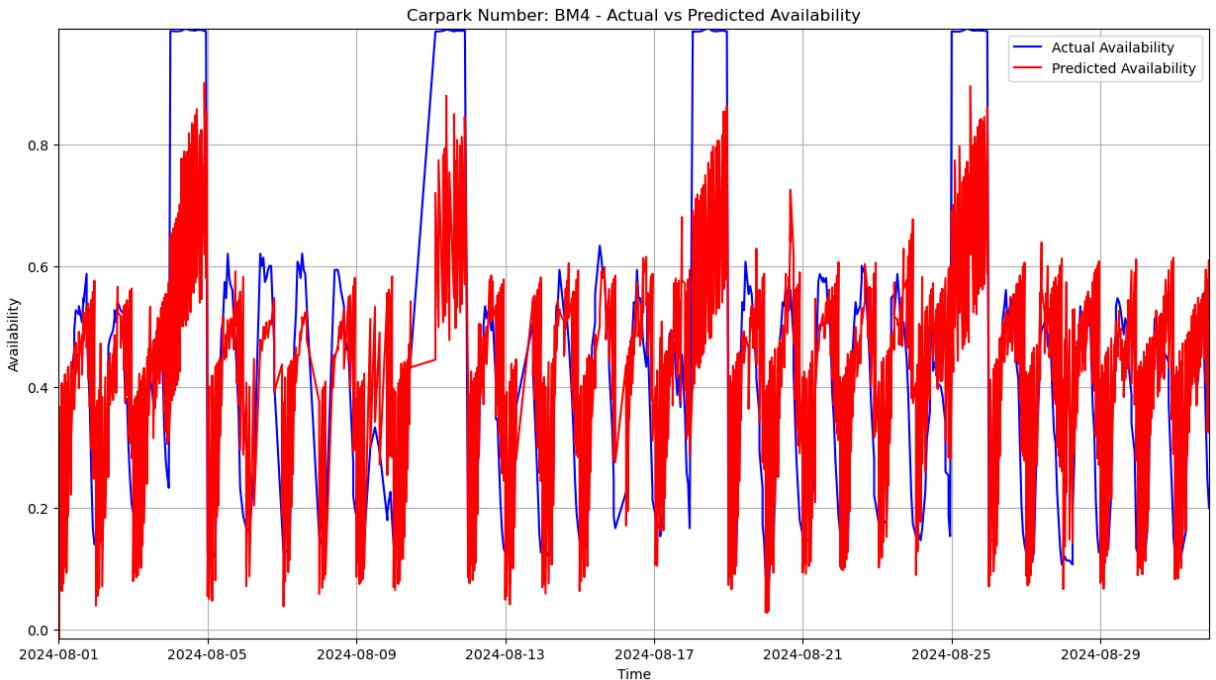
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: BM5

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number BM5: Ridge(alpha=1000)

Model saved as model_BM5.sav

Testing MSE: 0.004276511442580946

R-squared: -14.40663246853588

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

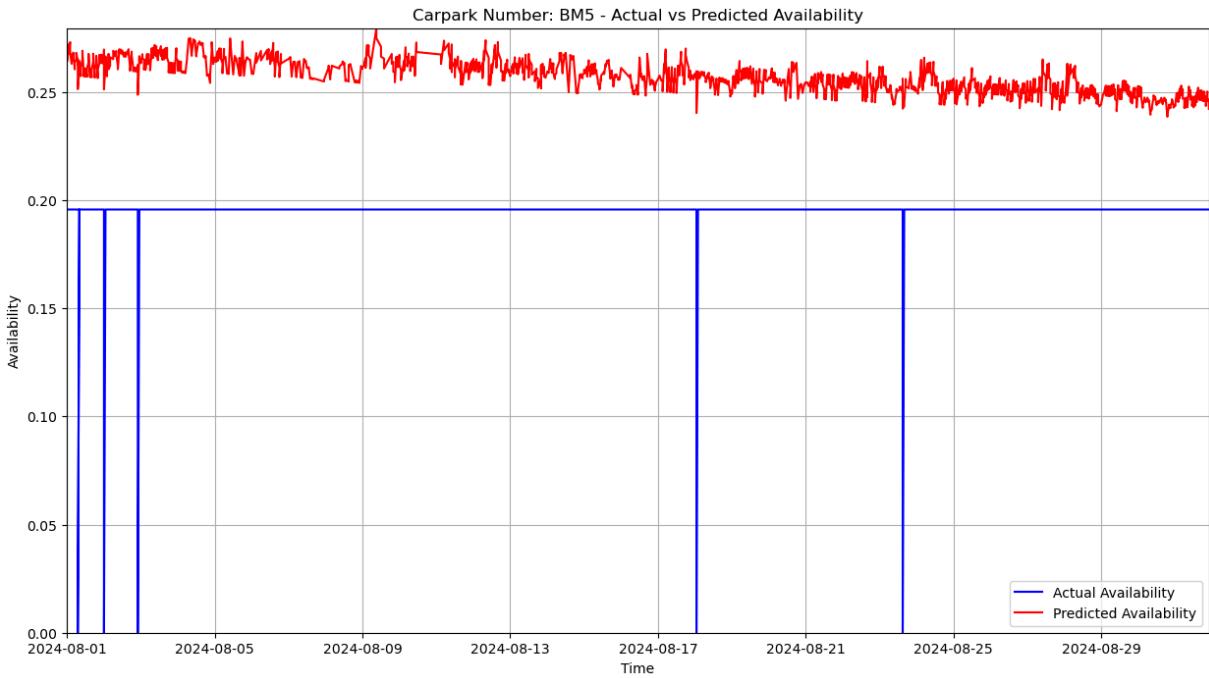
```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.
```

```
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: BM6

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number BM6: Ridge(alpha=1000)

Model saved as model_BM6.sav

Testing MSE: 0.07653706597632133

R-squared: -0.2837265172734429

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

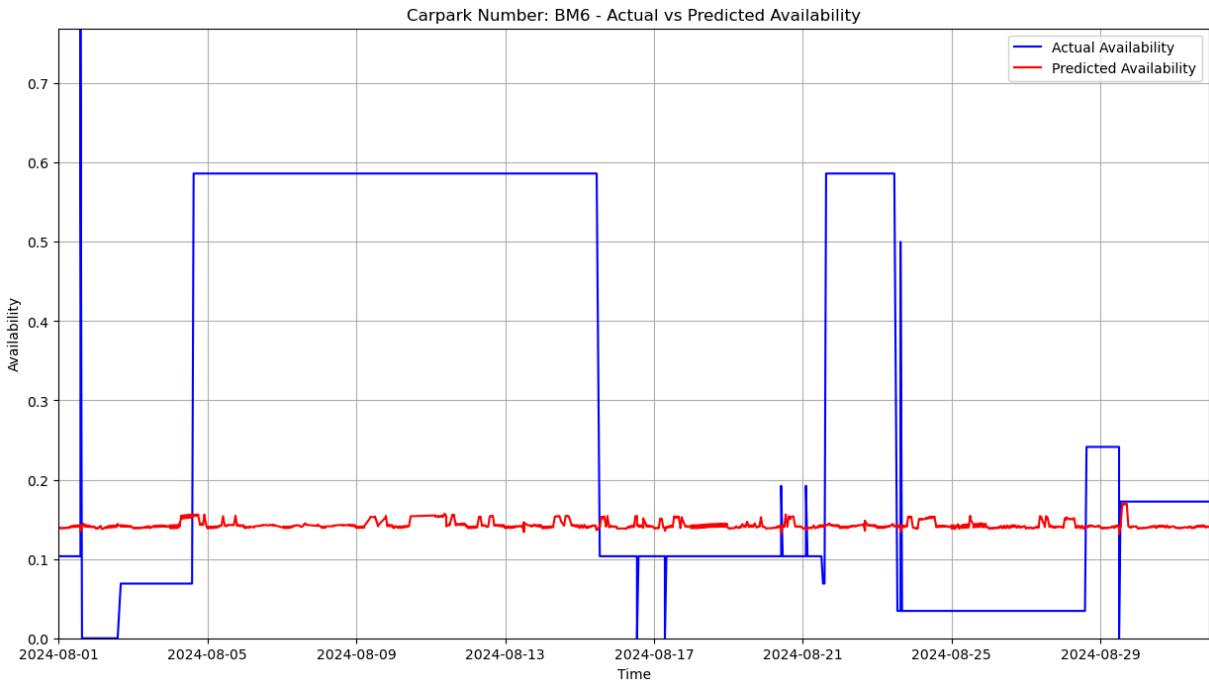
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: BWM

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number BWM: Ridge(alpha=0.01)

Model saved as model_BWM.sav

Testing MSE: 0.006813653632182897

R-squared: -0.02759710135724025

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

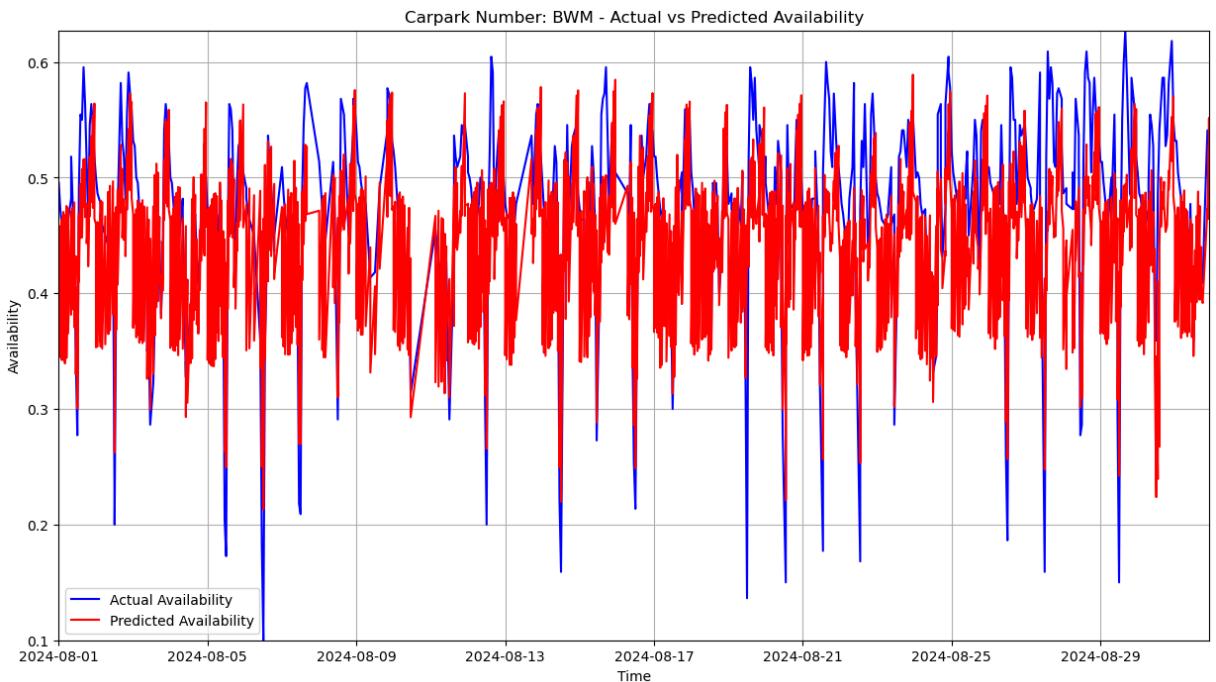
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

```
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: C10

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number C10: Ridge(alpha=1)

Model saved as model_C10.sav

Testing MSE: 0.0046826707332870265

R-squared: -12.233303919923491

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

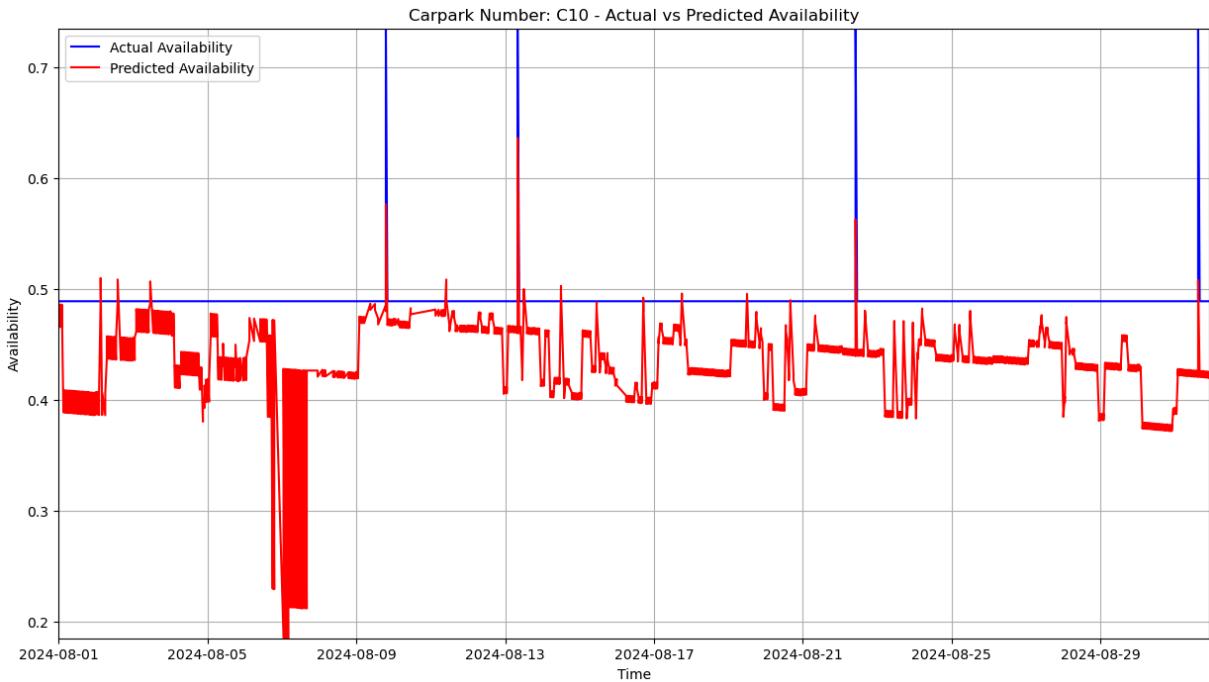
```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.
```

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: C11

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number C11: Ridge(alpha=1)

Model saved as model_C11.sav

Testing MSE: 0.003834829728568945

R-squared: 0.22232013687171626

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

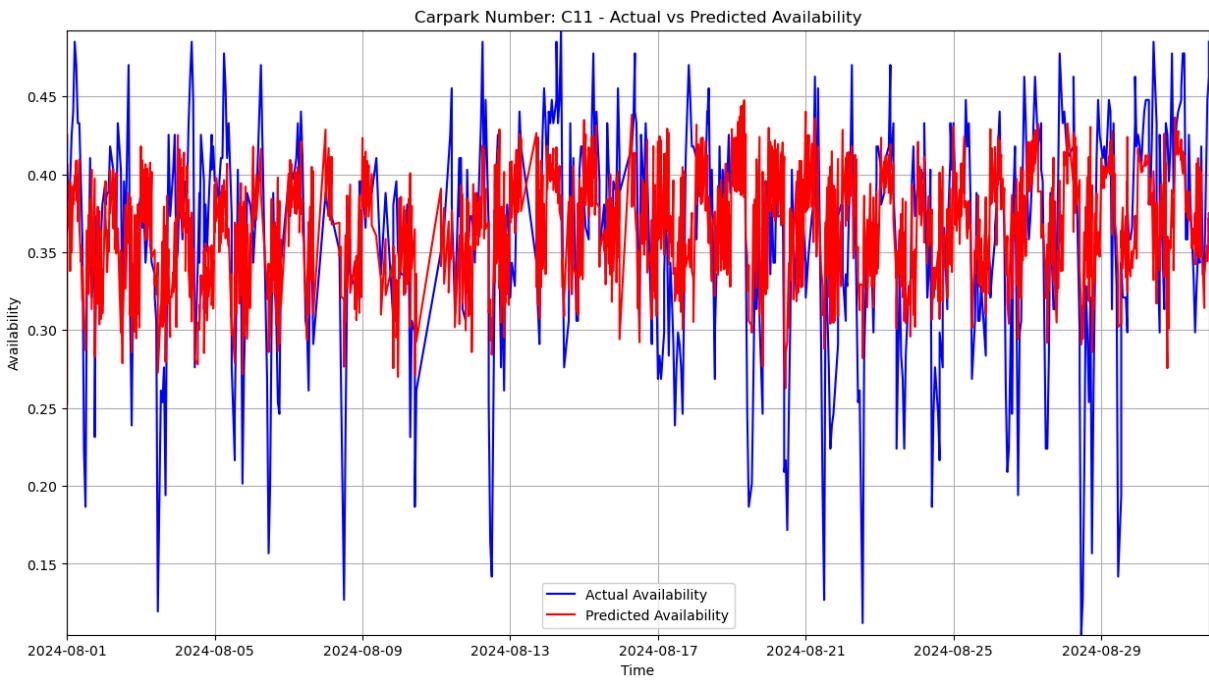
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: C12

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number C12: Ridge(alpha=1000)

Model saved as model_C12.sav

Testing MSE: 0.00424899318204801

R-squared: -6.671152280280864

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

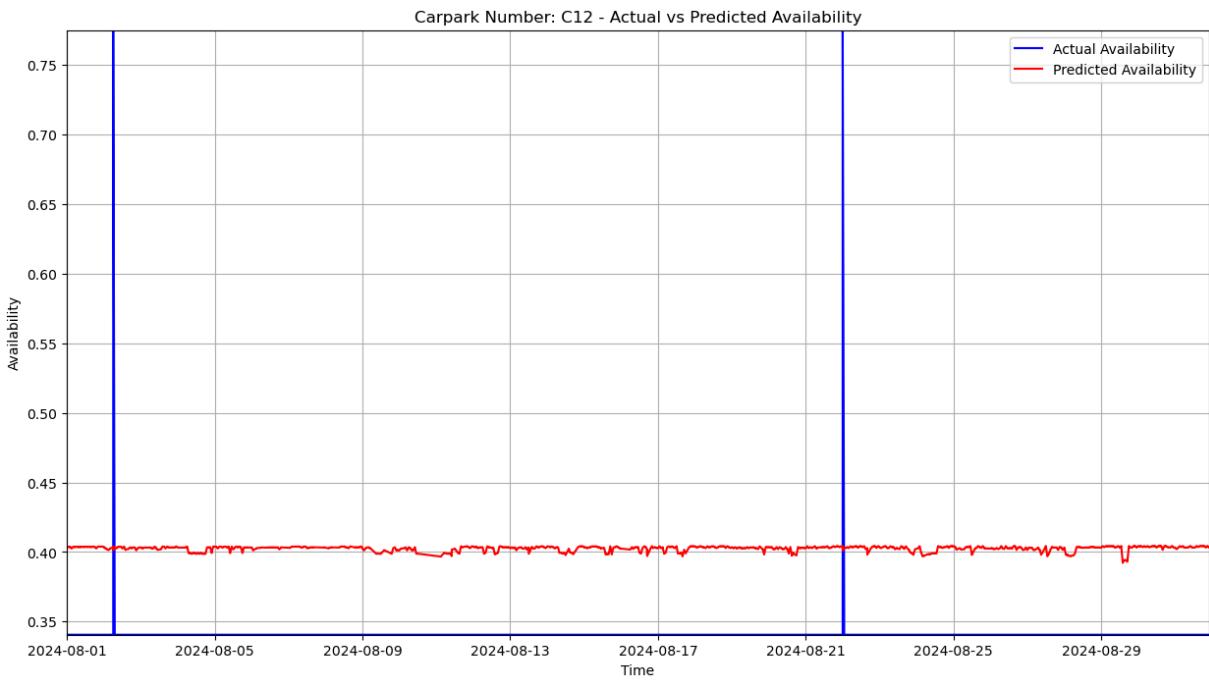
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: C13M

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number C13M: Ridge(alpha=1000)

Model saved as model_C13M.sav

Testing MSE: 0.0022401794574229508

R-squared: -1.0221126517354806

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

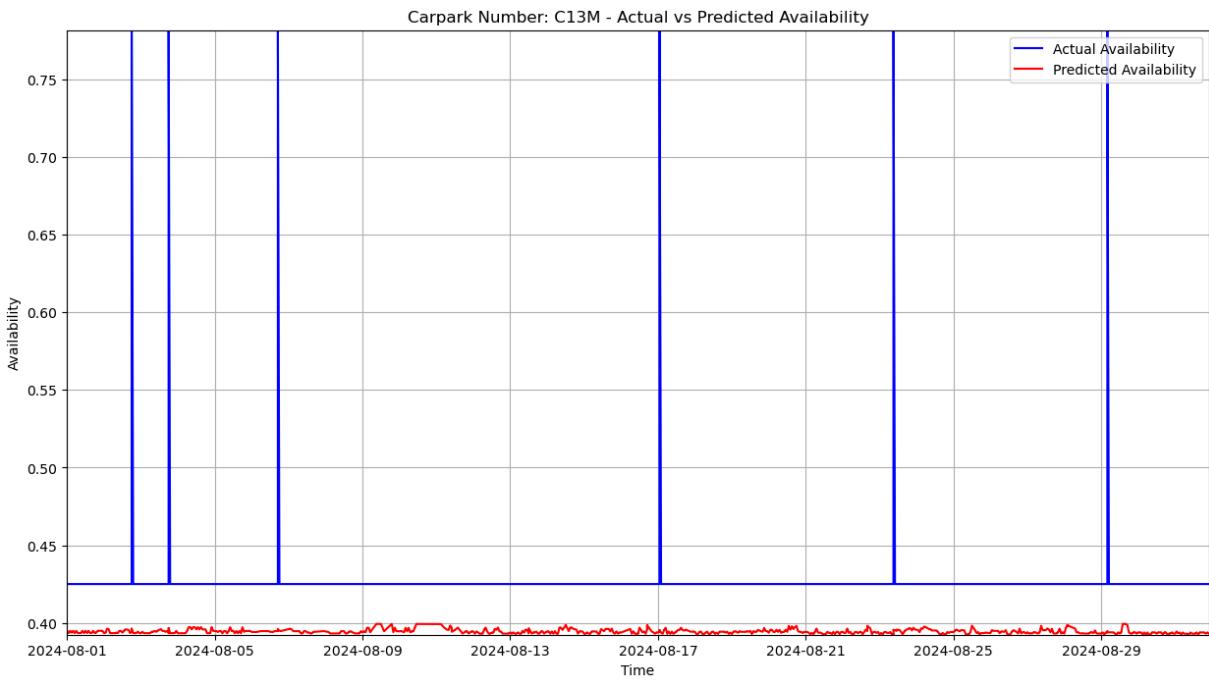
```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.
```

```
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: C14M

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number C14M: Ridge(alpha=1000)

Model saved as model_C14M.sav

Testing MSE: 0.010722886224669104

R-squared: -0.7015881417750625

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

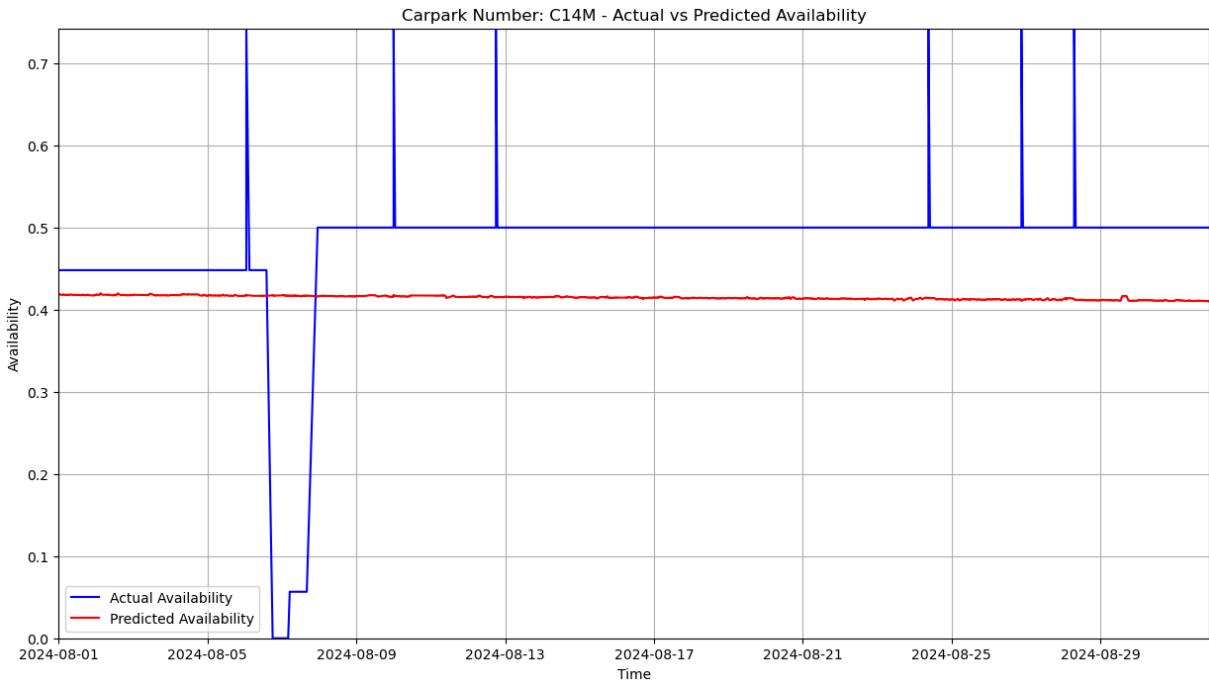
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: C15M

Fitting 3 folds for each of 6 candidates, totalling 18 fits
Best Ridge model for carpark_number C15M: Ridge(alpha=1)

Model saved as model_C15M.sav

Testing MSE: 0.0040568790130034735

R-squared: 0.3436698537472277

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

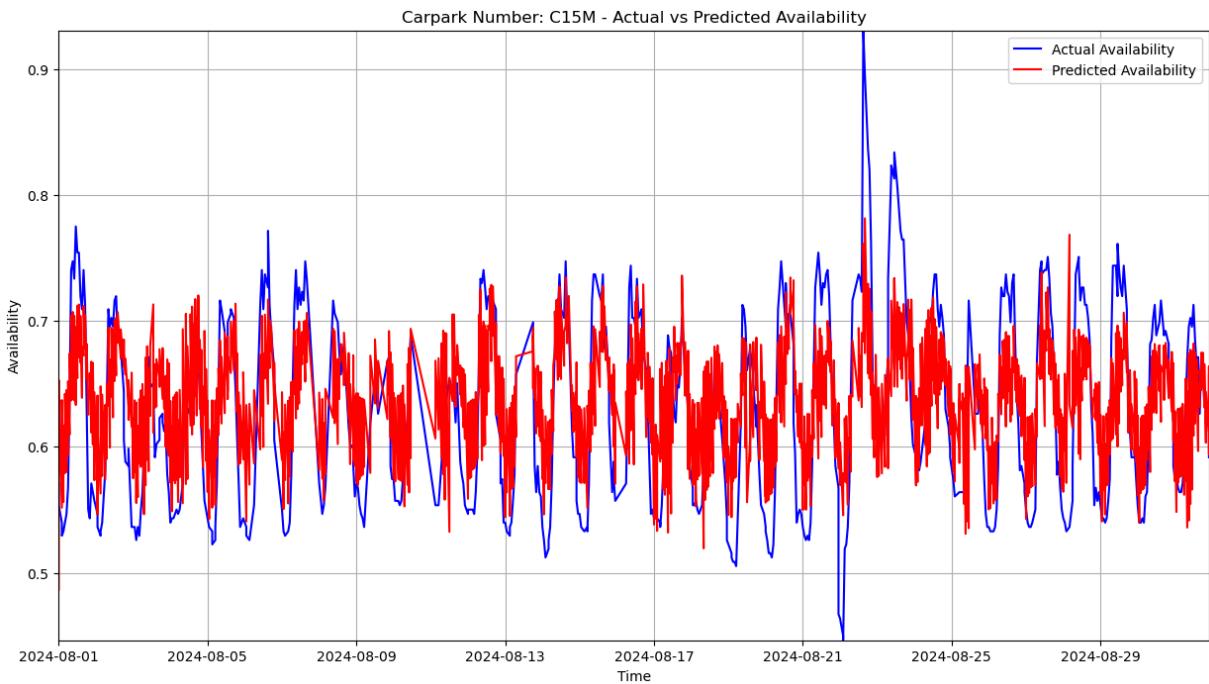
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: C16

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number C16: Ridge(alpha=10)

Model saved as model_C16.sav

Testing MSE: 0.009900818987999445

R-squared: 0.18933665108123088

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

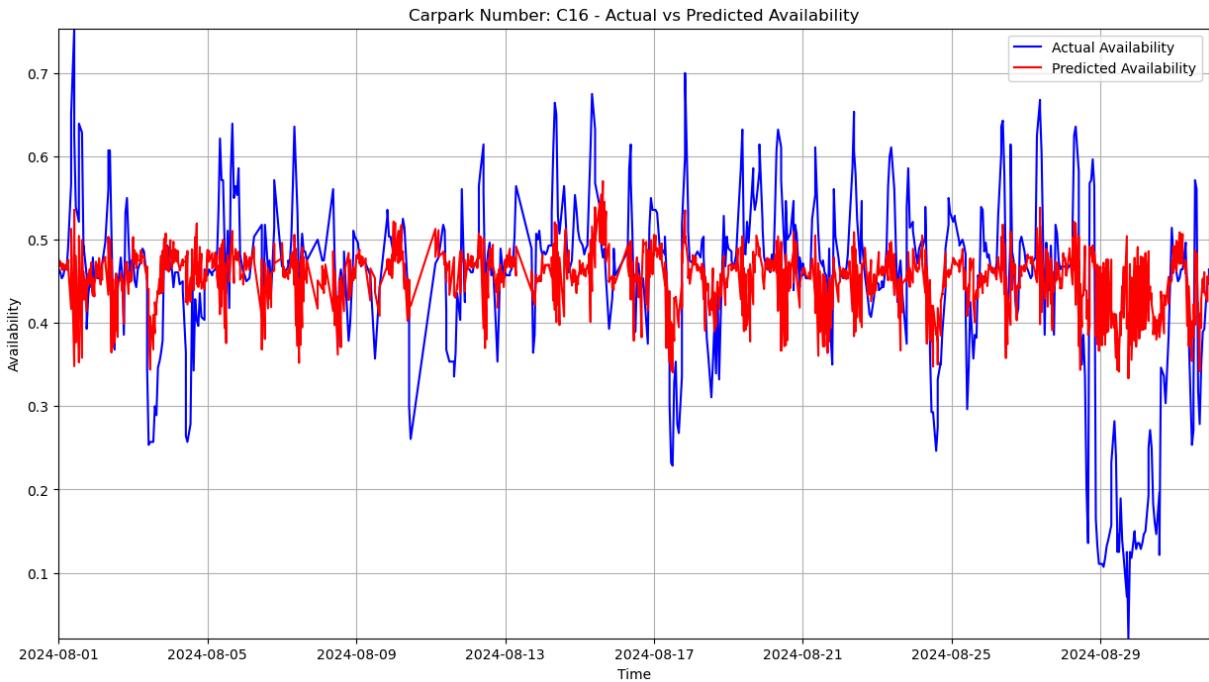
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: C17

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number C17: Ridge(alpha=100)

Model saved as model_C17.sav

Testing MSE: 0.06202537788346583

R-squared: -0.04728736567240022

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

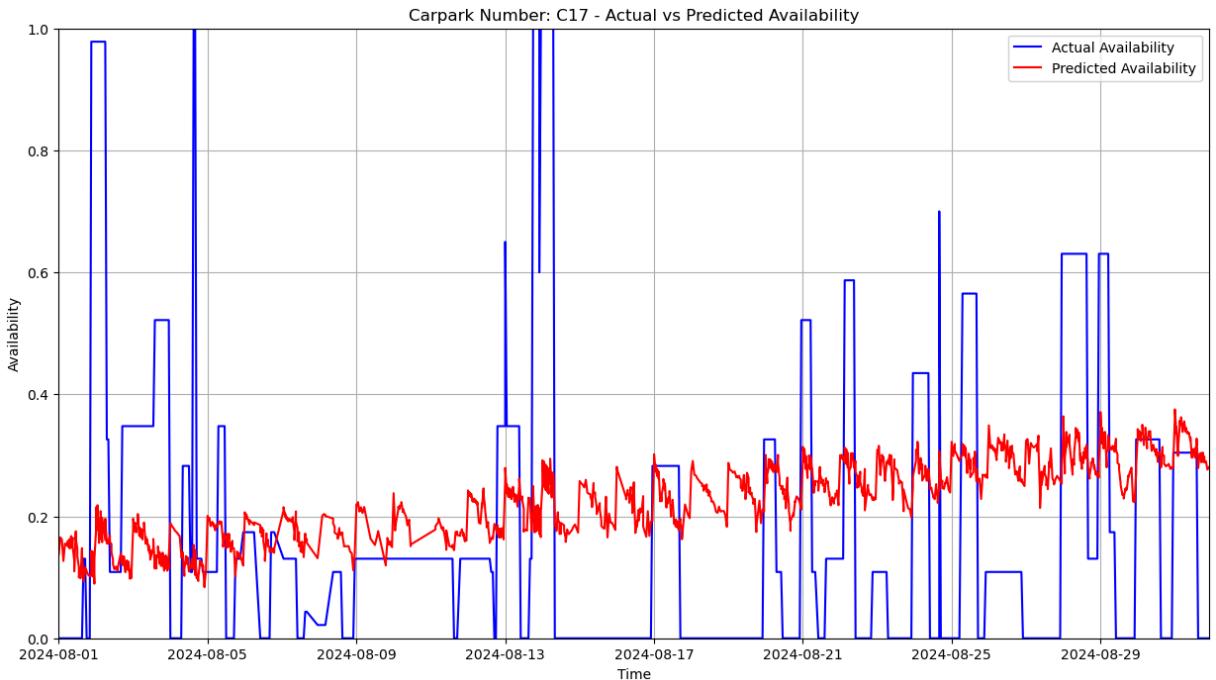
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: C18

Fitting 3 folds for each of 6 candidates, totalling 18 fits
 Best Ridge model for carpark_number C18: Ridge(alpha=0.01)

Model saved as model_C18.sav

Testing MSE: 0.006353895061468461

R-squared: 0.04135196197044533

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:  

  A value is trying to be set on a copy of a slice from a DataFrame.  

  Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
  test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

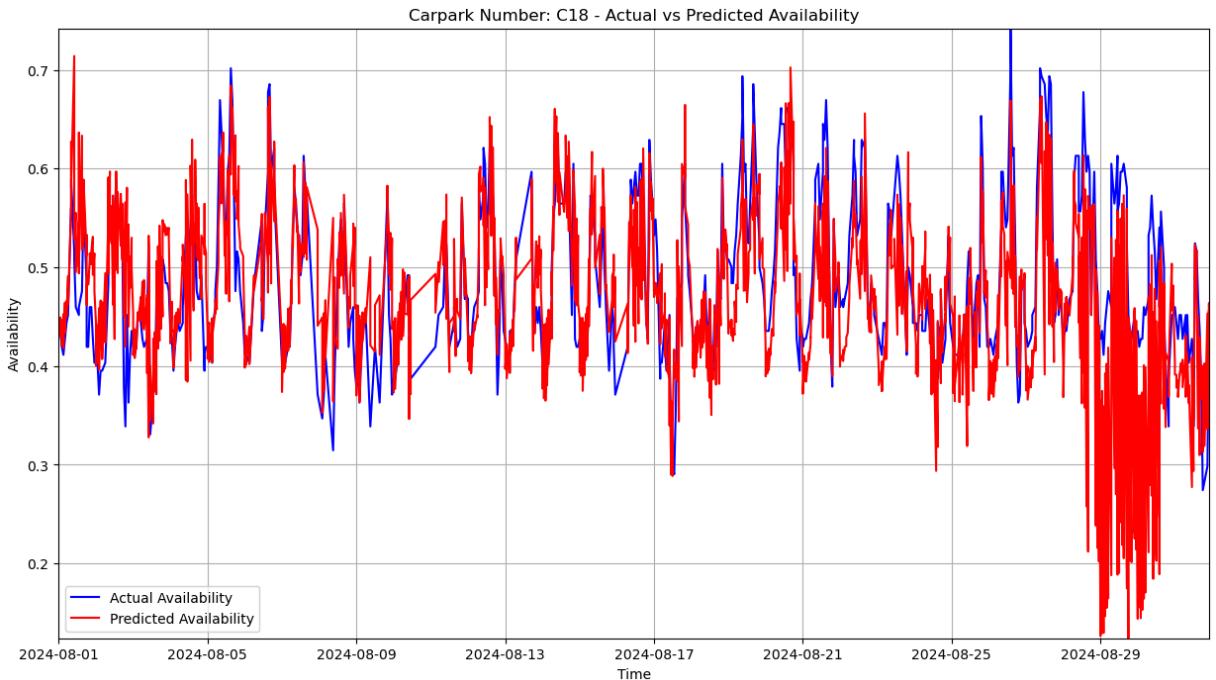
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:  

  A value is trying to be set on a copy of a slice from a DataFrame.
```

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
  test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: C18A

Fitting 3 folds for each of 6 candidates, totalling 18 fits
Best Ridge model for carpark_number C18A: Ridge(alpha=1000)

Model saved as model_C18A.sav

Testing MSE: 0.024670729048230408

R-squared: -0.04868955571778

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

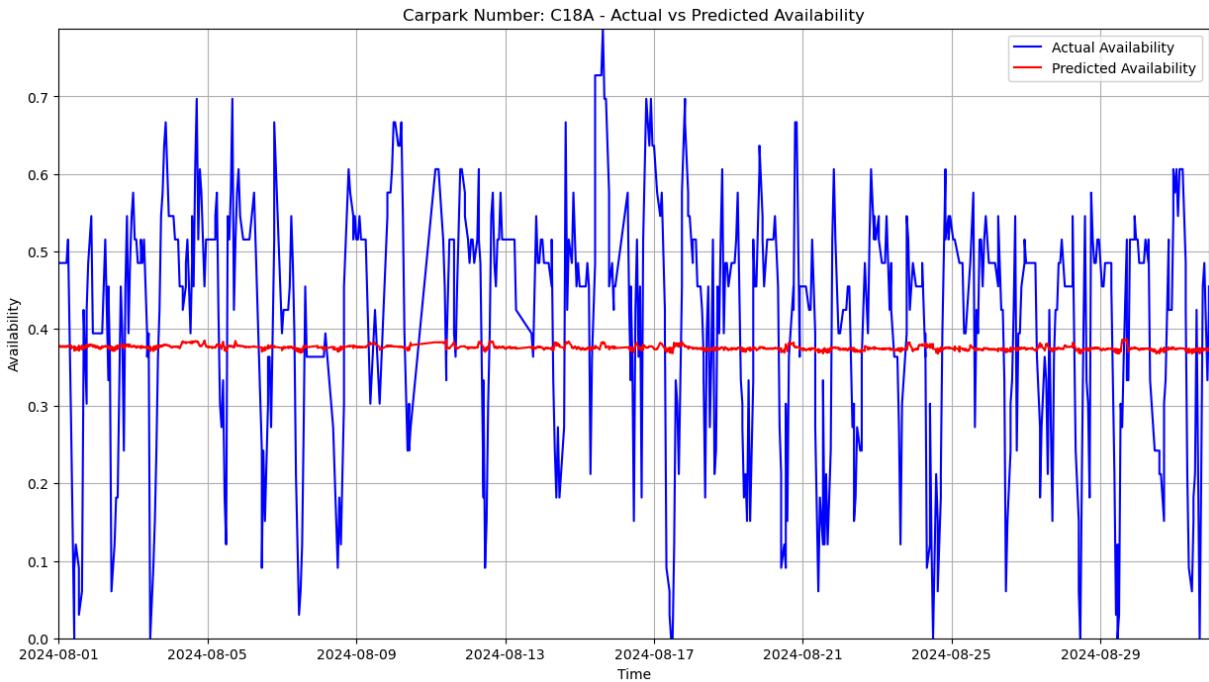
```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.
```

```
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: C19M

Fitting 3 folds for each of 6 candidates, totalling 18 fits
Best Ridge model for carpark_number C19M: Ridge(alpha=1000)

Model saved as model_C19M.sav

Testing MSE: 0.004763951969733035

R-squared: -0.011338327383249691

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

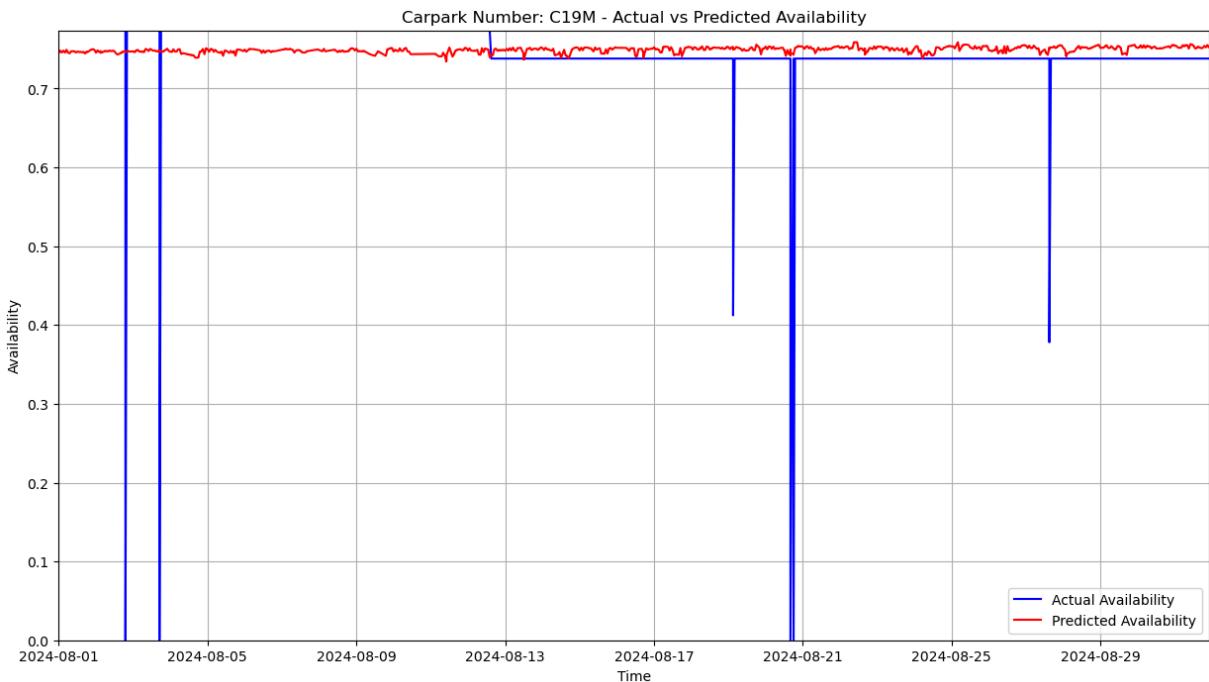
```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.
```

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: C20

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number C20: Ridge(alpha=10)

Model saved as model_C20.sav

Testing MSE: 0.021083578280248524

R-squared: 0.7515682661938529

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

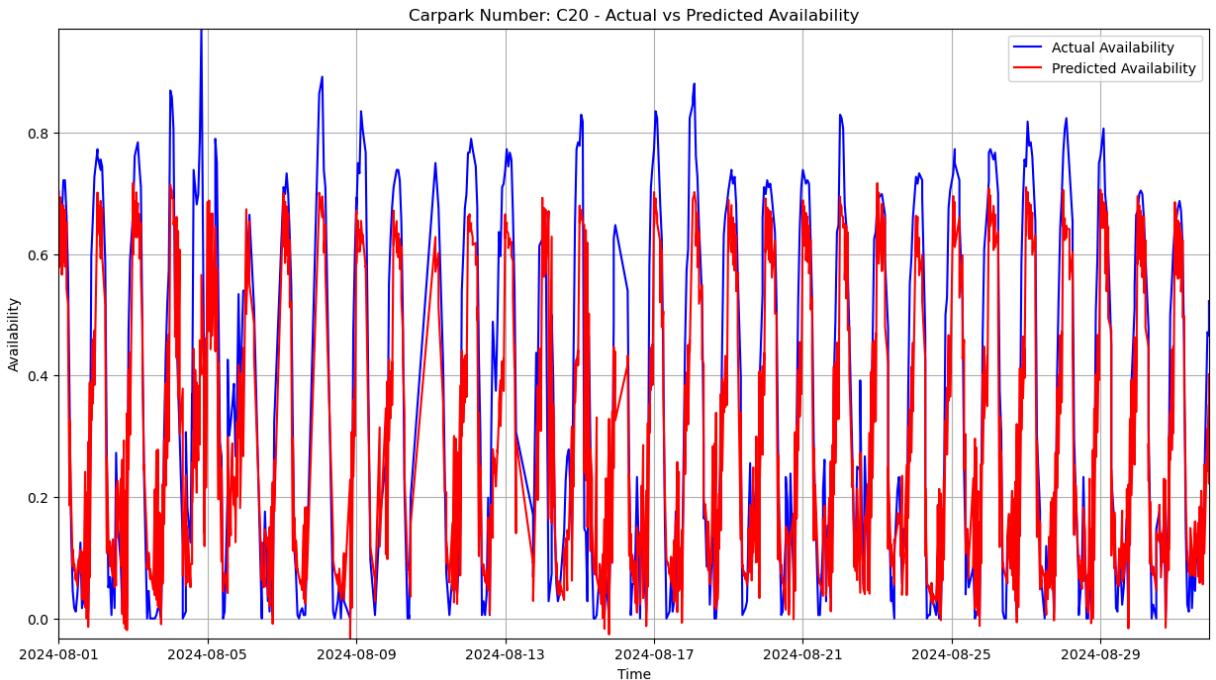
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



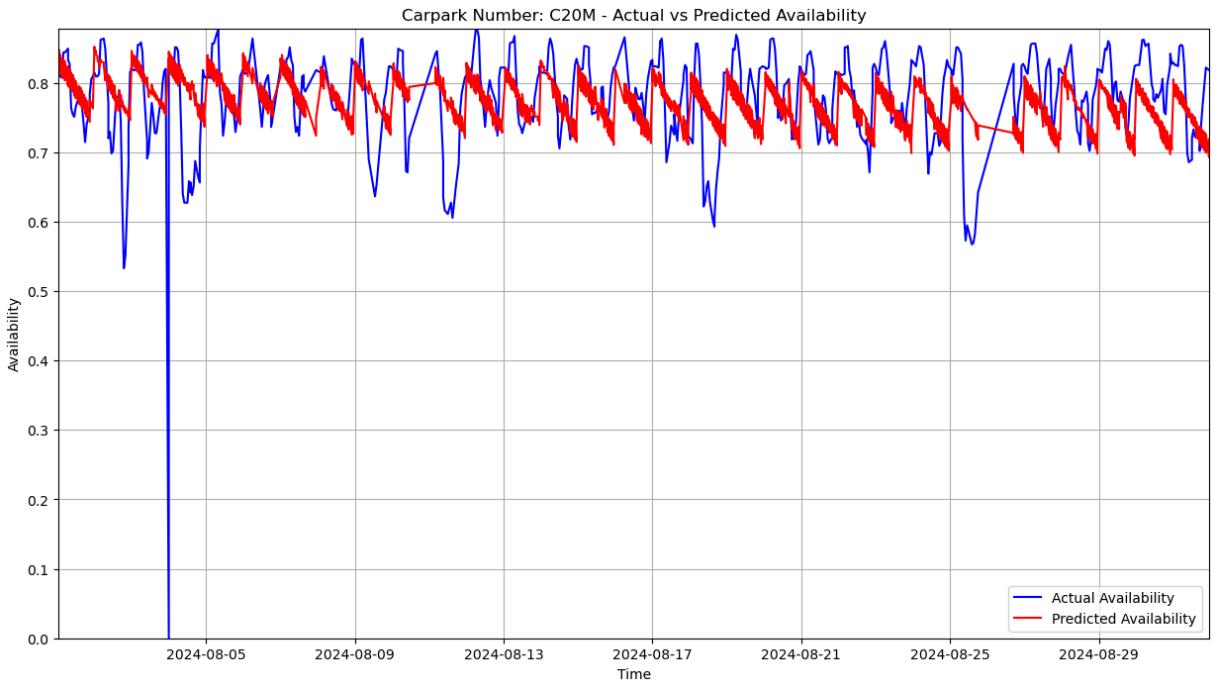
```
Training model for carpark_number: C20M
Fitting 3 folds for each of 6 candidates, totalling 18 fits
Best Ridge model for carpark_number C20M: Ridge(alpha=10)
```

```
Model saved as model_C20M.sav
Testing MSE: 0.004862953076718854
R-squared: -0.03838247678560425
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: C21L

Fitting 3 folds for each of 6 candidates, totalling 18 fits
Best Ridge model for carpark_number C21L: Ridge(alpha=1000)

Model saved as model_C21L.sav

Testing MSE: 0.0023766995574711312

R-squared: -0.3214138823308703

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

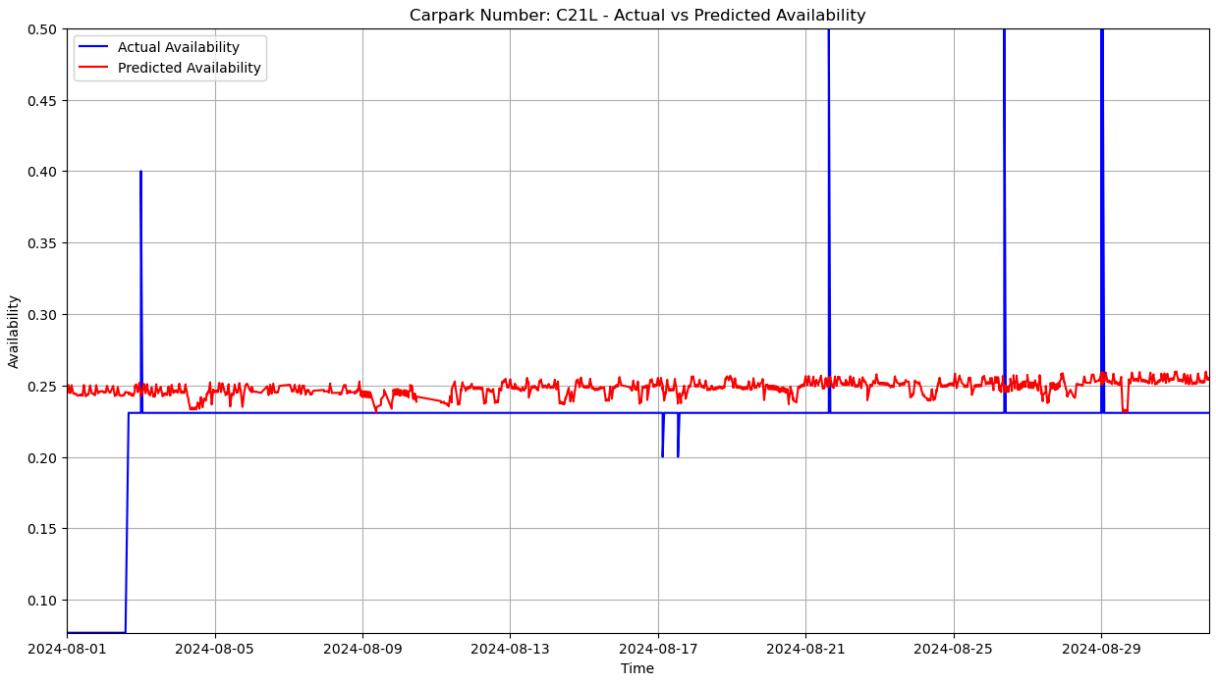
```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.
```

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



```
Training model for carpark_number: C21M
Fitting 3 folds for each of 6 candidates, totalling 18 fits
Best Ridge model for carpark_number C21M: Ridge(alpha=10)
```

```
Model saved as model_C21M.sav
Testing MSE: 0.001835075853680016
R-squared: 0.18602188823298493
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

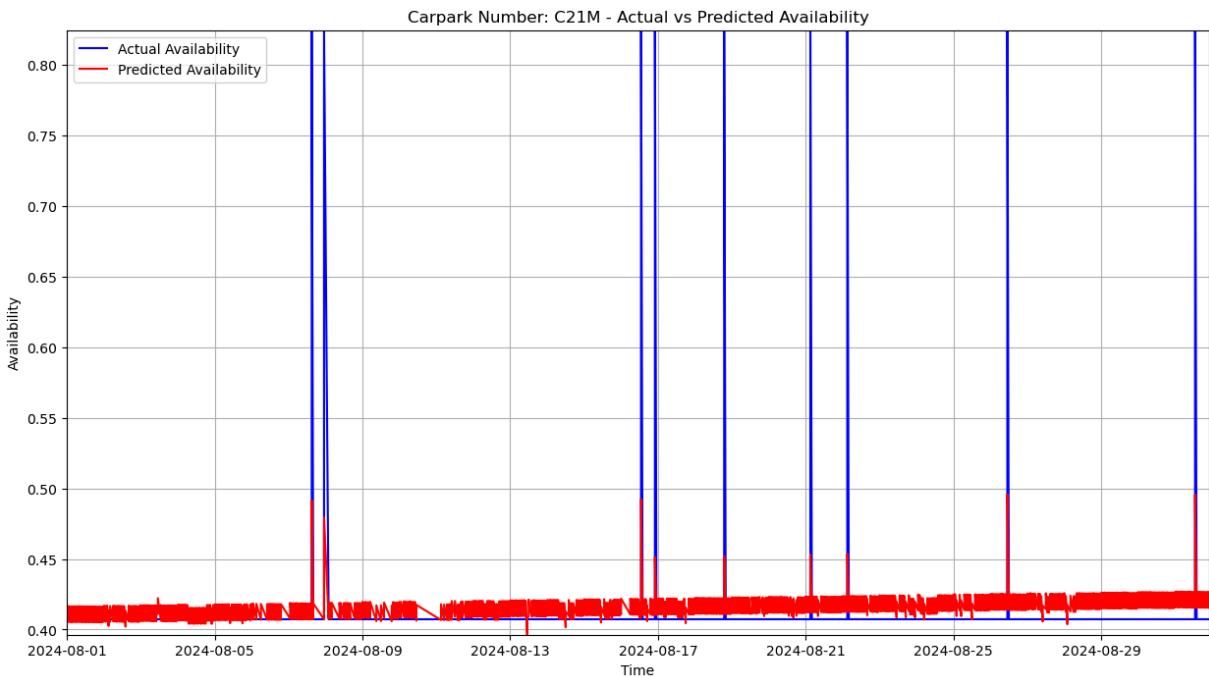
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: C22M

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number C22M: Ridge(alpha=0.01)

Model saved as model_C22M.sav

Testing MSE: 0.09143385155340496

R-squared: -94.50694268281273

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

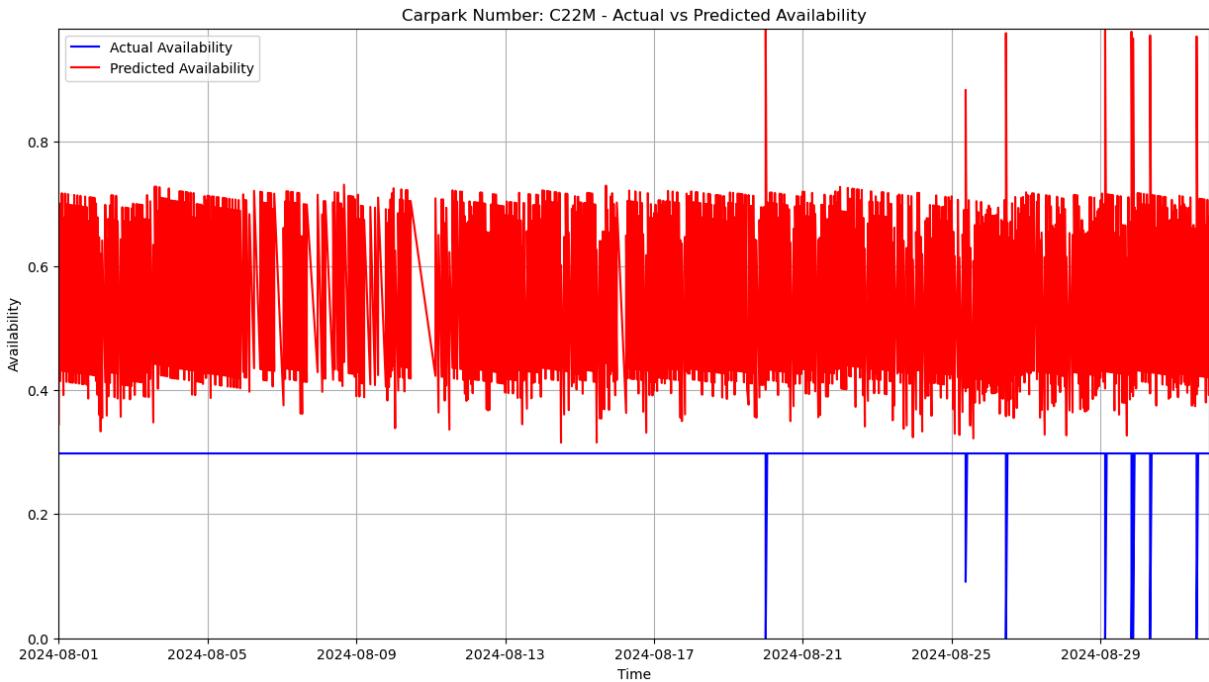
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: C24

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number C24: Ridge(alpha=1000)

Model saved as model_C24.sav

Testing MSE: 0.004885799186610768

R-squared: -1.8725679509805055

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

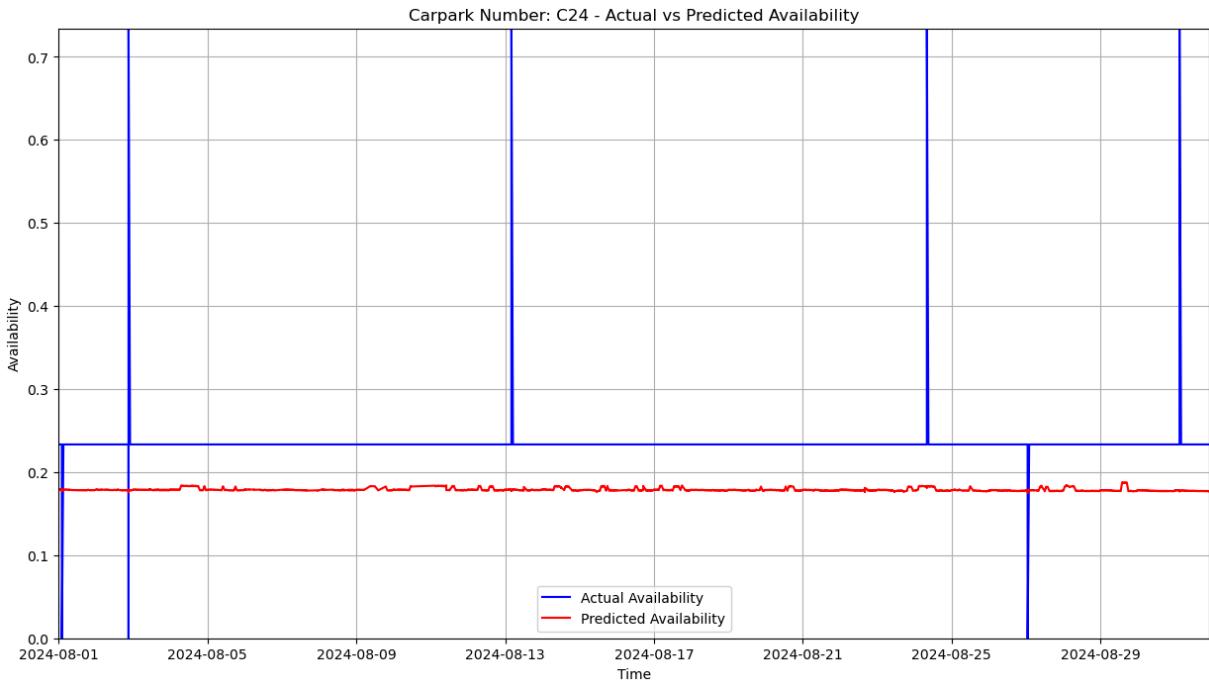
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: C25

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number C25: Ridge(alpha=1000)

Model saved as model_C25.sav

Testing MSE: 0.03720319594234512

R-squared: -11.582190517883879

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

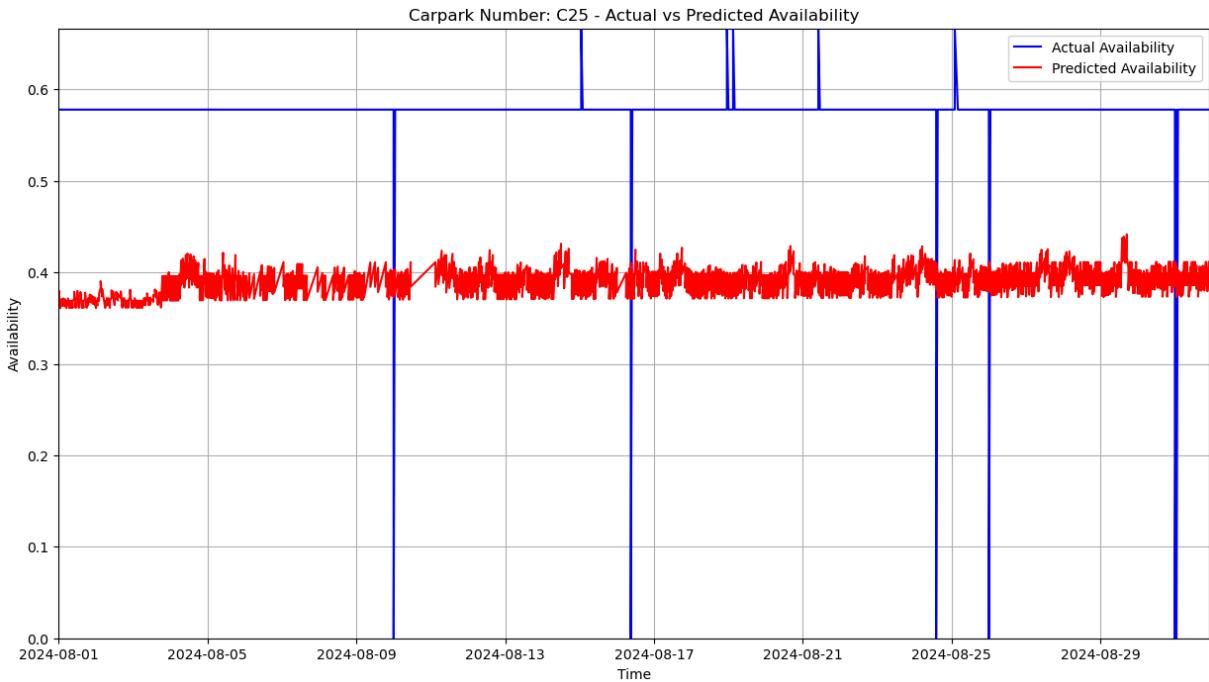
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: C26

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number C26: Ridge(alpha=1000)

Model saved as model_C26.sav

Testing MSE: 0.0721316414672043

R-squared: -0.36036772810163575

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

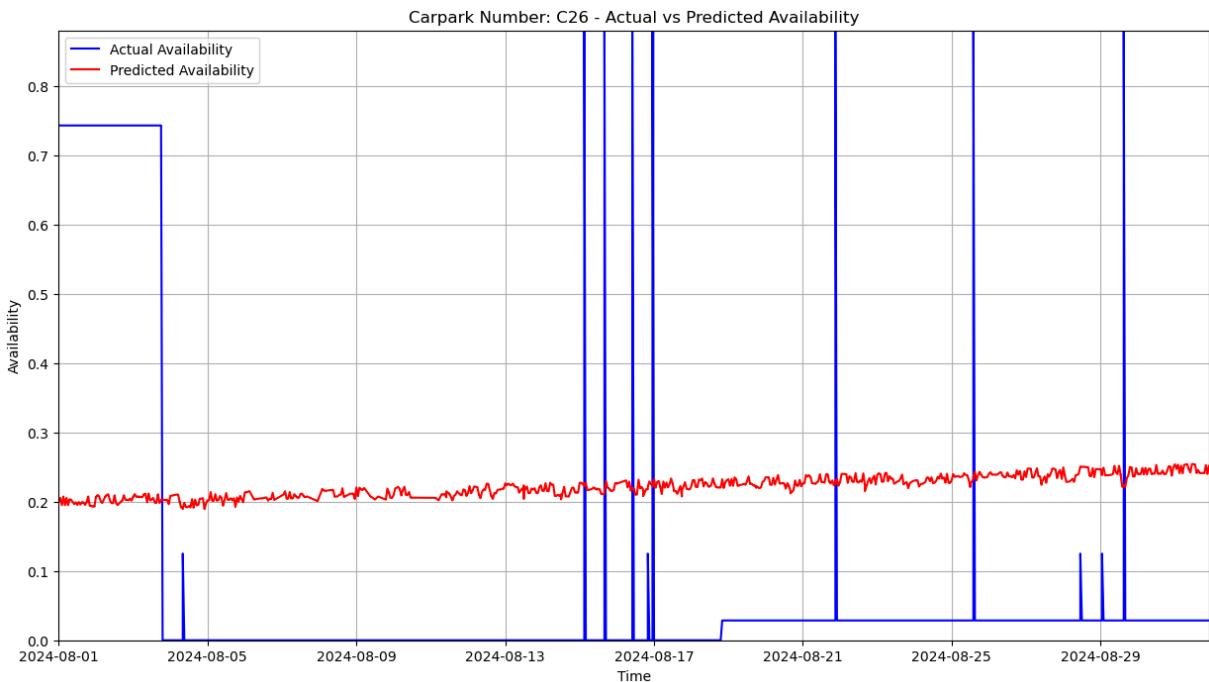
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

```
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: C27

Fitting 3 folds for each of 6 candidates, totalling 18 fits
Best Ridge model for carpark_number C27: Ridge(alpha=1000)

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.
```

Try using .loc[row_indexer,col_indexer] = value instead

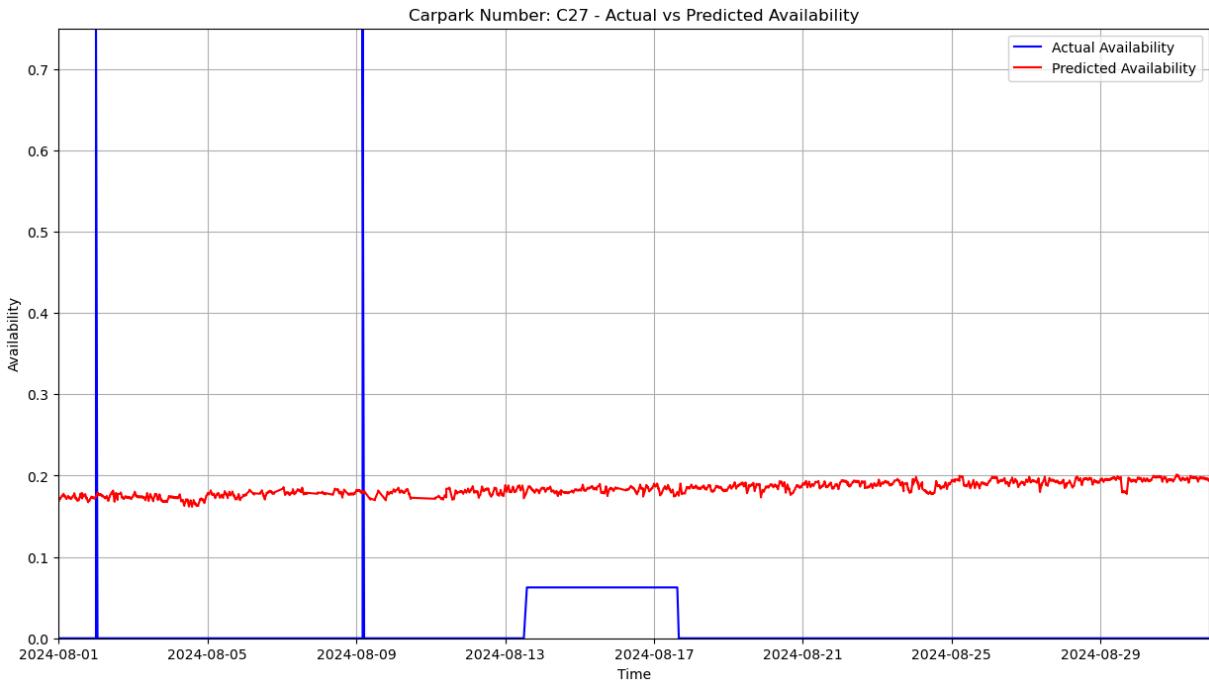
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Model saved as model_C27.sav

Testing MSE: 0.032301077621857834

R-squared: -14.707812871305366



Training model for carpark_number: C28M

Fitting 3 folds for each of 6 candidates, totalling 18 fits

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

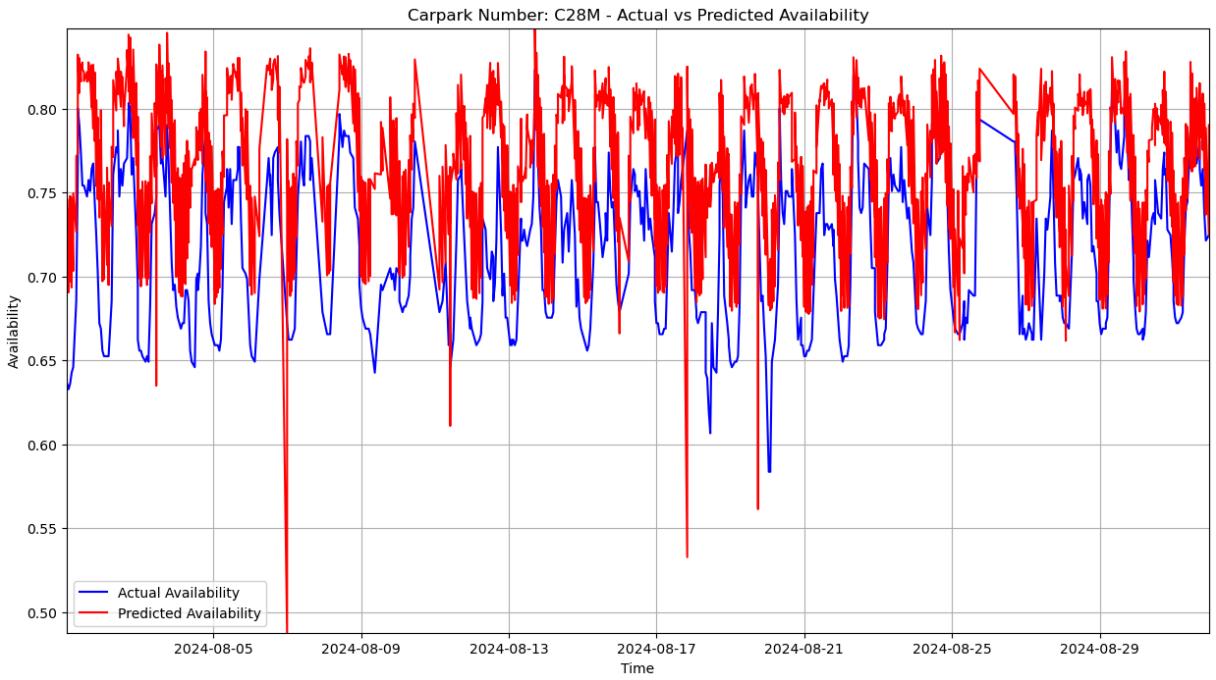
```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Best Ridge model for carpark_number C28M: Ridge(alpha=1)

Model saved as model_C28M.sav

Testing MSE: 0.004011765109866041

R-squared: -0.8764443679434941



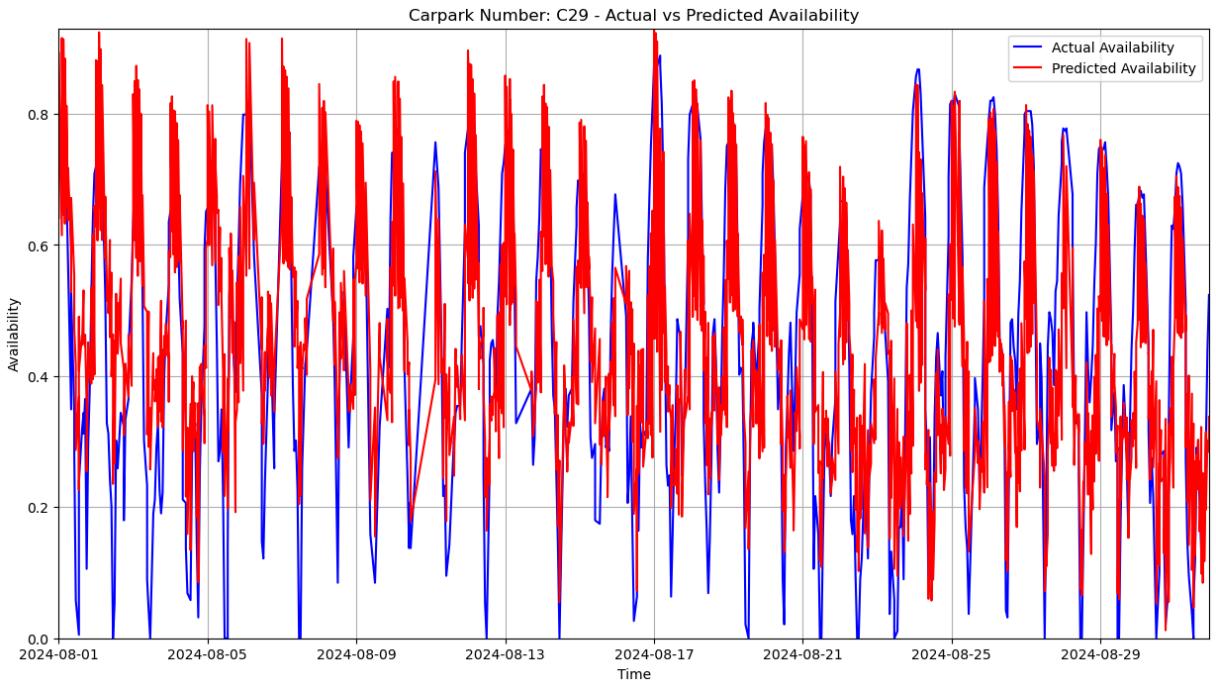
```
Training model for carpark_number: C29
Fitting 3 folds for each of 6 candidates, totalling 18 fits
Best Ridge model for carpark_number C29: Ridge(alpha=0.01)
```

```
Model saved as model_C29.sav
Testing MSE: 0.02998528385368231
R-squared: 0.48135388960211467
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: C29A

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number C29A: Ridge(alpha=1)

Model saved as model_C29A.sav

Testing MSE: 0.13321993439732707

R-squared: -0.4925414279281193

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

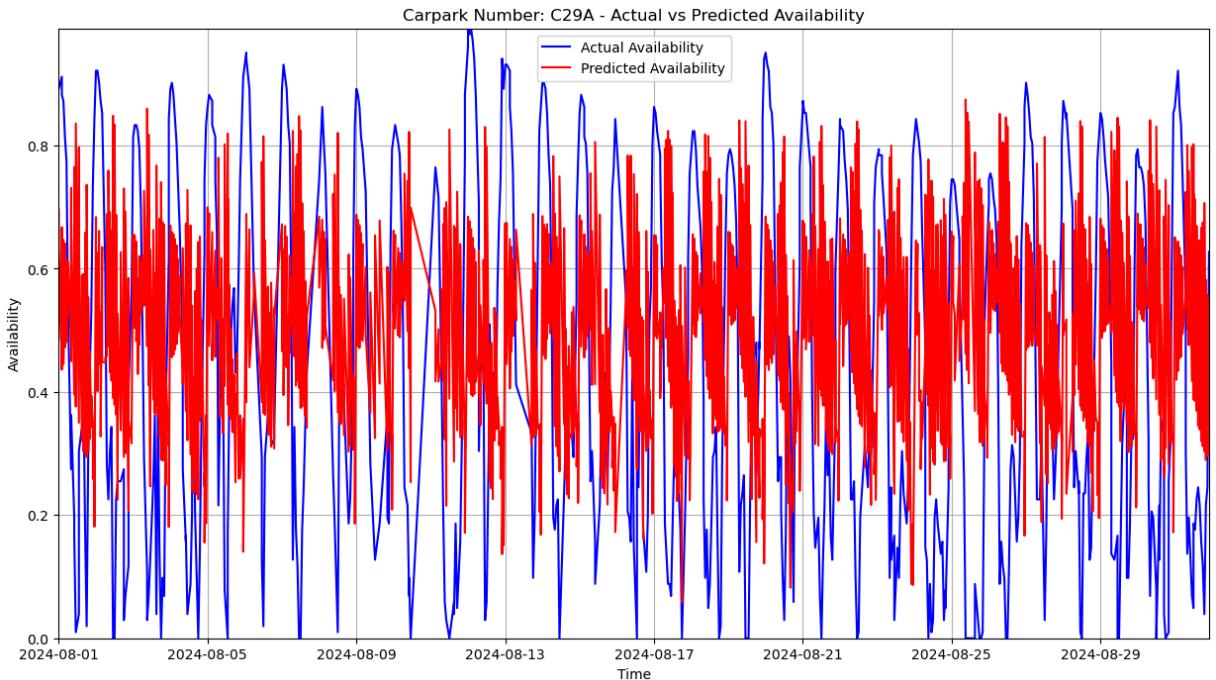
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

```
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: C2M

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number C2M: Ridge(alpha=0.01)

Model saved as model_C2M.sav

Testing MSE: 0.014610869848705006

R-squared: -0.09034055896963178

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

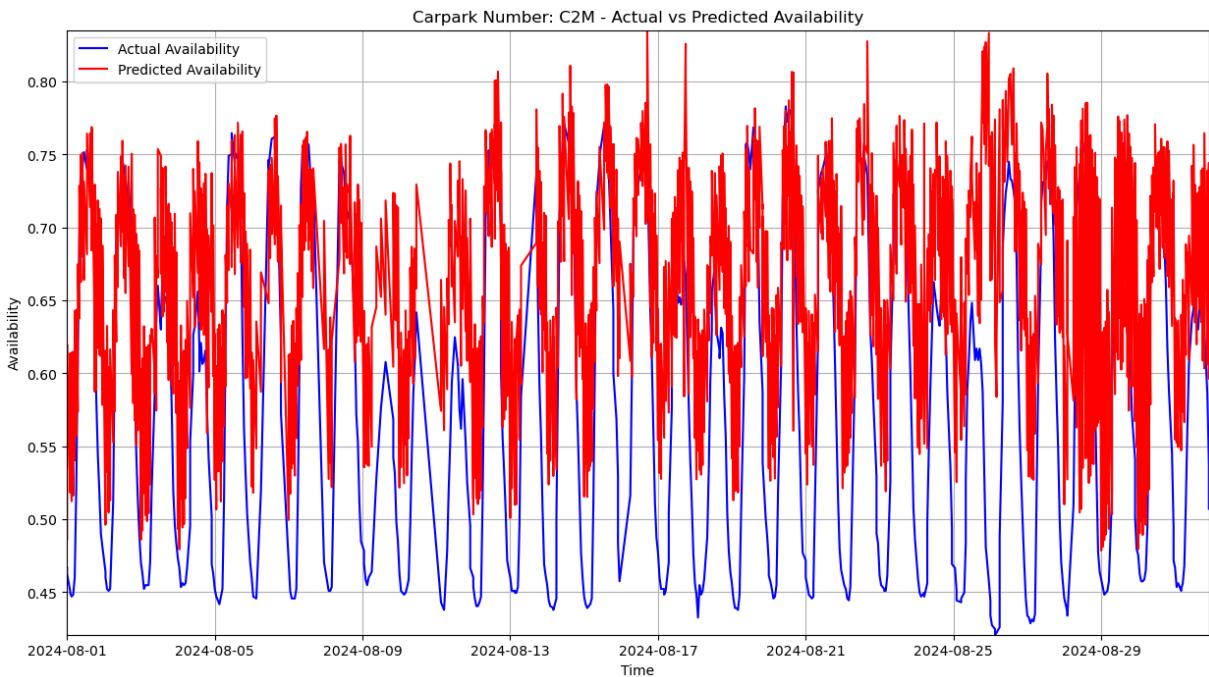
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: C30
 Fitting 3 folds for each of 6 candidates, totalling 18 fits
 Best Ridge model for carpark_number C30: Ridge(alpha=100)

Model saved as model_C30.sav
 Testing MSE: 0.00870204752336652
 R-squared: -0.10592178265086782

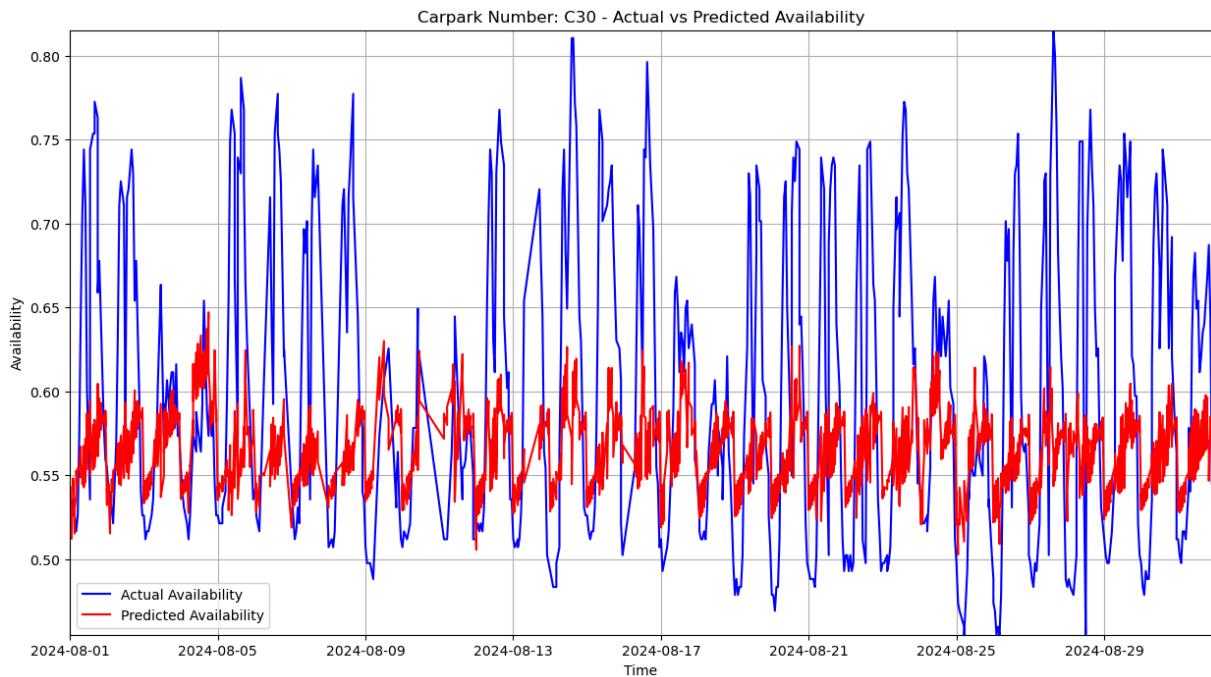
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:  

A value is trying to be set on a copy of a slice from a DataFrame.  

Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
`test_data['day'] = test_data['day'].clip(lower=1, upper=31)`
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
`test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)`



```

Training model for carpark_number: C31
Fitting 3 folds for each of 6 candidates, totalling 18 fits
Best Ridge model for carpark_number C31: Ridge(alpha=1)

```

```

Model saved as model_C31.sav
Testing MSE: 0.017726910578998317
R-squared: 0.0021866047990377613

```

```

/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

```

```

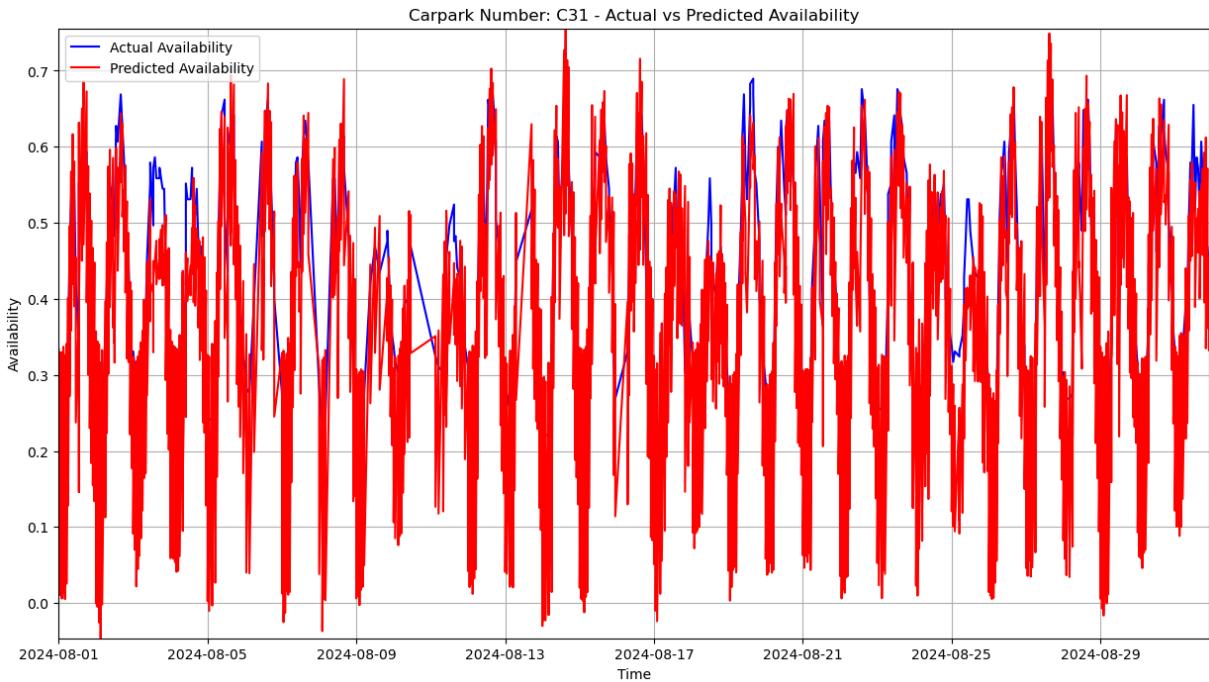
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

```

```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)

```



Training model for carpark_number: C32

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number C32: Ridge(alpha=1000)

Model saved as model_C32.sav

Testing MSE: 0.03437310397346818

R-squared: -368.2687750234673

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

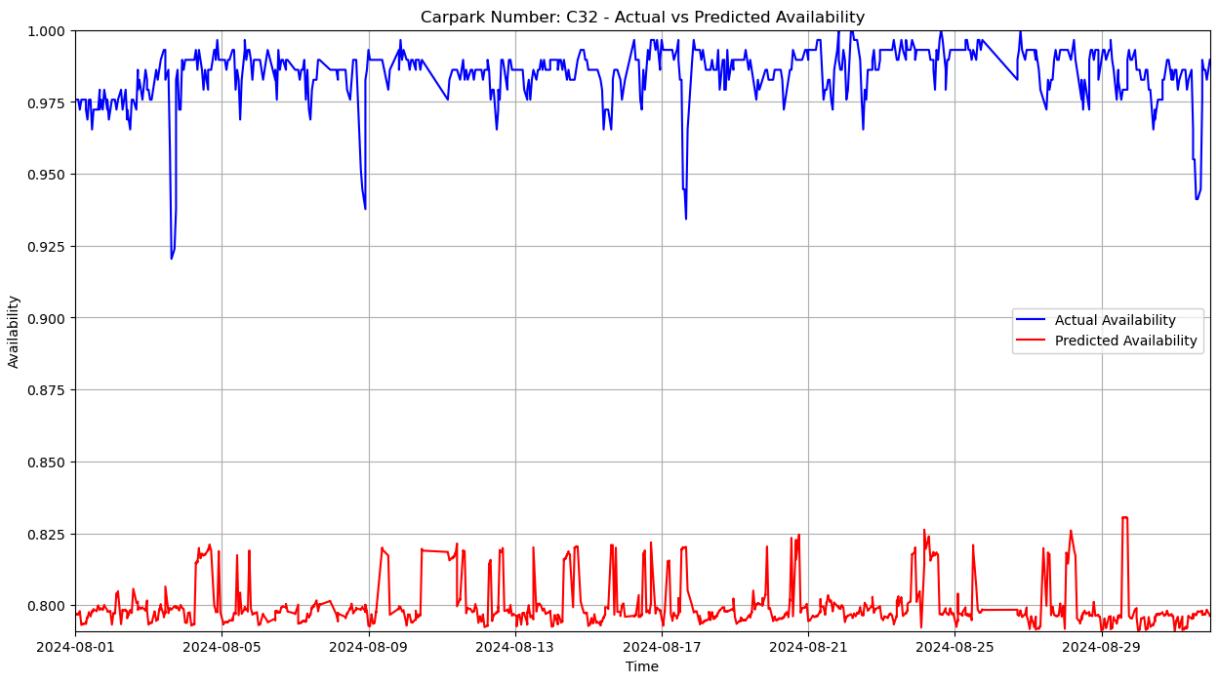
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



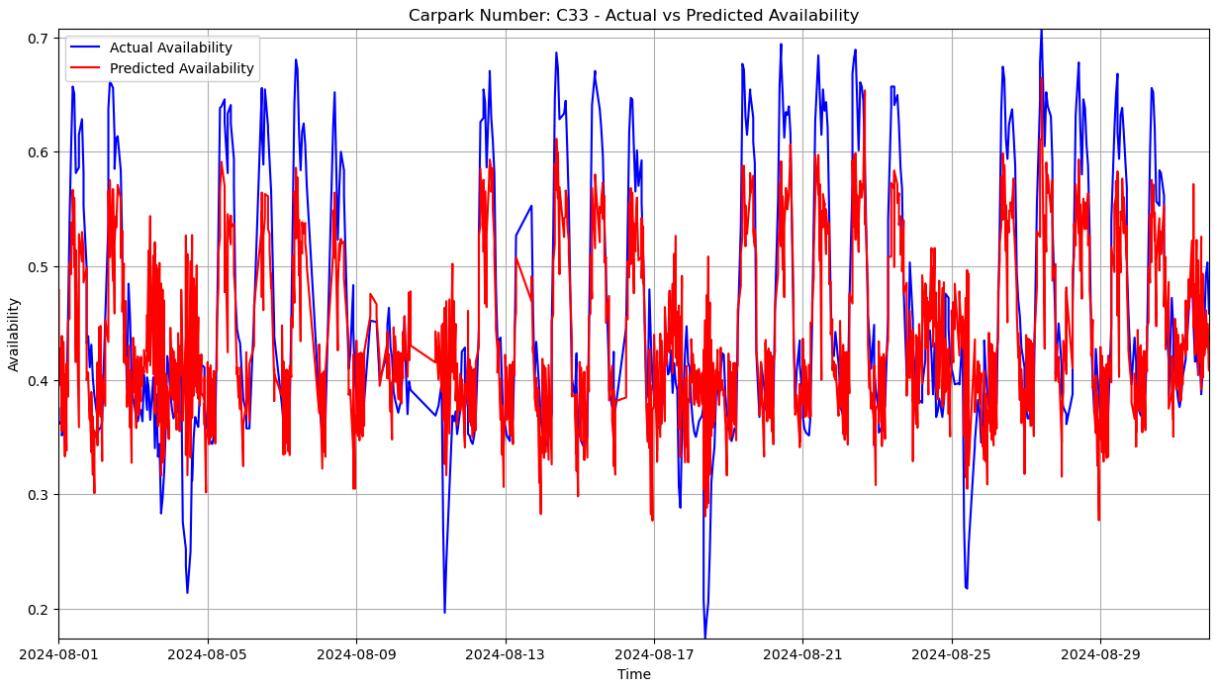
```
Training model for carpark_number: C33
Fitting 3 folds for each of 6 candidates, totalling 18 fits
Best Ridge model for carpark_number C33: Ridge(alpha=1)
```

```
Model saved as model_C33.sav
Testing MSE: 0.005162053937435788
R-squared: 0.6071364620915158
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: C34

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number C34: Ridge(alpha=10)

Model saved as model_C34.sav

Testing MSE: 0.007140345184157909

R-squared: 0.4936697341179578

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

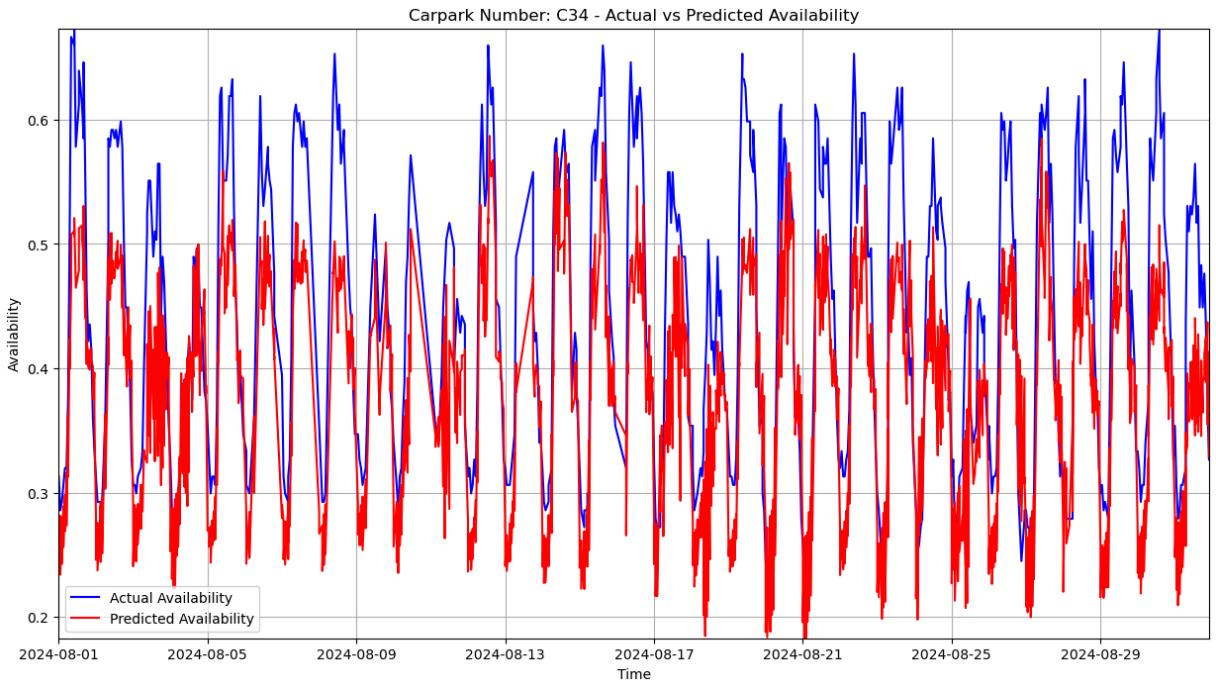
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: C35

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number C35: Ridge(alpha=10)

Model saved as model_C35.sav

Testing MSE: 0.004345782836751157

R-squared: 0.6732470612293755

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

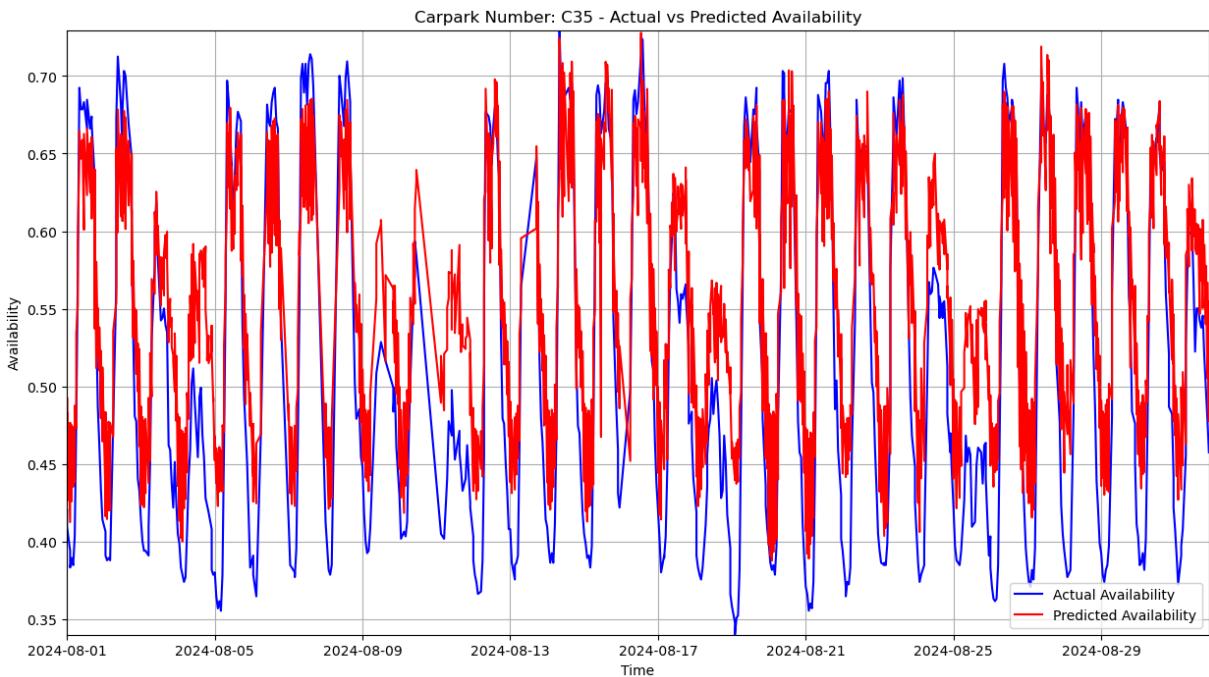
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: C36

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number C36: Ridge(alpha=1)

Model saved as model_C36.sav

Testing MSE: 0.015589087861858586

R-squared: -0.11691470928347525

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.
```

```
py:29: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

```
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.
```

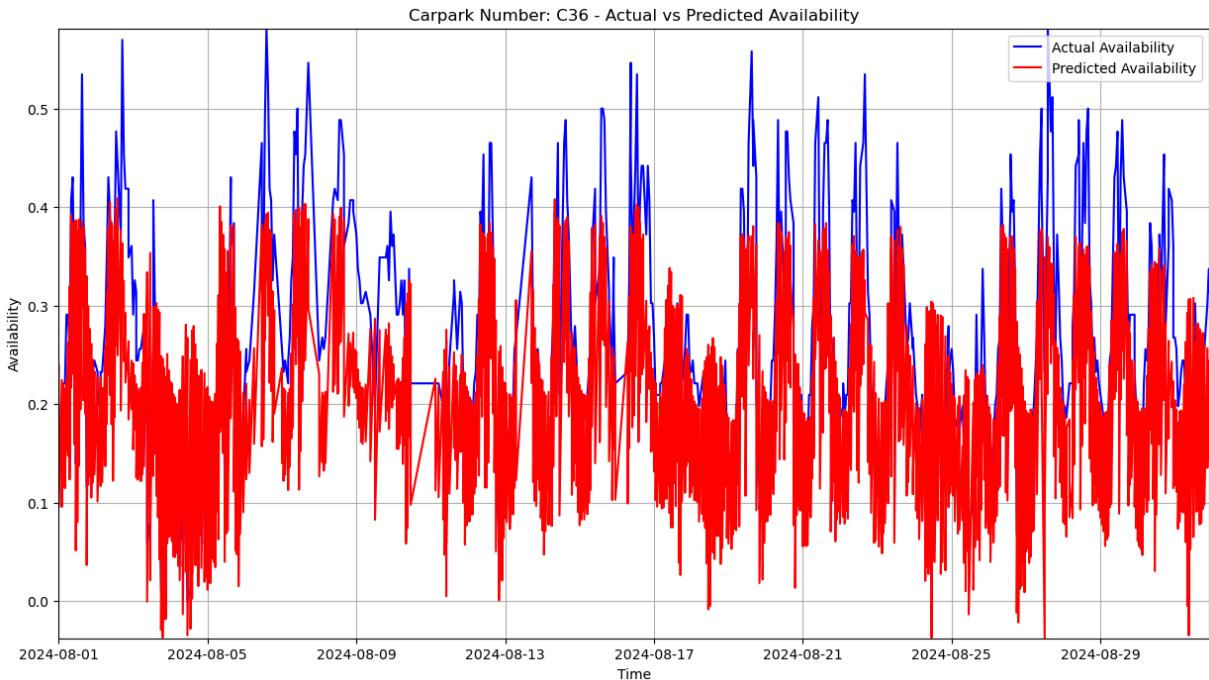
```
py:30: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

```
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: C37

Fitting 3 folds for each of 6 candidates, totalling 18 fits

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

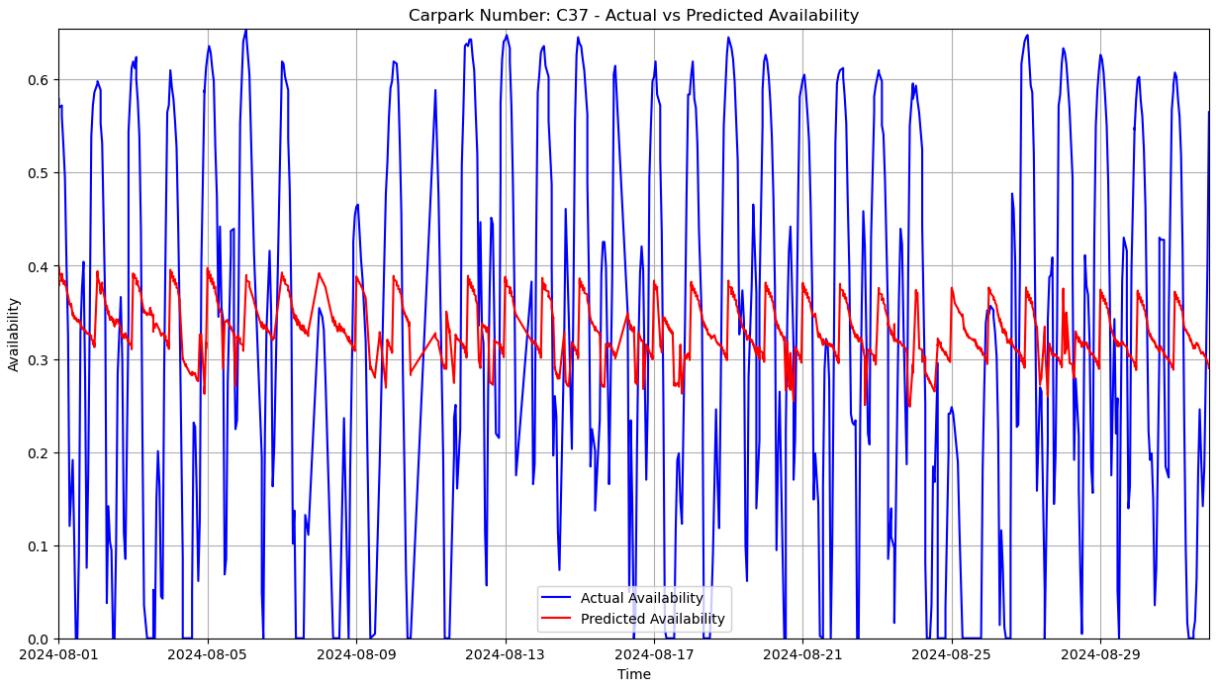
```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Best Ridge model for carpark_number C37: Ridge(alpha=100)

Model saved as model_C37.sav

Testing MSE: 0.04377349971439705

R-squared: 0.06786385929662464



Training model for carpark_number: C38

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number C38: Ridge(alpha=0.1)

Model saved as model_C38.sav

Testing MSE: 0.012099449815539383

R-squared: 0.14387485772987452

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

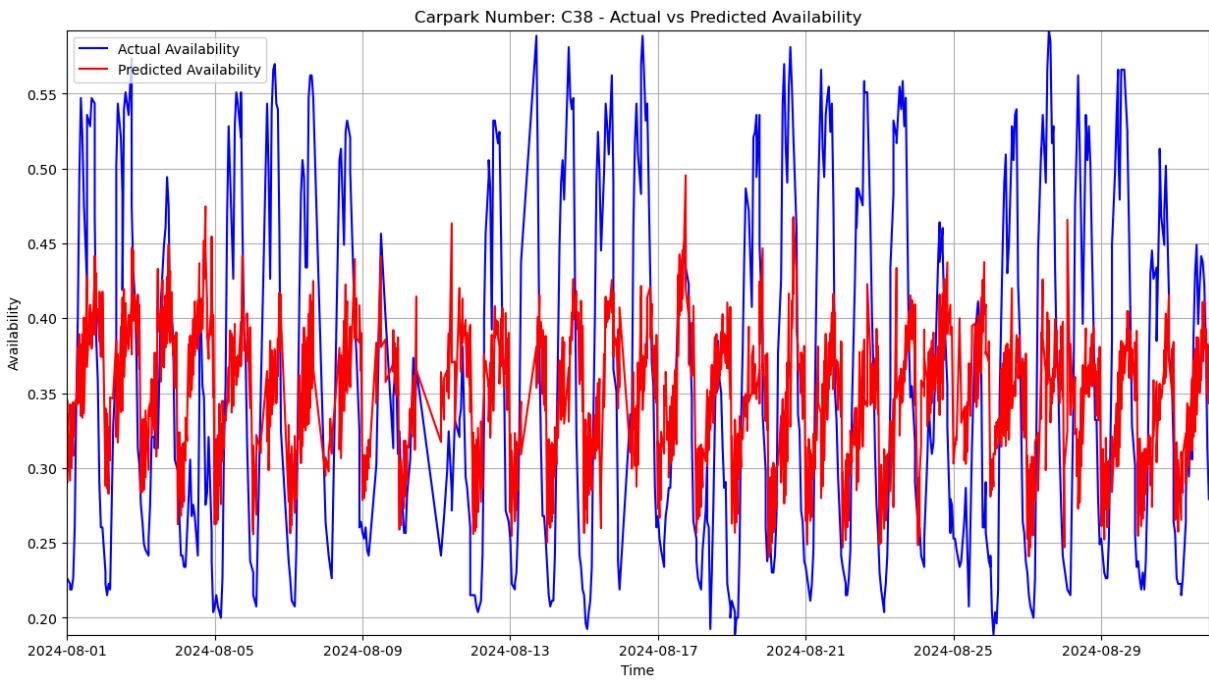
```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.
```

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: C3M

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number C3M: Ridge(alpha=0.01)

Model saved as model_C3M.sav

Testing MSE: 0.04631888041985068

R-squared: -88.20785408708078

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

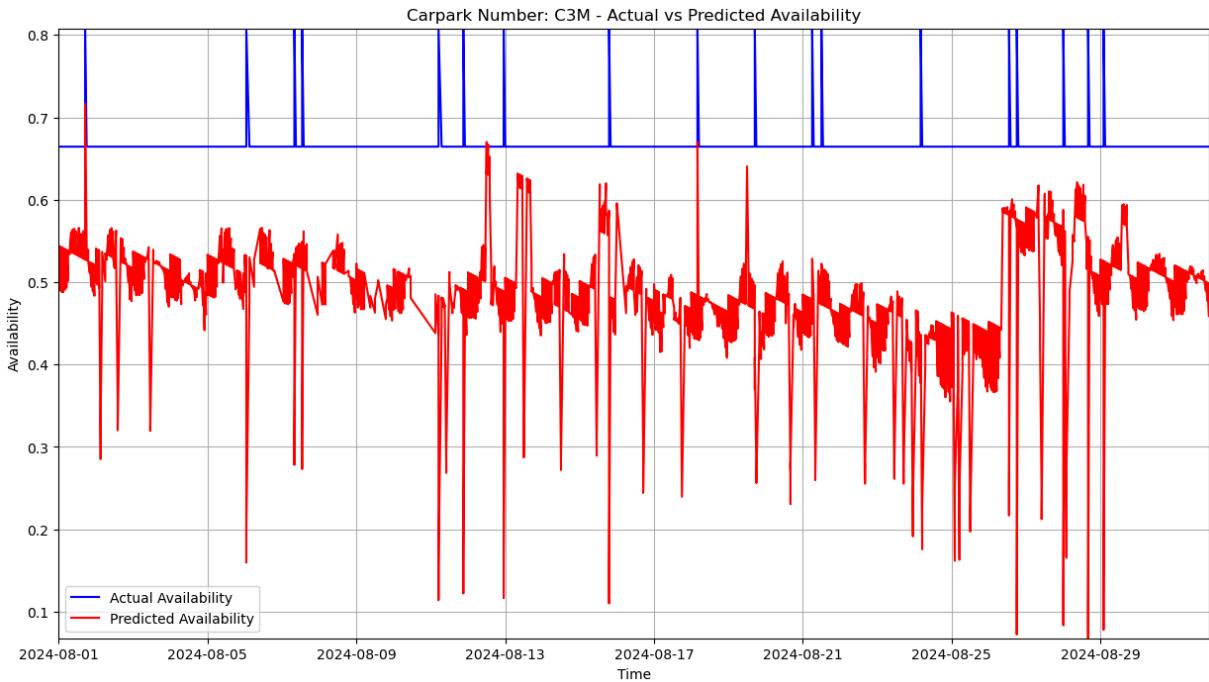
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: C3ML

Fitting 3 folds for each of 6 candidates, totalling 18 fits

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

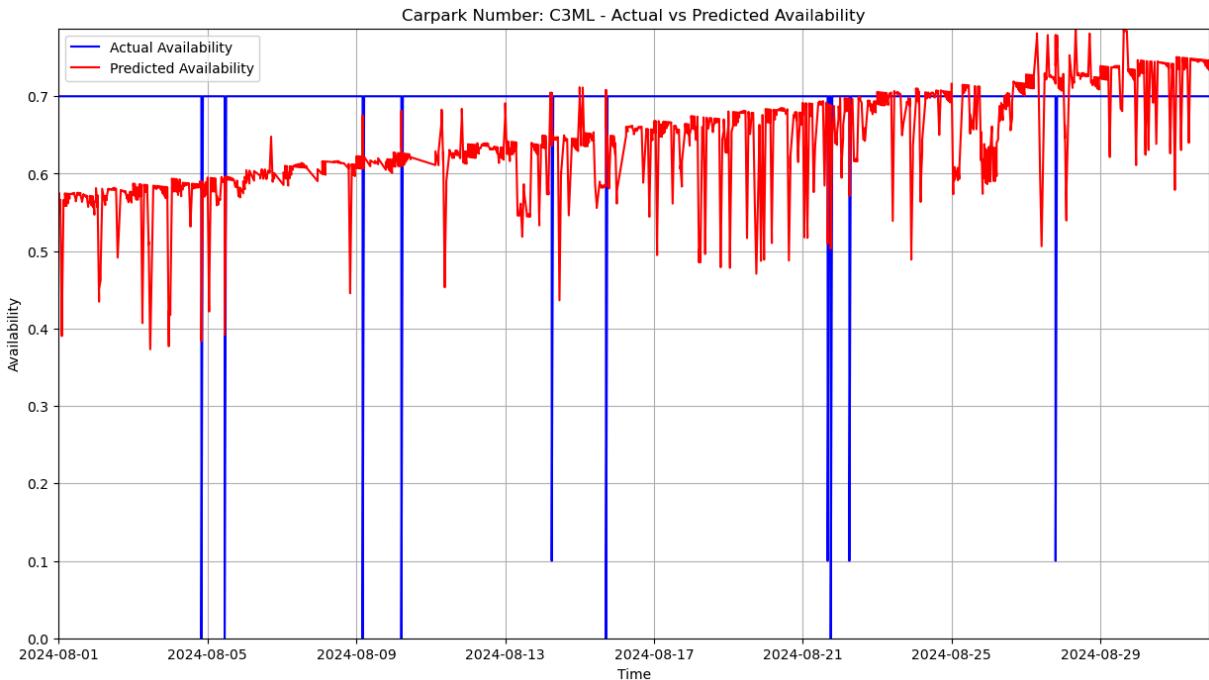
```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Best Ridge model for carpark_number C3ML: Ridge(alpha=10)

Model saved as model_C3ML.sav

Testing MSE: 0.012801865600040846

R-squared: -1.0389197616729864



Training model for carpark_number: C40L

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)  
Fitting 3 folds for each of 6 candidates, totalling 18 fits  
Best Ridge model for carpark_number C40L: Ridge(alpha=10)
```

Model saved as model_C40L.sav

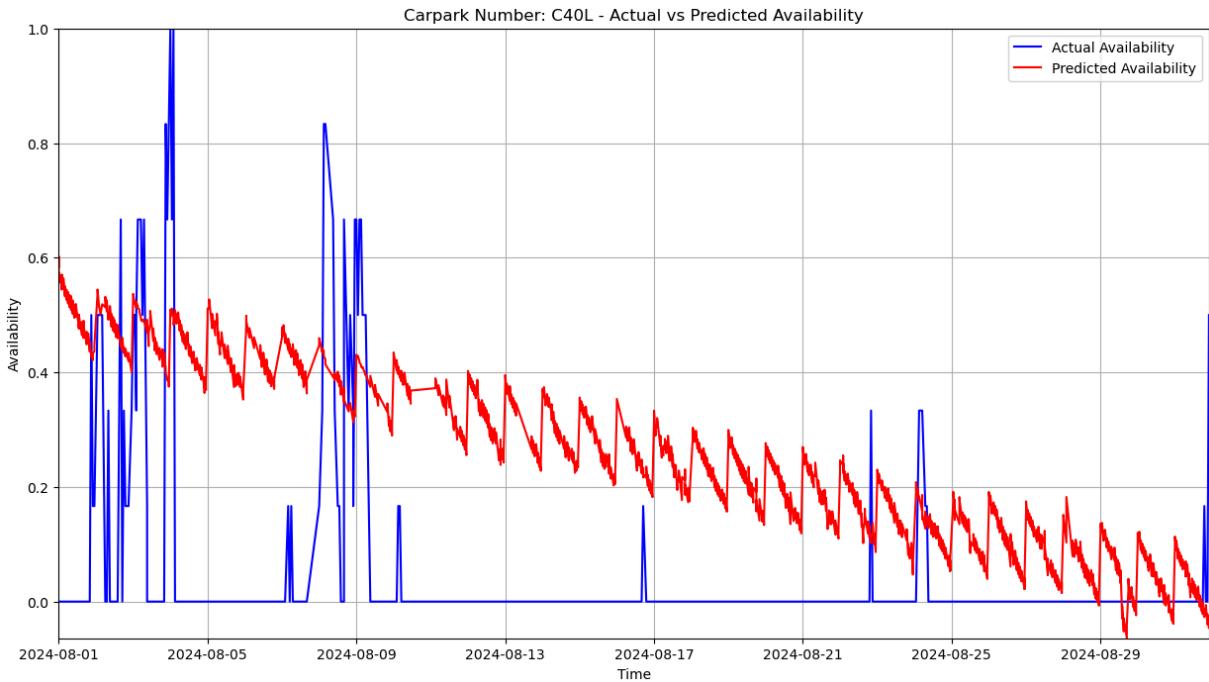
Testing MSE: 0.07405804846827363

R-squared: -2.254695921508304

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: C40M

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number C40M: Ridge(alpha=100)

Model saved as model_C40M.sav

Testing MSE: 0.006502252437739987

R-squared: 0.0173523834653575

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

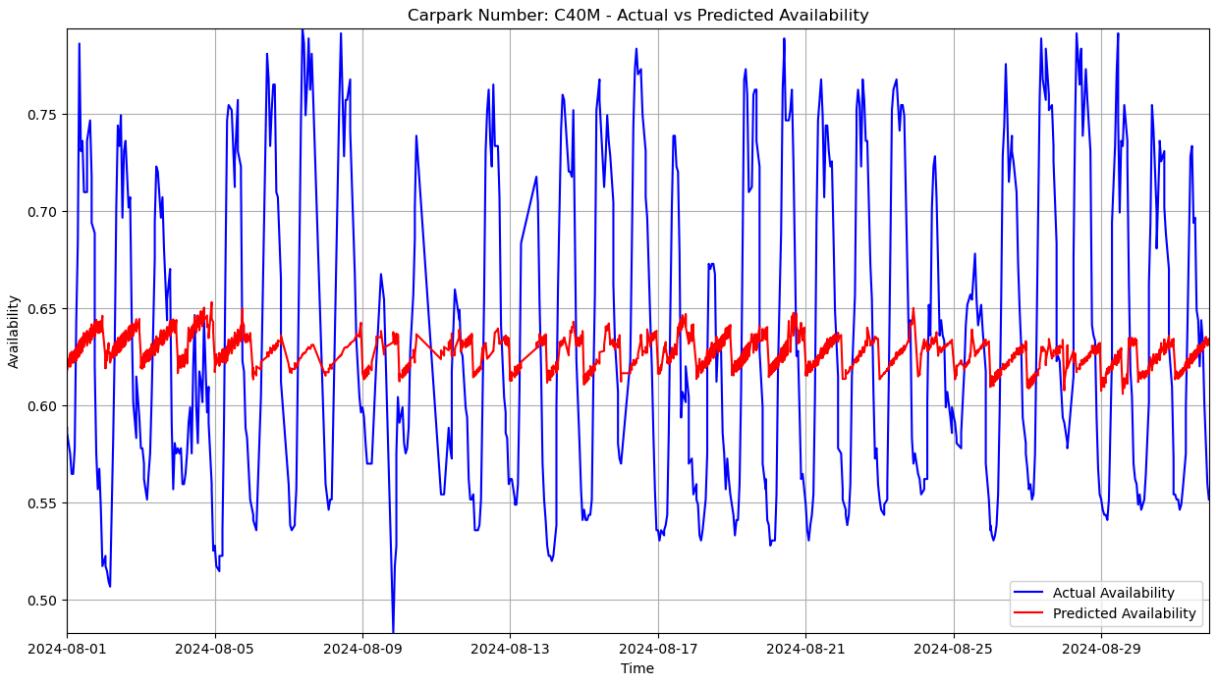
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

```
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: C4M

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number C4M: Ridge(alpha=100)

Model saved as model_C4M.sav

Testing MSE: 0.007045868498765487

R-squared: 0.041624154495096155

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

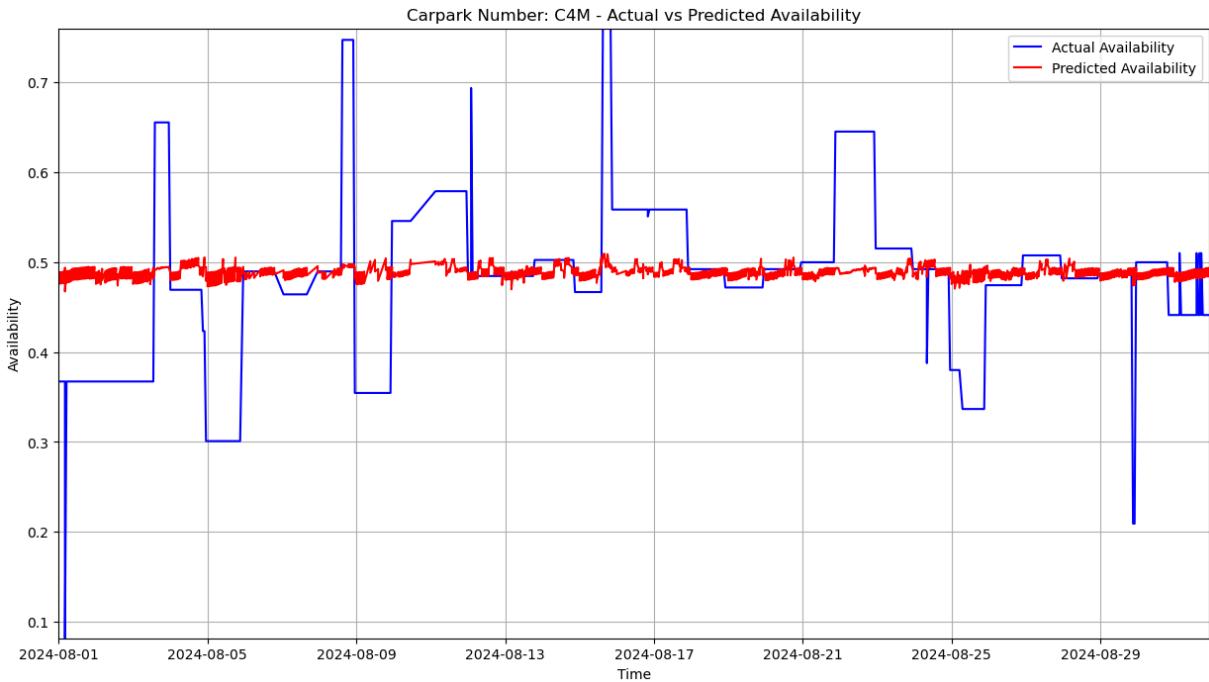
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: C5

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number C5: Ridge(alpha=0.01)

Model saved as model_C5.sav

Testing MSE: 0.0645254112698496

R-squared: -2.668410769254597

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

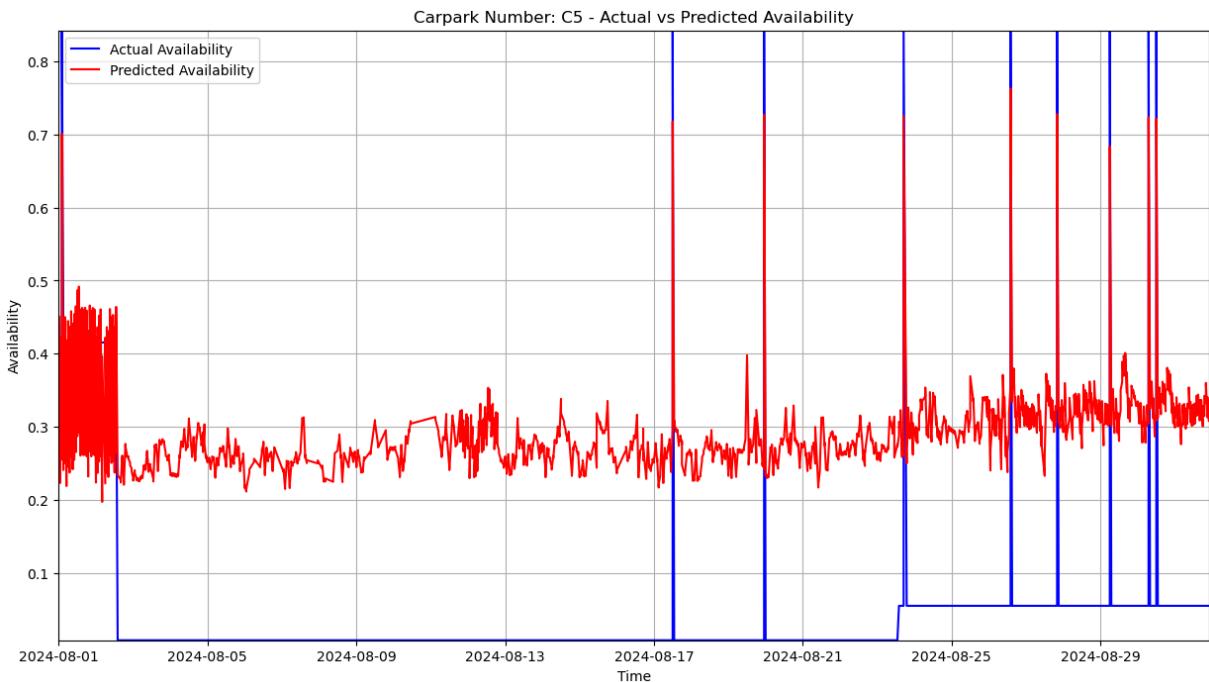
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

```
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: C6

Fitting 3 folds for each of 6 candidates, totalling 18 fits

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

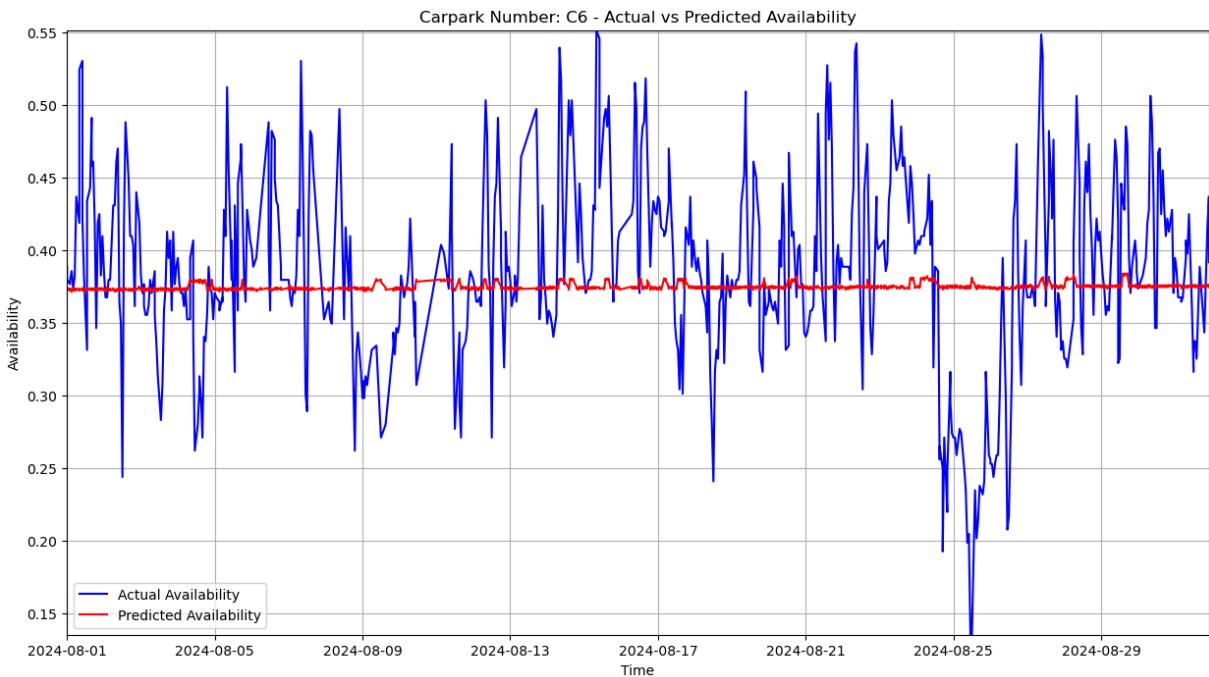
```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Best Ridge model for carpark_number C6: Ridge(alpha=1000)

Model saved as model_C6.sav

Testing MSE: 0.004404628016019823

R-squared: -0.025380569613017823



Training model for carpark_number: C7

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number C7: Ridge(alpha=10)

Model saved as model_C7.sav

Testing MSE: 0.01594800013400944

R-squared: 0.2503028099931328

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

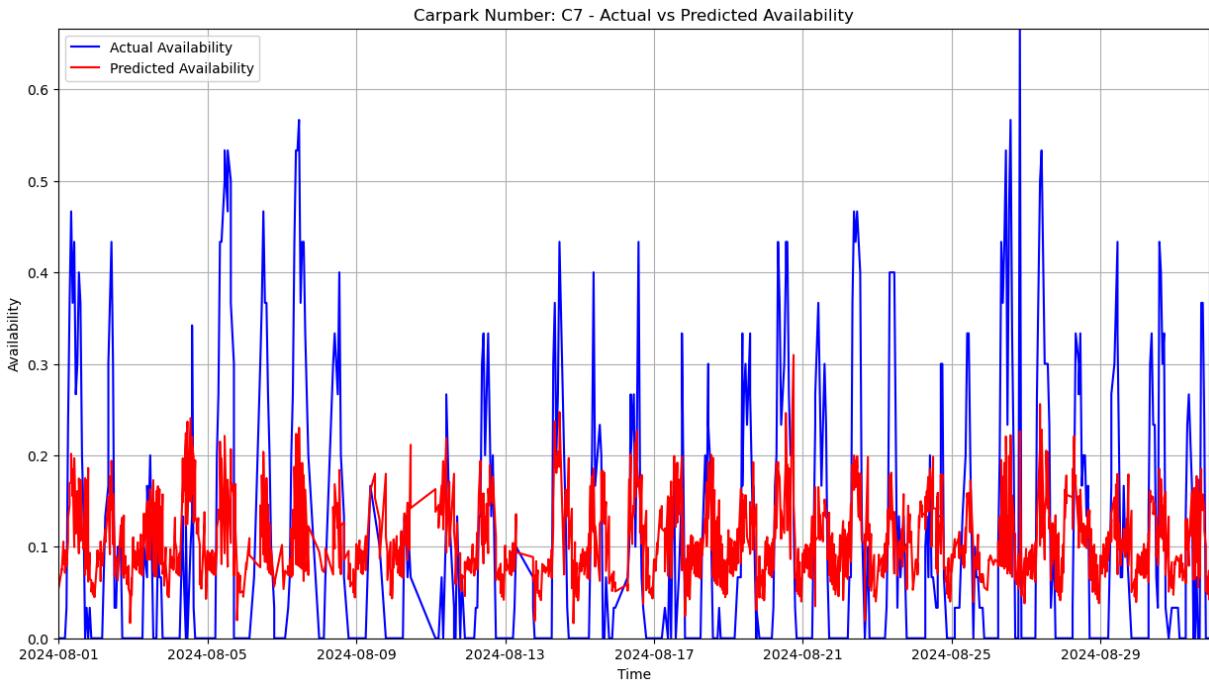
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: C8

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number C8: Ridge(alpha=10)

Model saved as model_C8.sav

Testing MSE: 0.008388186533500493

R-squared: 0.14882726423146175

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

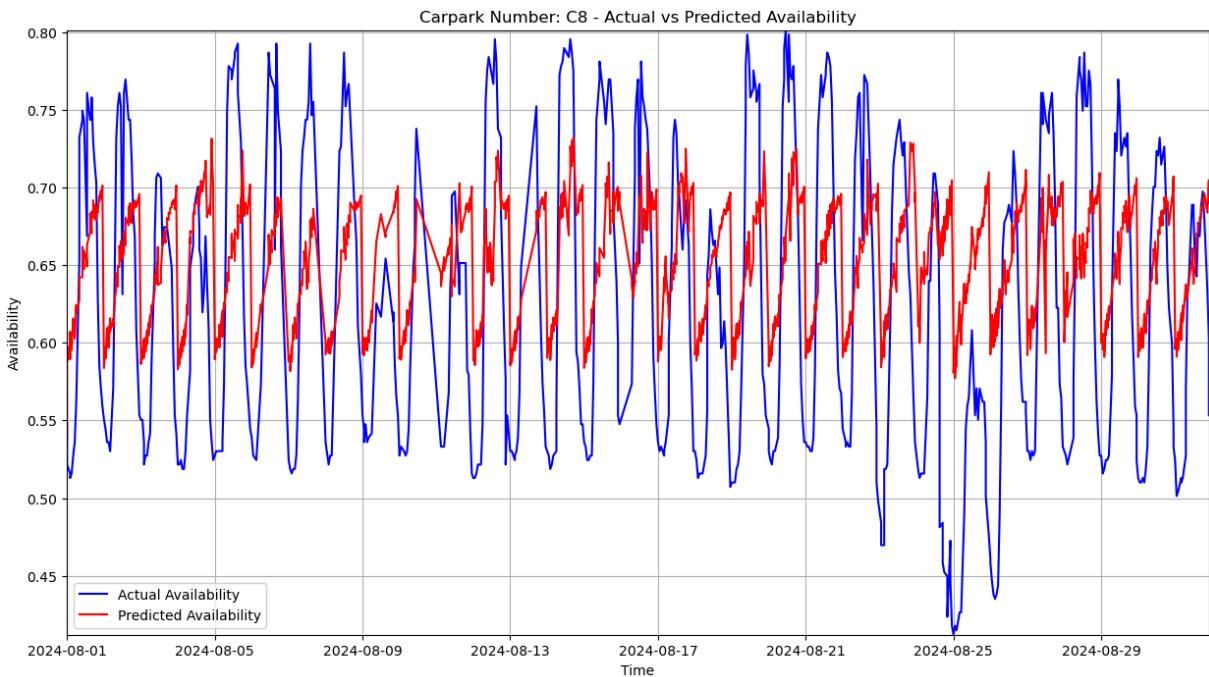
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: C9

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number C9: Ridge(alpha=0.01)

Model saved as model_C9.sav

Testing MSE: 0.07707717928189714

R-squared: -91.90936551763525

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

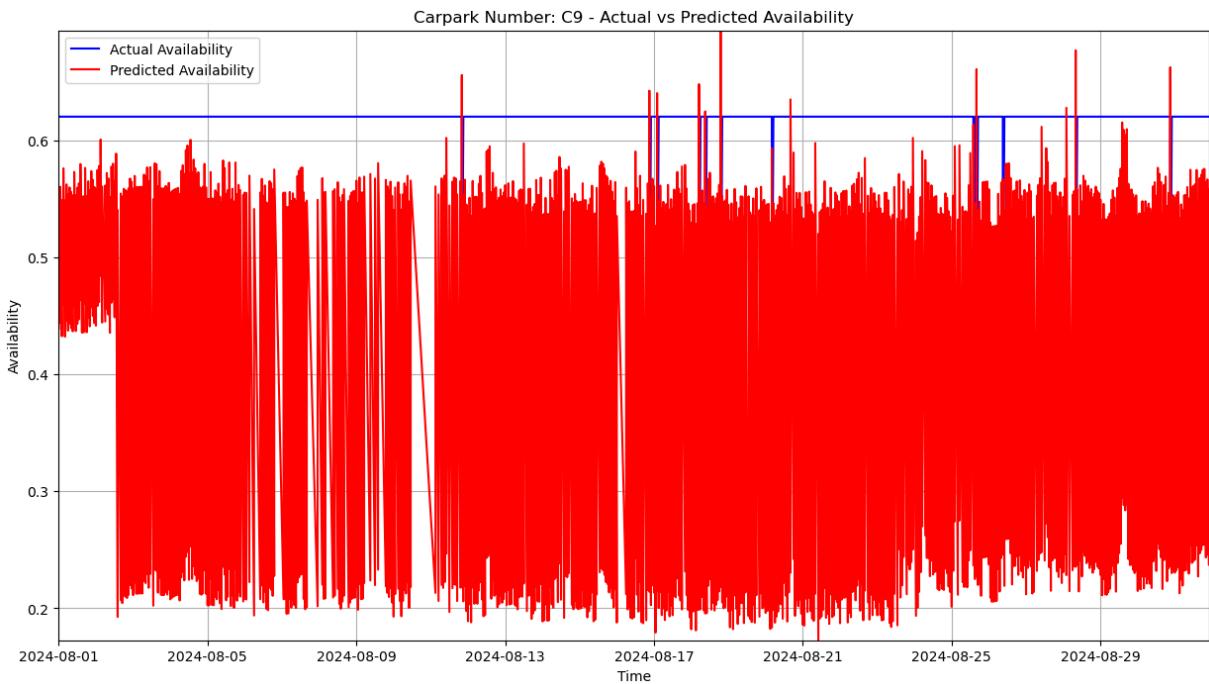
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: CAM

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number CAM: Ridge(alpha=1000)

Model saved as model_CAM.sav

Testing MSE: 0.0008151621504744218

R-squared: 0.0010922489344625808

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

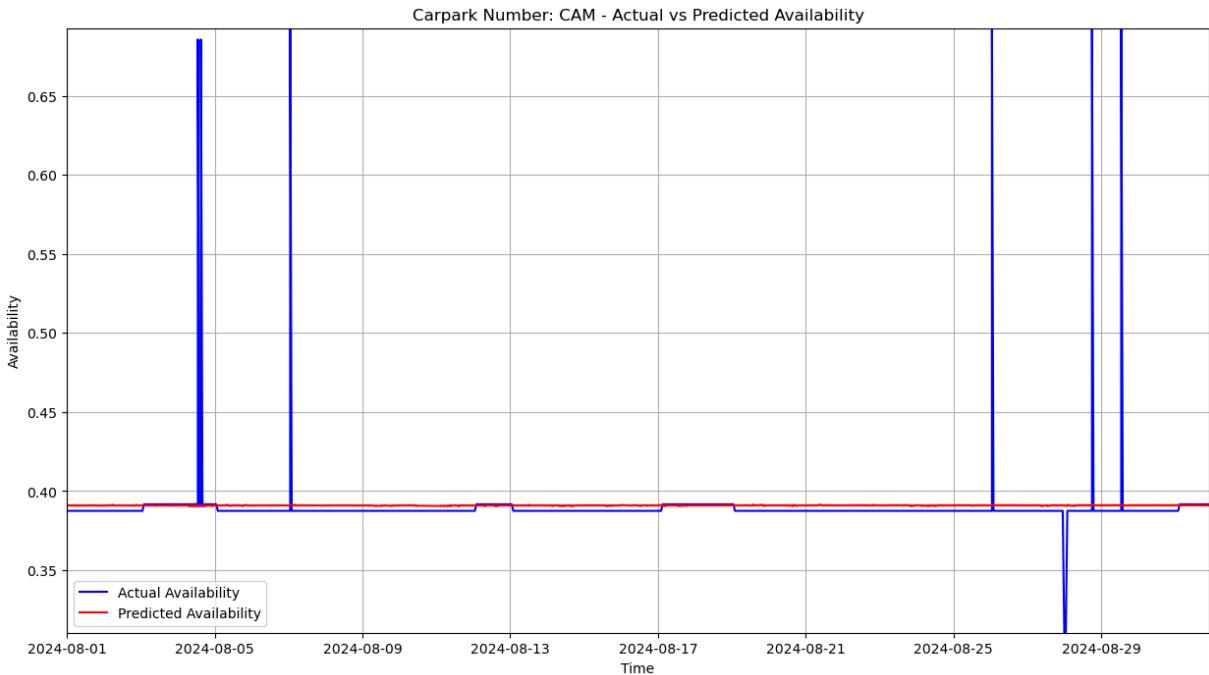
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: CDM

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number CDM: Ridge(alpha=1000)

Model saved as model_CDM.sav

Testing MSE: 0.0010504167945303482

R-squared: 0.0007189930108680853

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

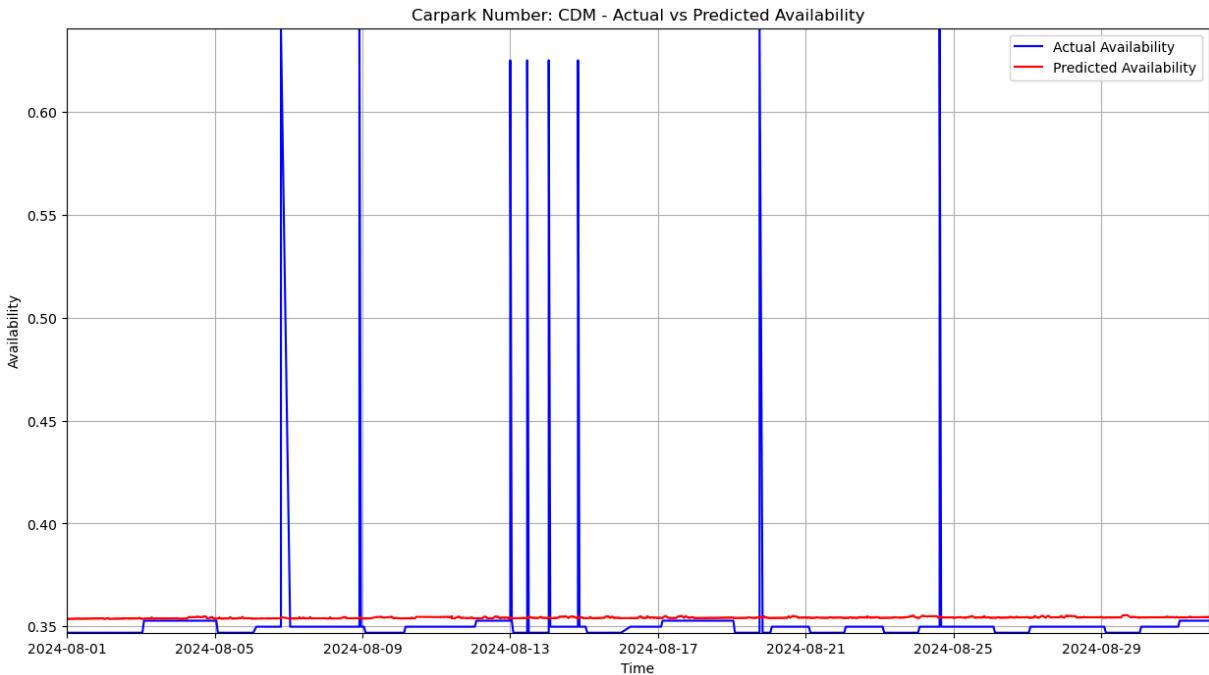
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: CLM

Fitting 3 folds for each of 6 candidates, totalling 18 fits

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

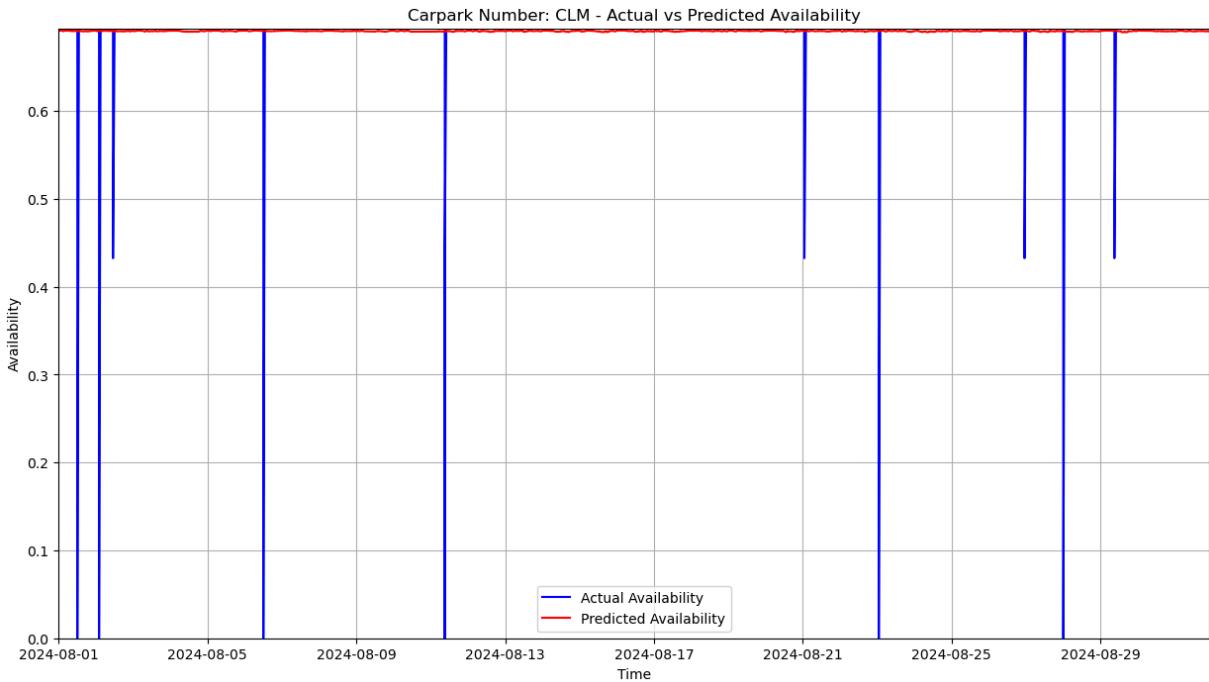
```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Best Ridge model for carpark_number CLM: Ridge(alpha=1000)

Model saved as model_CLM.sav

Testing MSE: 0.004654890830147883

R-squared: -0.0055831820496619056



Training model for carpark_number: CLNA

Fitting 3 folds for each of 6 candidates, totalling 18 fits
Best Ridge model for carpark_number CLNA: Ridge(alpha=10)

Model saved as model_CLNA.sav

Testing MSE: 0.03533142667659209

R-squared: -0.04207994948325622

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

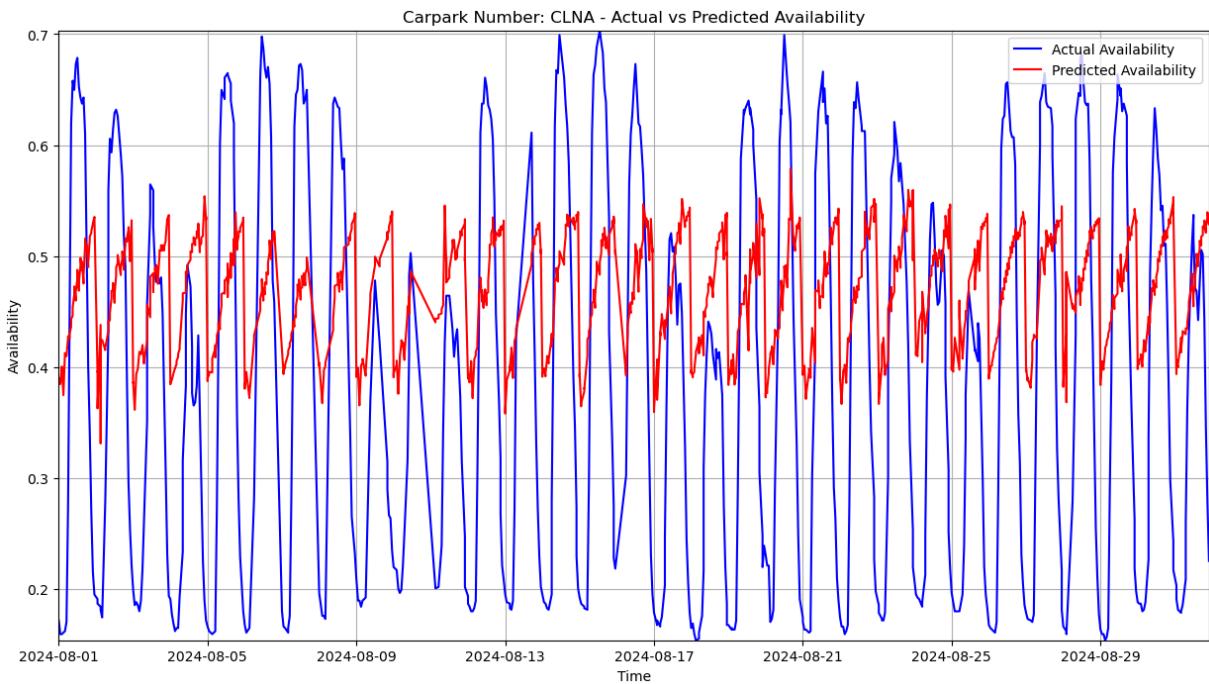
```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: CLRG

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number CLRG: Ridge(alpha=10)

Model saved as model_CLRG.sav

Testing MSE: 0.016565547619720105

R-squared: -0.030260787721745563

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

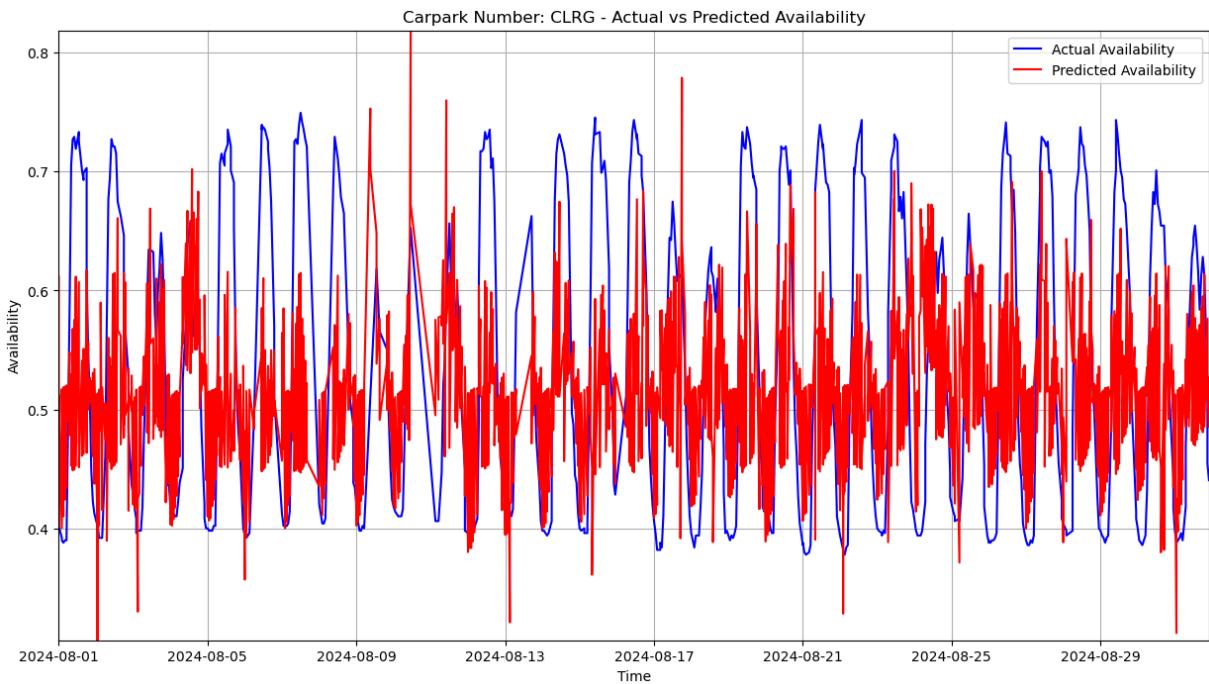
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: CLTR

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number CLTR: Ridge(alpha=10)

Model saved as model_CLTR.sav

Testing MSE: 0.005928224536909498

R-squared: 0.5737540679596396

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

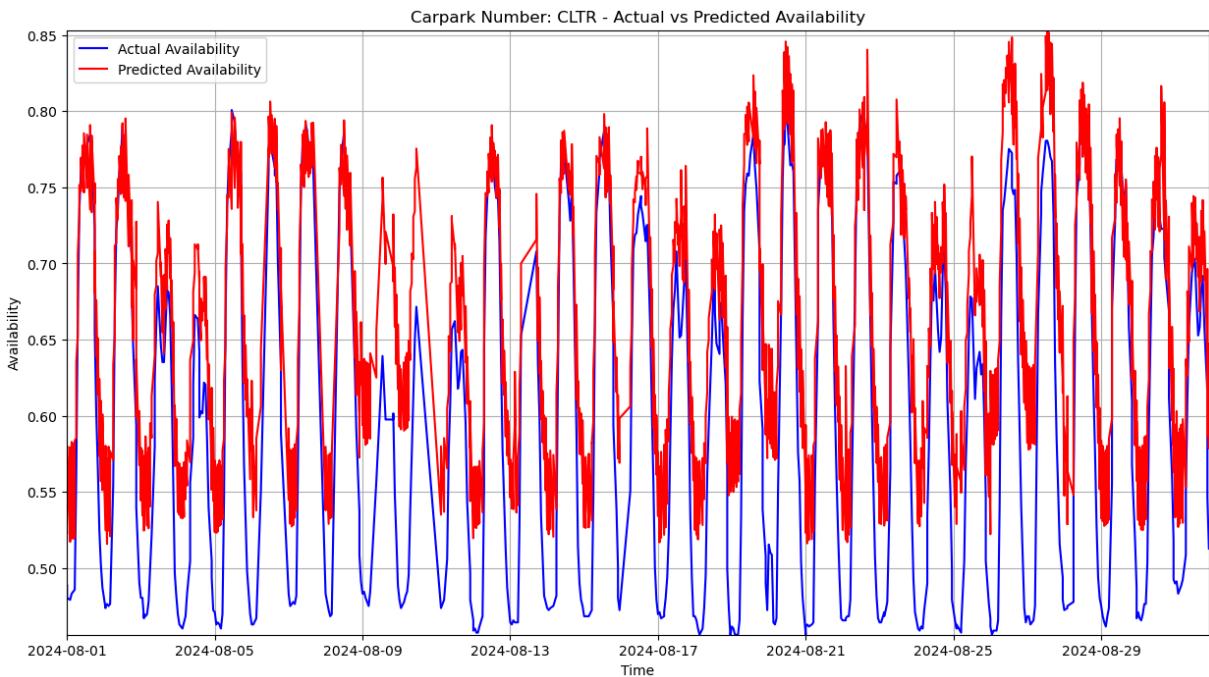
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

```
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: CTM1

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number CTM1: Ridge(alpha=1)

Model saved as model_CTM1.sav

Testing MSE: 0.0034348402243484354

R-squared: 0.07719813464600855

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

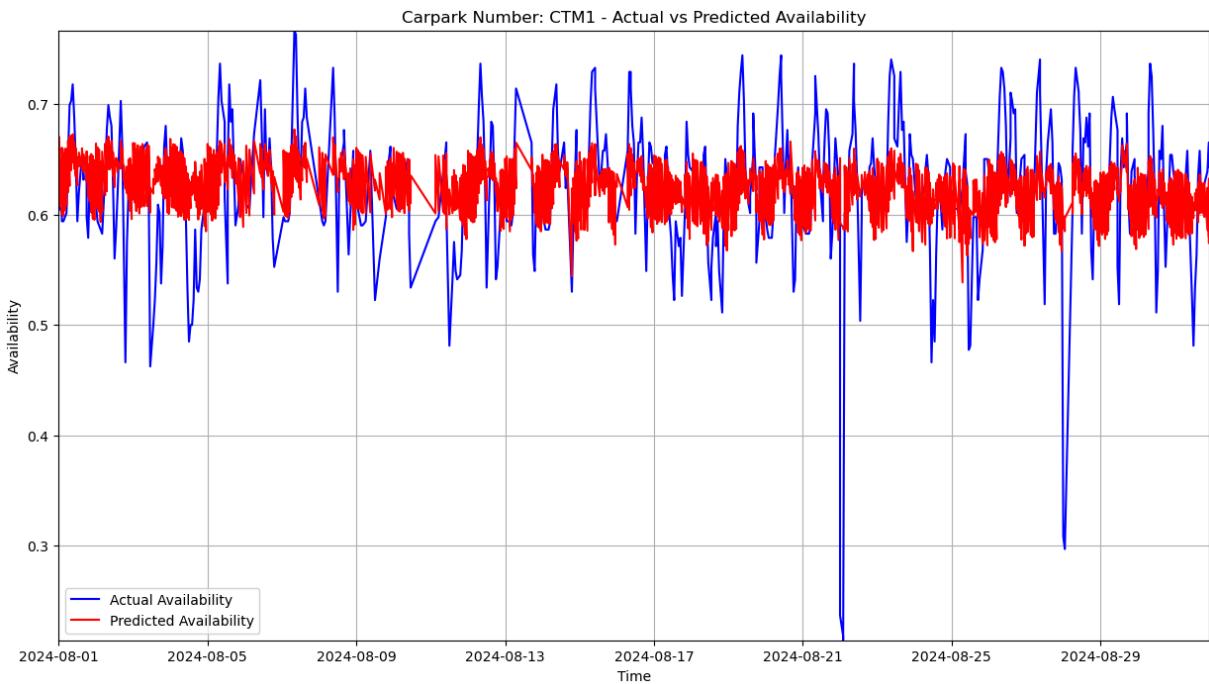
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

```
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: DRM1

Fitting 3 folds for each of 6 candidates, totalling 18 fits
Best Ridge model for carpark_number DRM1: Ridge(alpha=1000)

Model saved as model_DRM1.sav

Testing MSE: 0.001130896094255591

R-squared: 0.06242036150504948

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

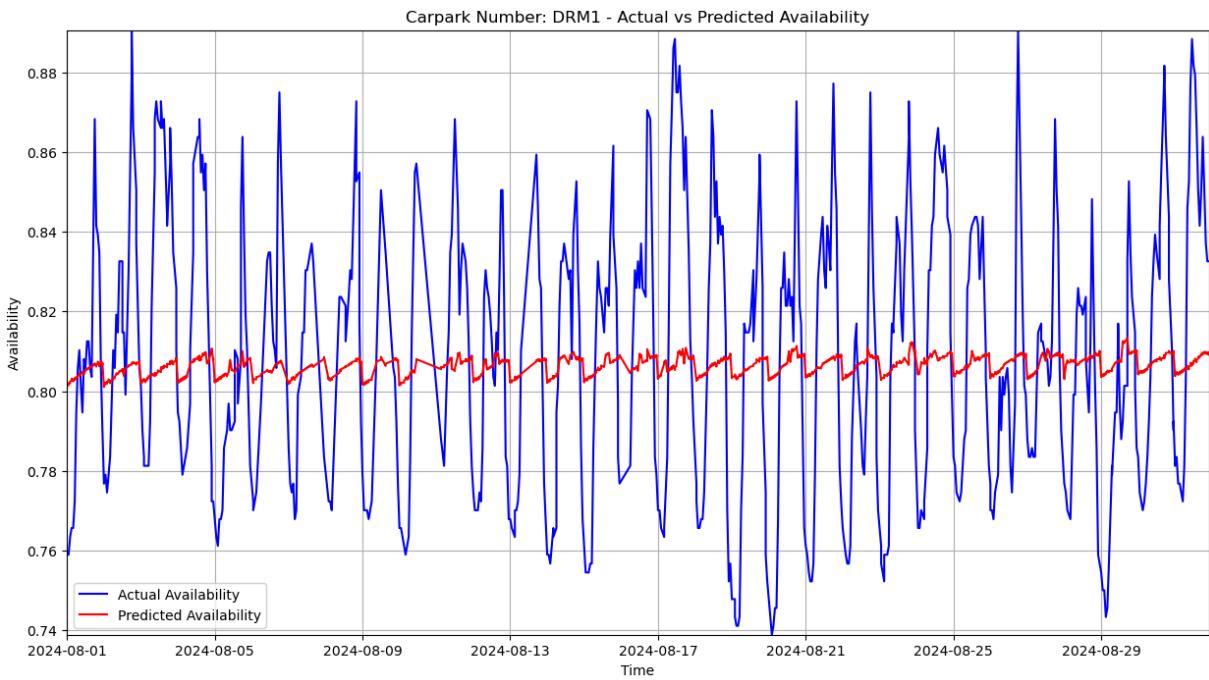
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: DRM2

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number DRM2: Ridge(alpha=100)

Model saved as model_DRM2.sav

Testing MSE: 0.007672720793700444

R-squared: 0.09119969605841105

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

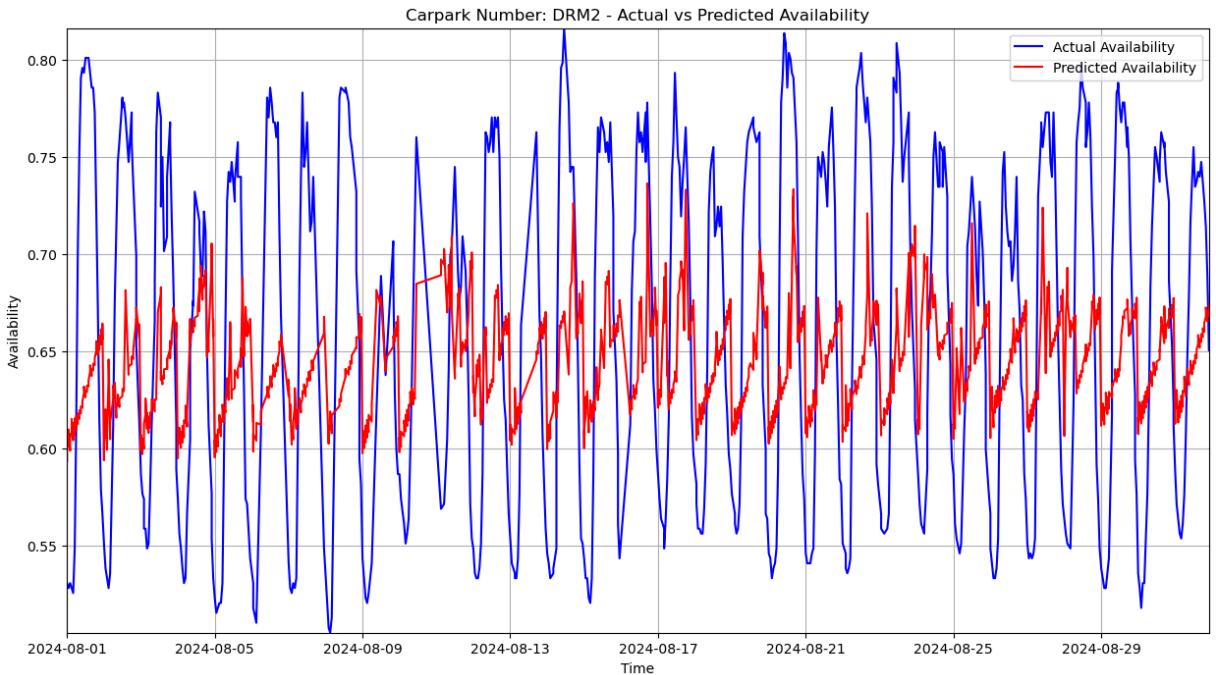
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: DRM3

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number DRM3: Ridge(alpha=0.01)

Model saved as model_DRM3.sav

Testing MSE: 0.0020581440471540324

R-squared: 0.22480503120007456

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

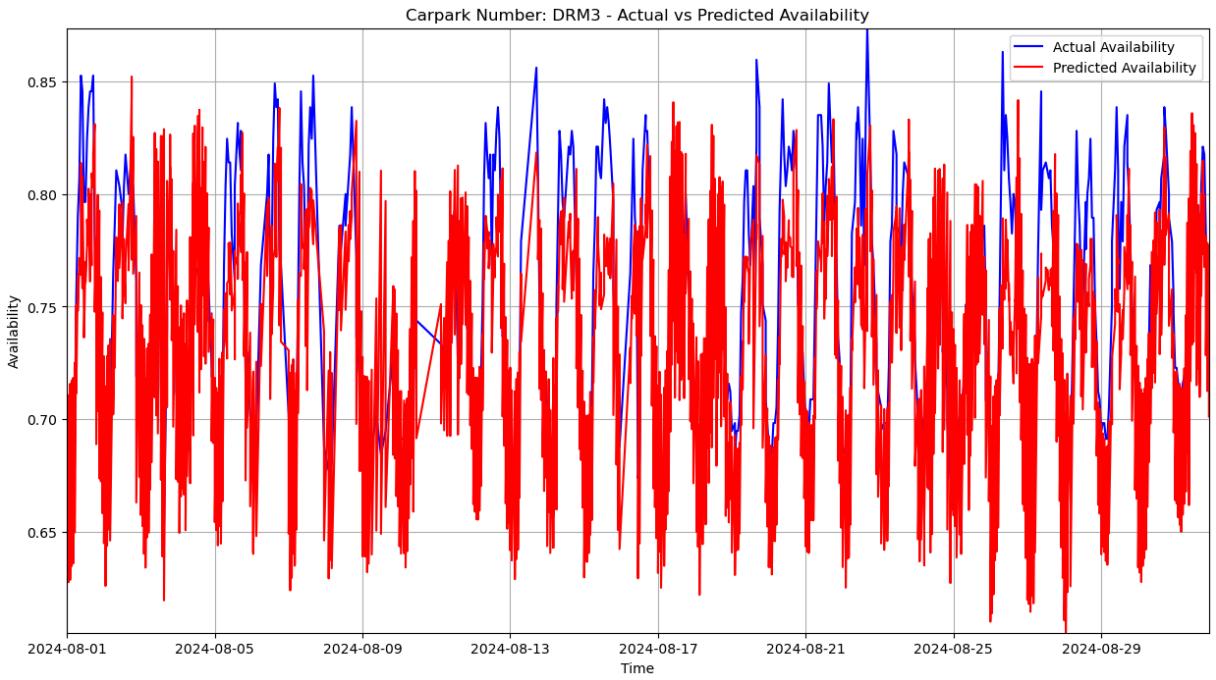
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: DRM4

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number DRM4: Ridge(alpha=0.01)

Model saved as model_DRM4.sav

Testing MSE: 0.05913763086586555

R-squared: -0.41143858744518846

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

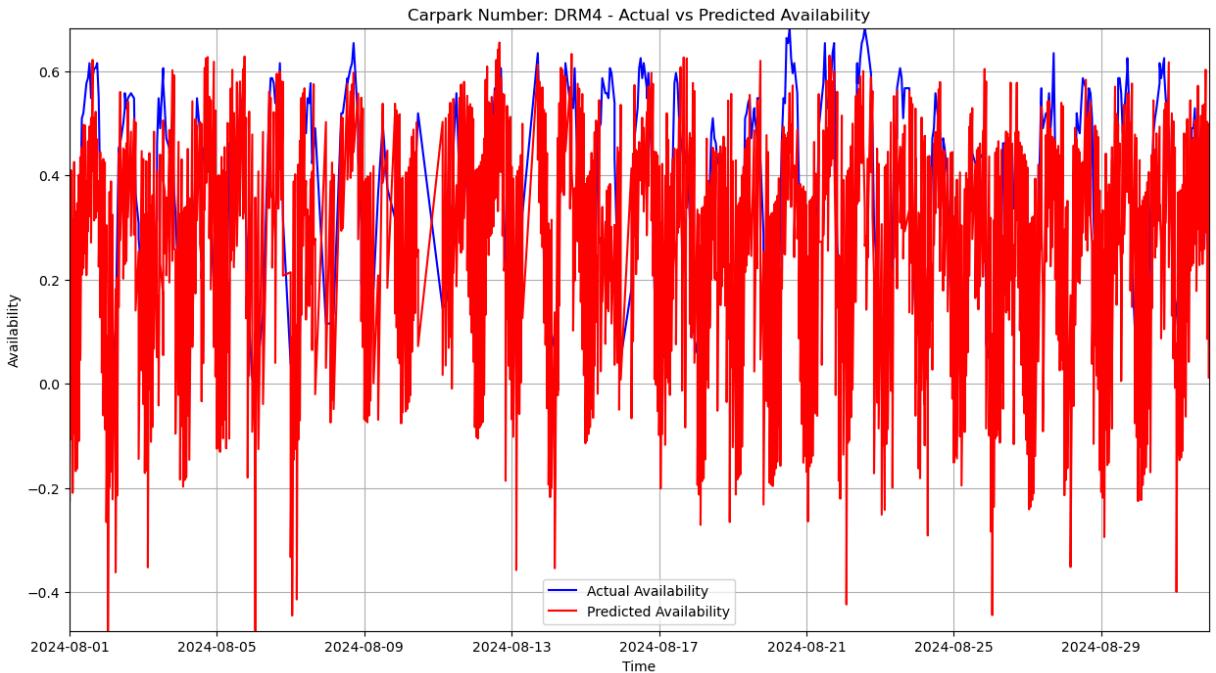
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



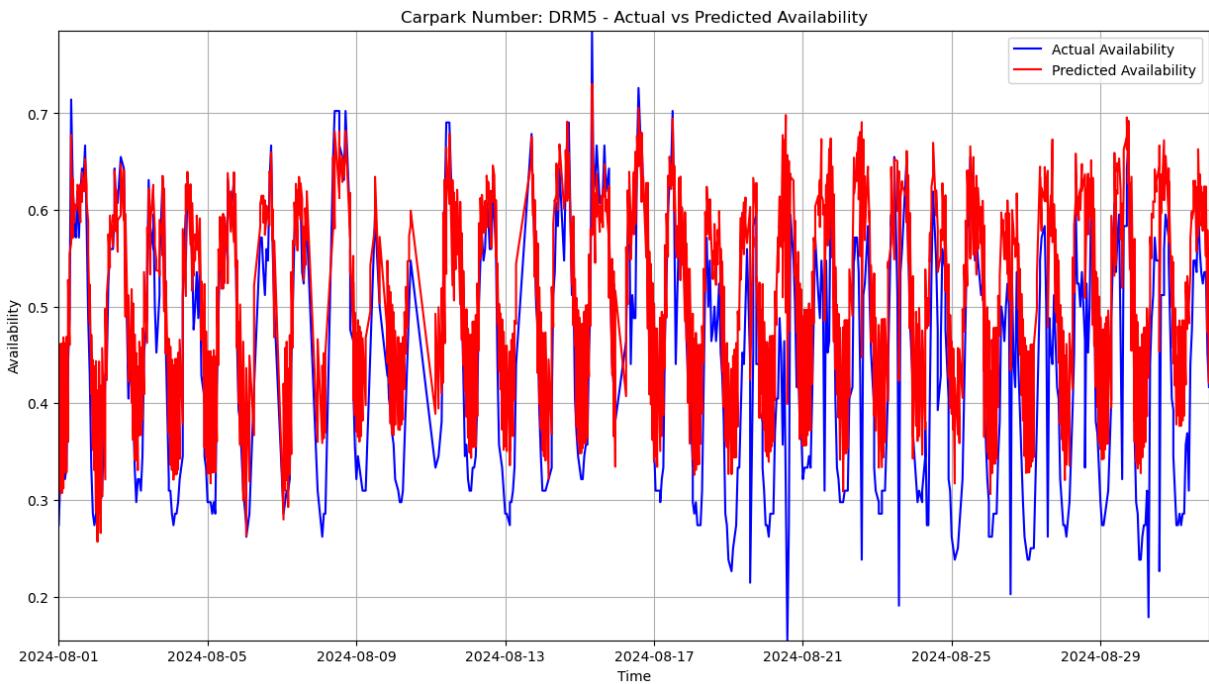
```
Training model for carpark_number: DRM5
Fitting 3 folds for each of 6 candidates, totalling 18 fits
Best Ridge model for carpark_number DRM5: Ridge(alpha=1)
```

```
Model saved as model_DRM5.sav
Testing MSE: 0.011443064179629965
R-squared: 0.31835894815219856
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: DRS

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number DRS: Ridge(alpha=1000)

Model saved as model_DRS.sav

Testing MSE: 0.0001990945962442888

R-squared: -3.1390452610632718

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

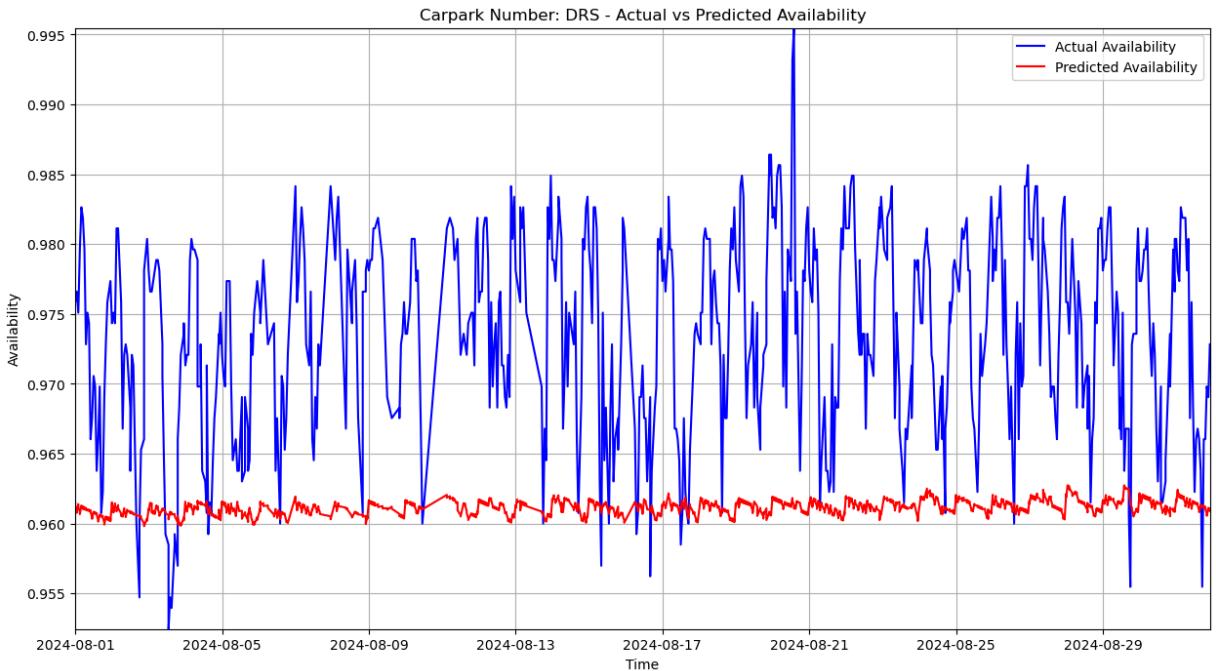
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

```
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



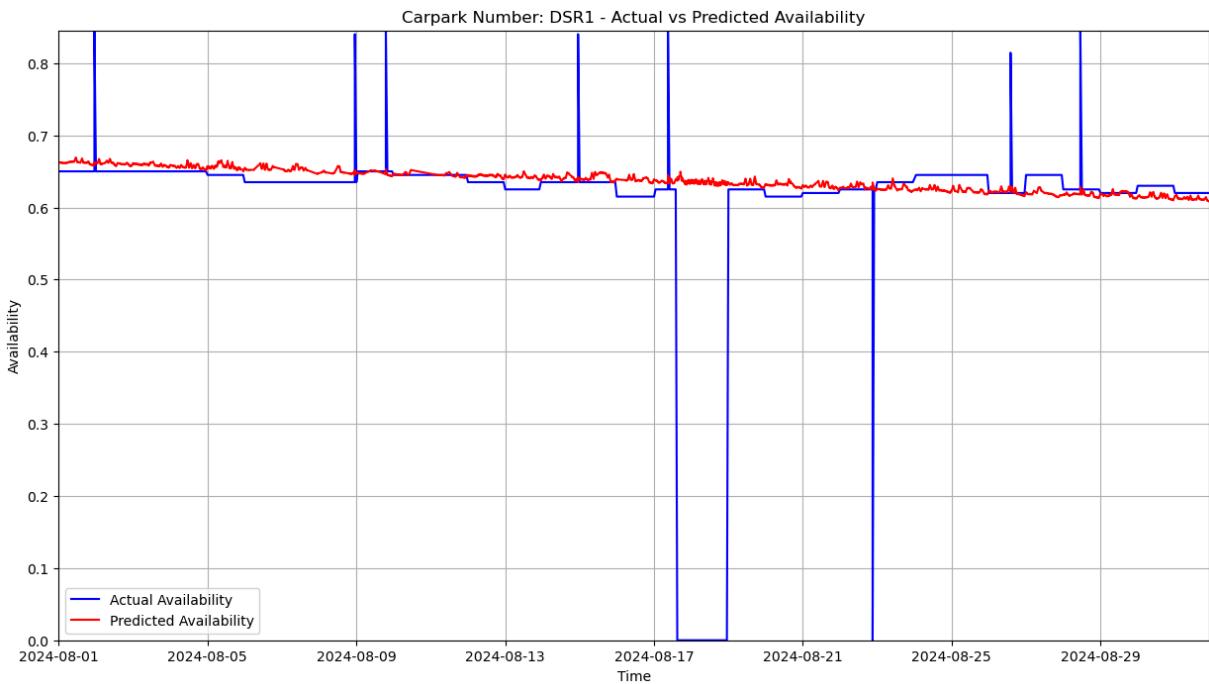
```
Training model for carpark_number: DSR1
Fitting 3 folds for each of 6 candidates, totalling 18 fits
Best Ridge model for carpark_number DSR1: Ridge(alpha=100)
```

```
Model saved as model_DSR1.sav
Testing MSE: 0.020598560866846364
R-squared: -0.04920875462251817
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: DSR2

Fitting 3 folds for each of 6 candidates, totalling 18 fits
Best Ridge model for carpark_number DSR2: Ridge(alpha=1000)

Model saved as model_DSR2.sav

Testing MSE: 0.0017750490843504308

R-squared: -0.0032179440839592566

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

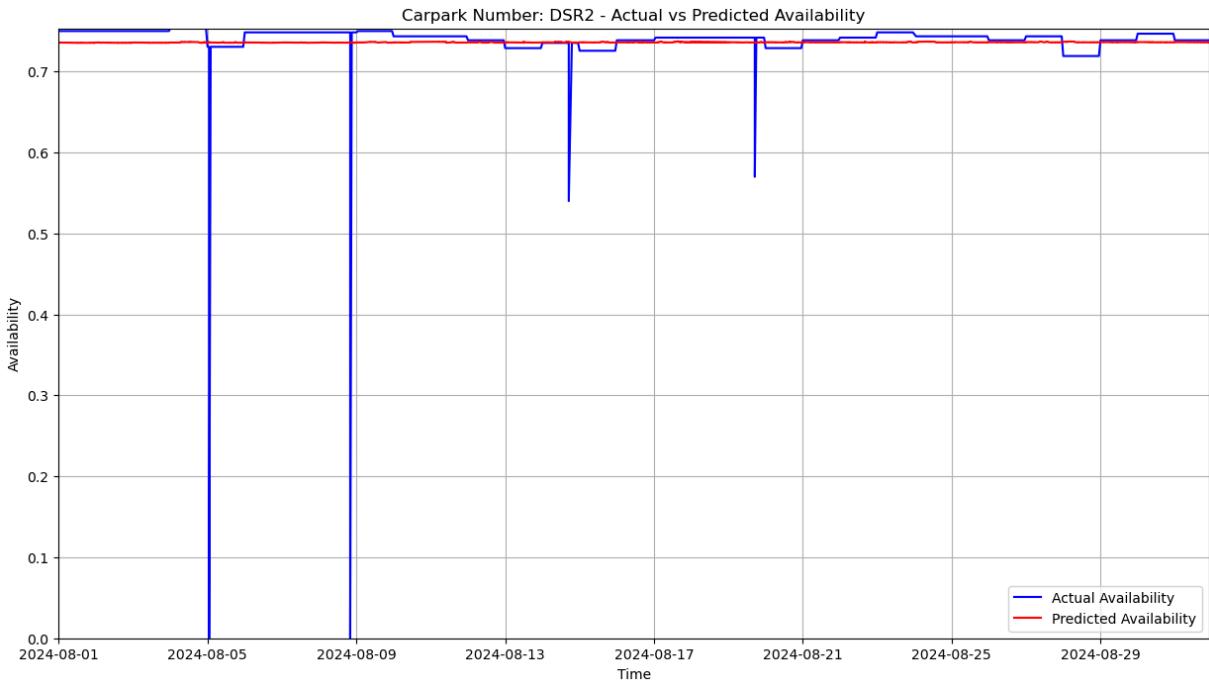
```
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: DSRL

Fitting 3 folds for each of 6 candidates, totalling 18 fits
Best Ridge model for carpark_number DSRL: Ridge(alpha=1000)

Model saved as model_DSRL.sav

Testing MSE: 0.168766508382121

R-squared: 0.010628615139456676

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

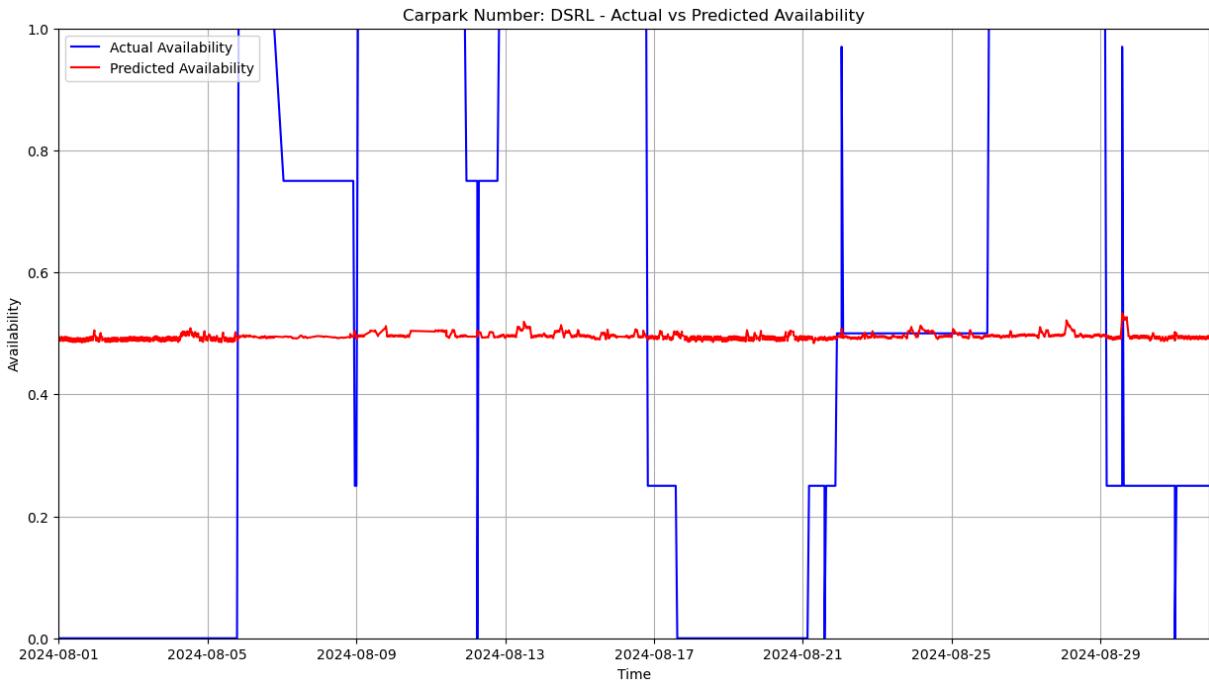
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: DWS0

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number DWS0: Ridge(alpha=100)

Model saved as model_DWS0.sav

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

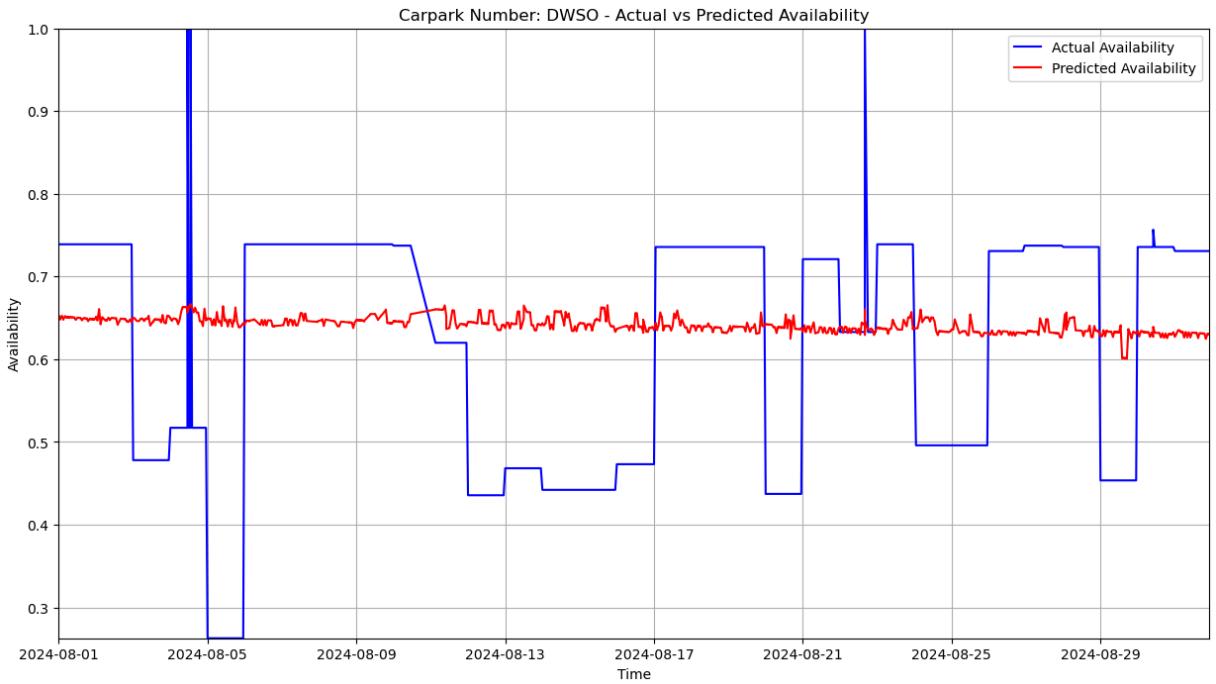
```
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.02245311017299488

R-squared: -0.05958634538992258



Training model for carpark_number: DWSP

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number DWSP: Ridge(alpha=10)

Model saved as model_DWSP.sav

Testing MSE: 0.0000996323352172736

R-squared: -0.013084441708950845

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

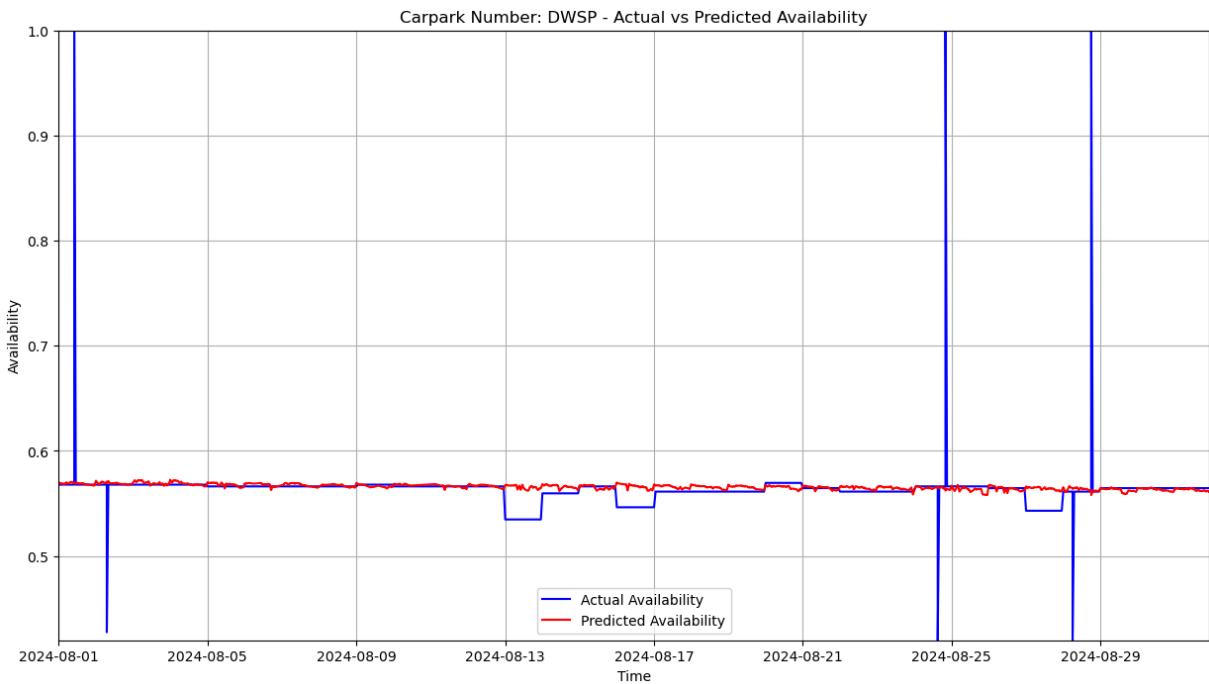
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: DWST

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number DWST: Ridge(alpha=1)

Model saved as model_DWST.sav

Testing MSE: 0.08204708598875624

R-squared: 0.29453523068345544

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

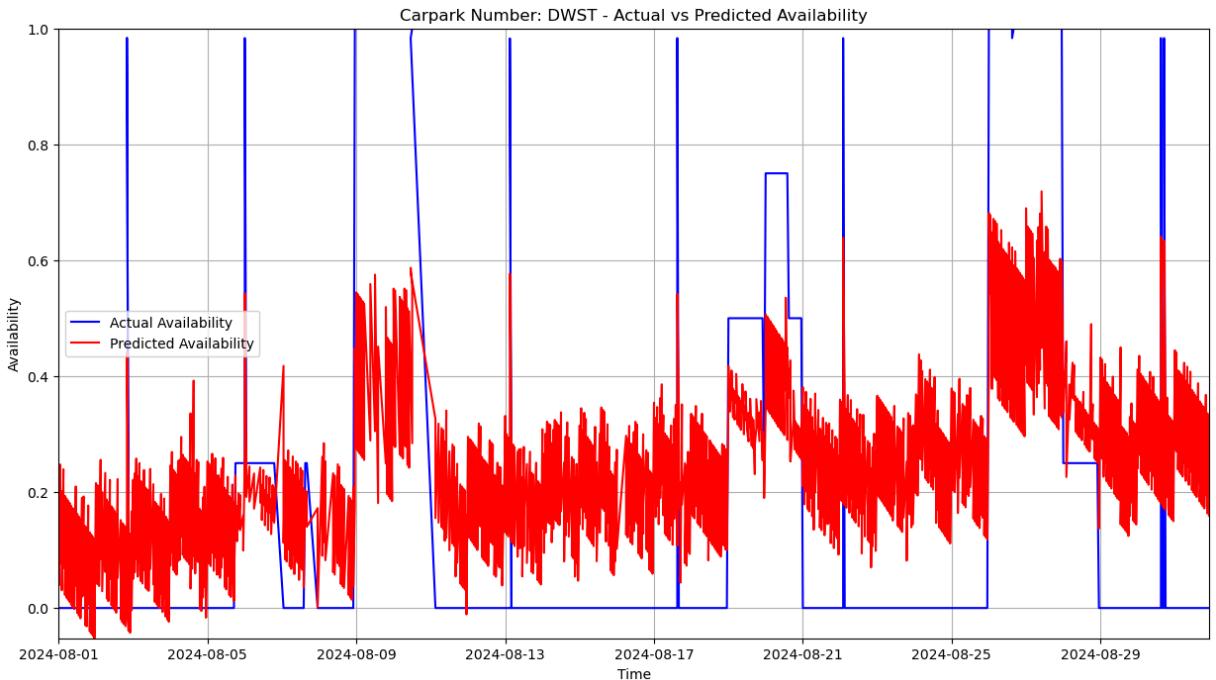
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: DWSV

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number DWSV: Ridge(alpha=100)

Model saved as model_DWSV.sav

Testing MSE: 0.0053031873947431965

R-squared: -0.0070041120632469145

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

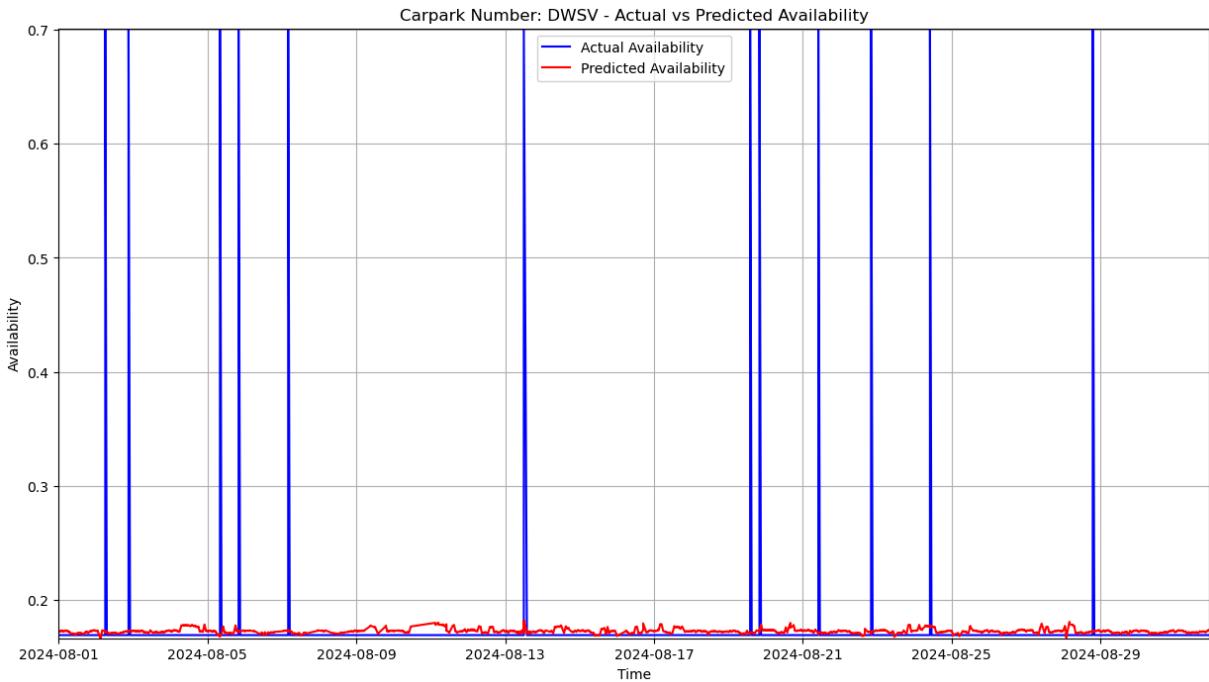
```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.
```

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: DWVT

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number DWVT: Ridge(alpha=10)

Model saved as model_DWVT.sav

Testing MSE: 0.00620825043655465

R-squared: 0.07574754512253168

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

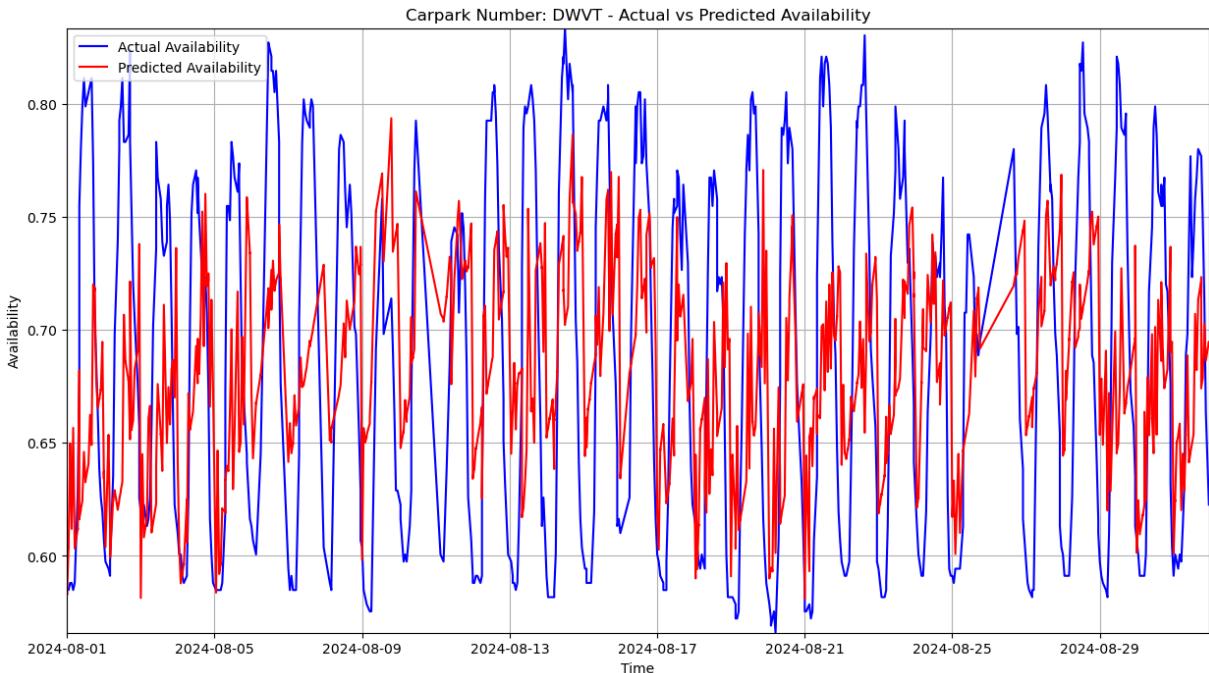
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: FR2C

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number FR2C: Ridge(alpha=10)

Model saved as model_FR2C.sav

Testing MSE: 0.004538933301286558

R-squared: -146.77061751061777

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

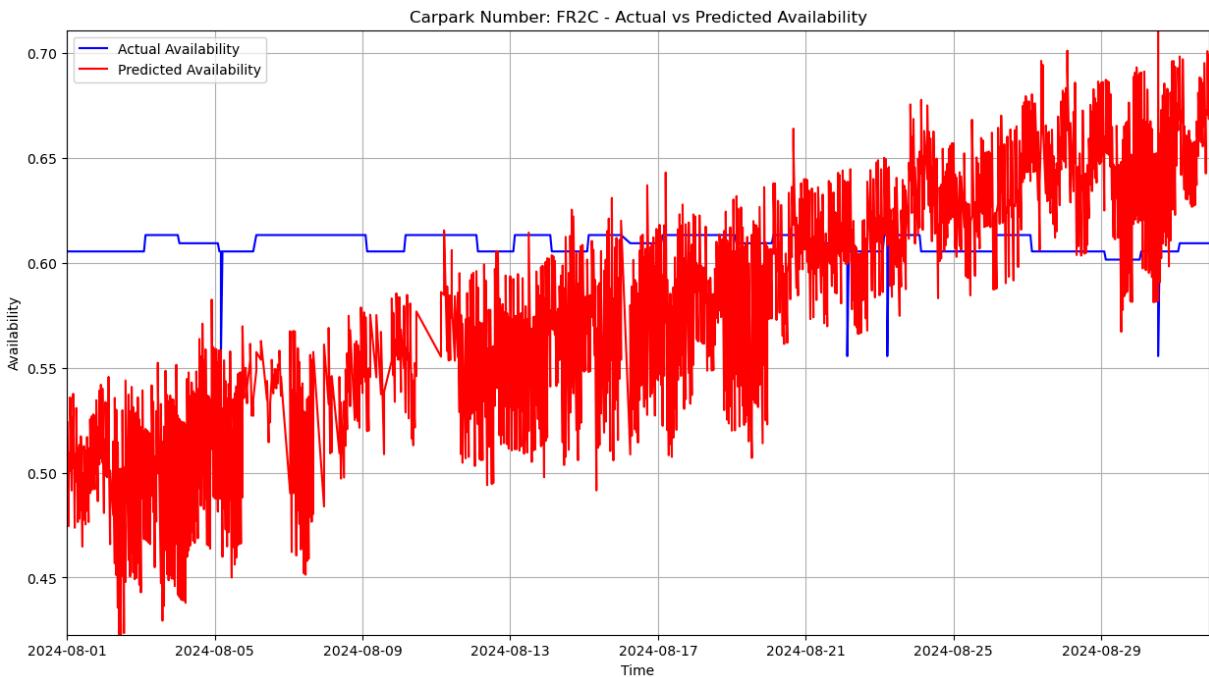
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: FR3M

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number FR3M: Ridge(alpha=1)

Model saved as model_FR3M.sav

Testing MSE: 0.015043749528300562

R-squared: 0.3373871431363066

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

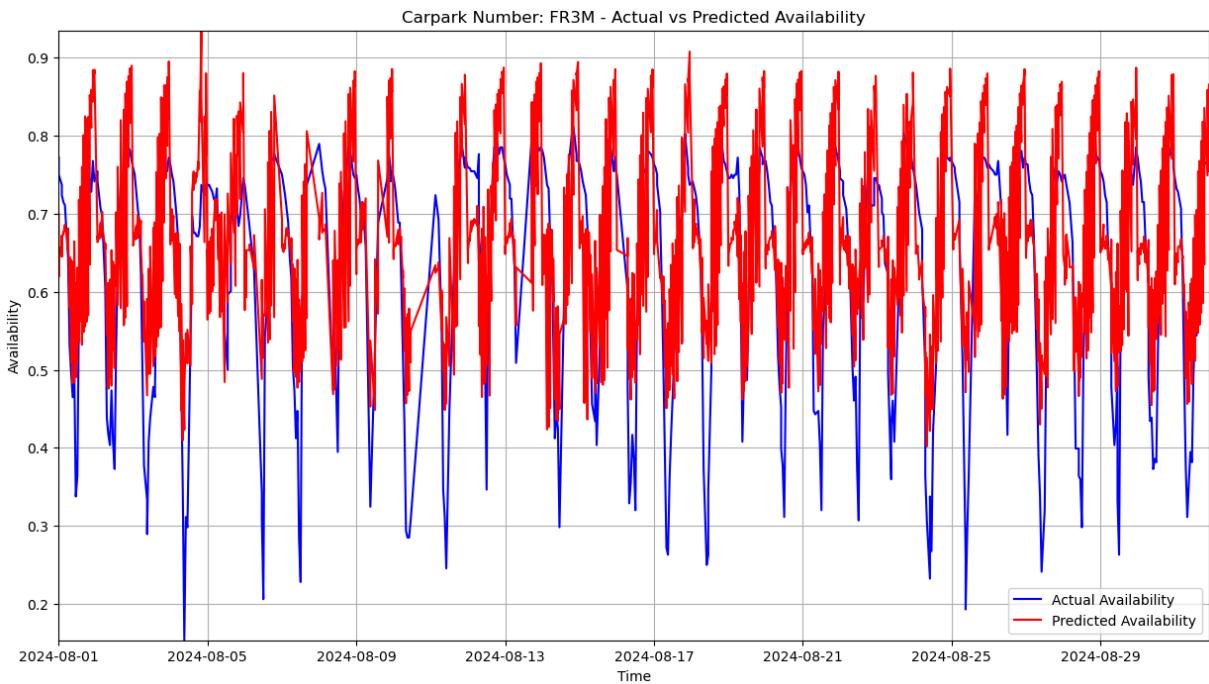
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: FR4M

Fitting 3 folds for each of 6 candidates, totalling 18 fits

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

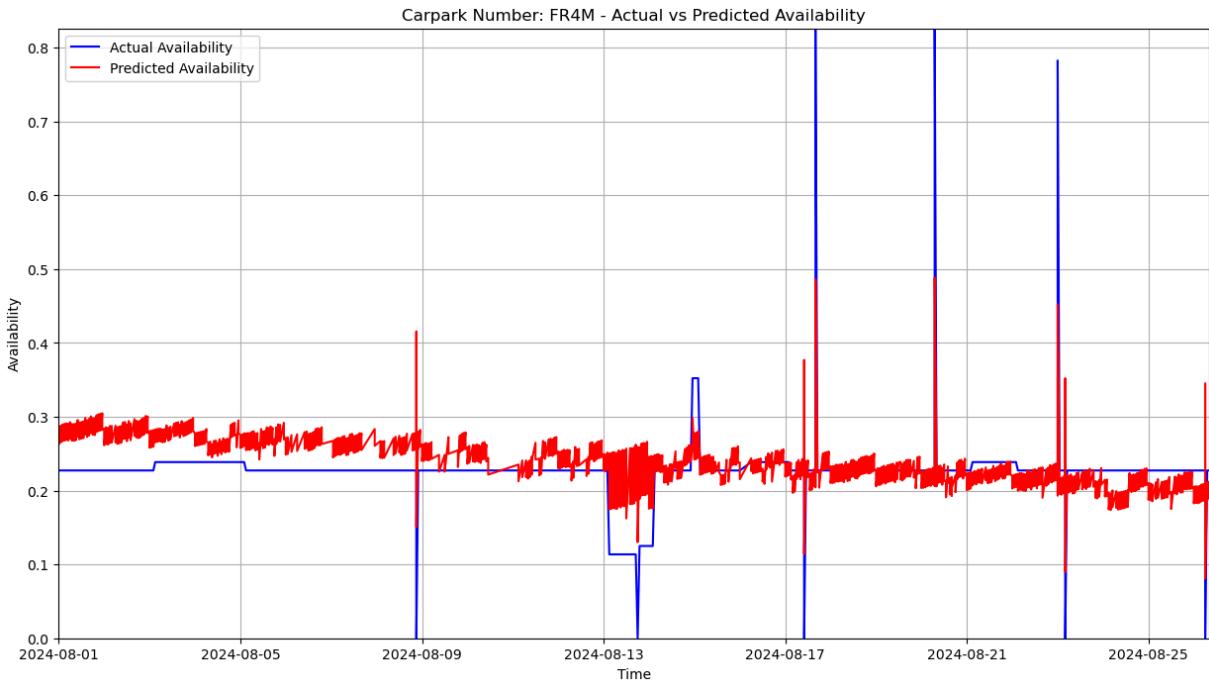
```
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Best Ridge model for carpark_number FR4M: Ridge(alpha=0.01)

Model saved as model_FR4M.sav

Testing MSE: 0.0029000681245562317

R-squared: 0.025616479000200254



Training model for carpark_number: GM1A

Fitting 3 folds for each of 6 candidates, totalling 18 fits
 Best Ridge model for carpark_number GM1A: Ridge(alpha=0.01)

Model saved as model_GM1A.sav

Testing MSE: 0.025281575576673796

R-squared: -279.02117202814986

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:  

  A value is trying to be set on a copy of a slice from a DataFrame.  

  Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
  test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

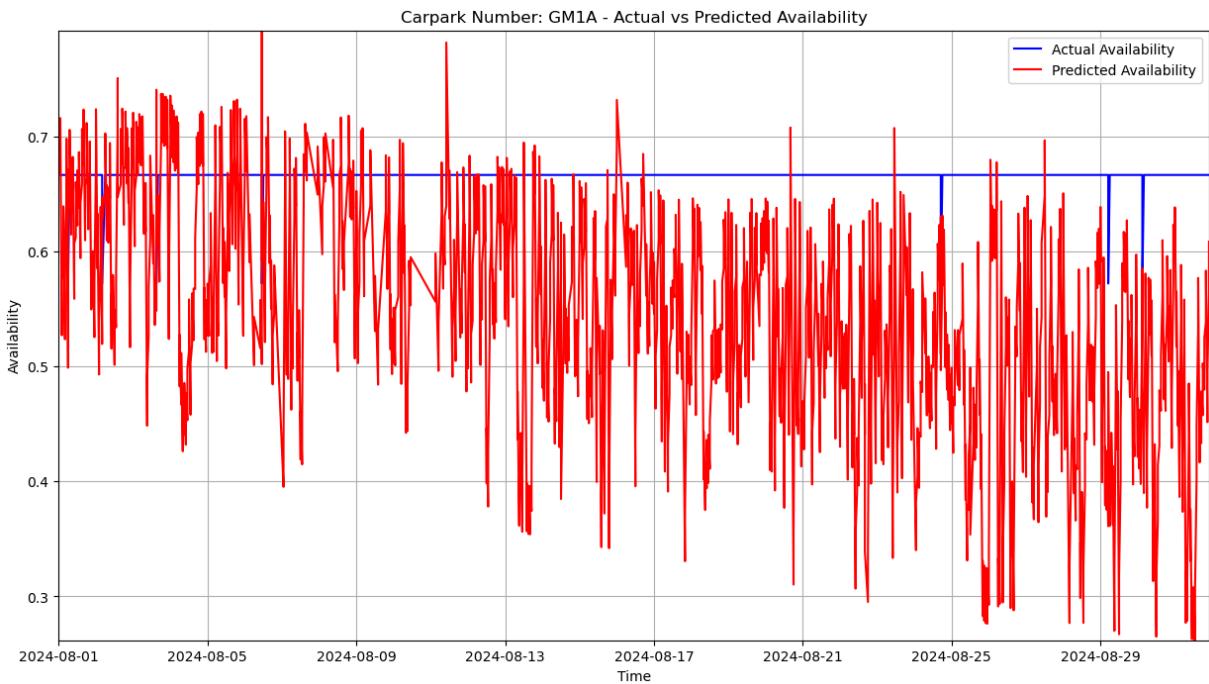
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:  

  A value is trying to be set on a copy of a slice from a DataFrame.
```

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
  test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: GM1M

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)  
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

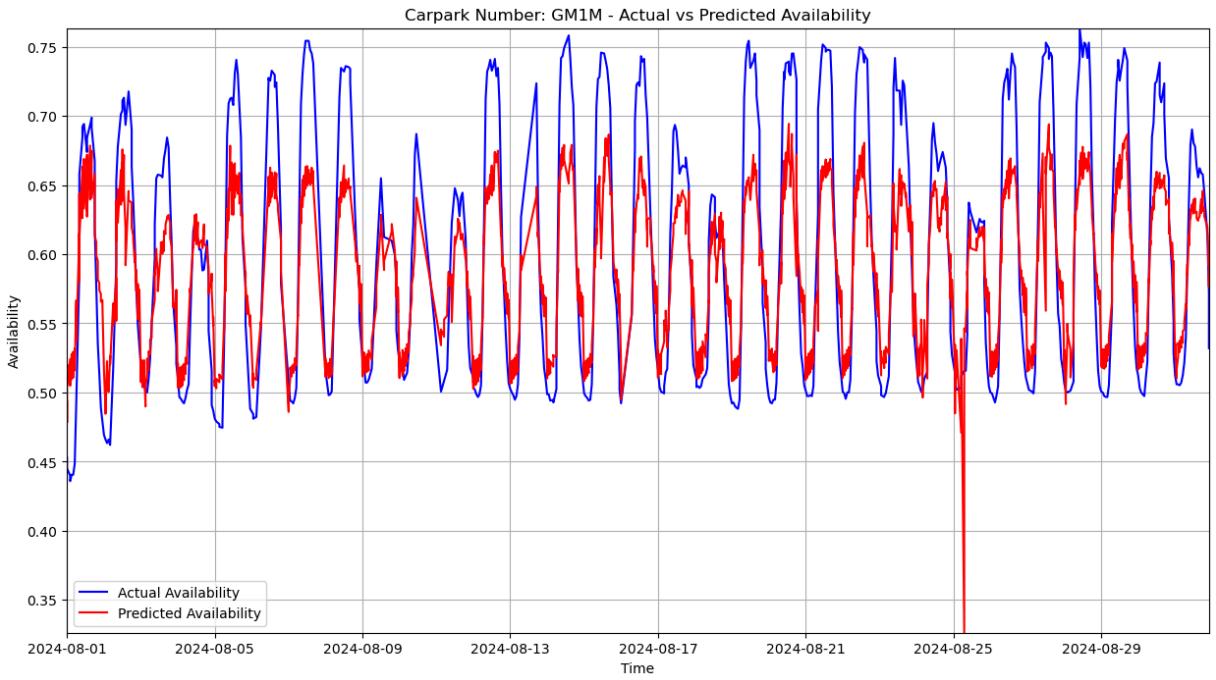
Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number GM1M: Ridge(alpha=10)

Model saved as model_GM1M.sav

Testing MSE: 0.002555098568969574

R-squared: 0.7089410080751952



Training model for carpark_number: GM2

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number GM2: Ridge(alpha=100)

Model saved as model_GM2.sav

Testing MSE: 0.06148983275661293

R-squared: -0.029034728776159646

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

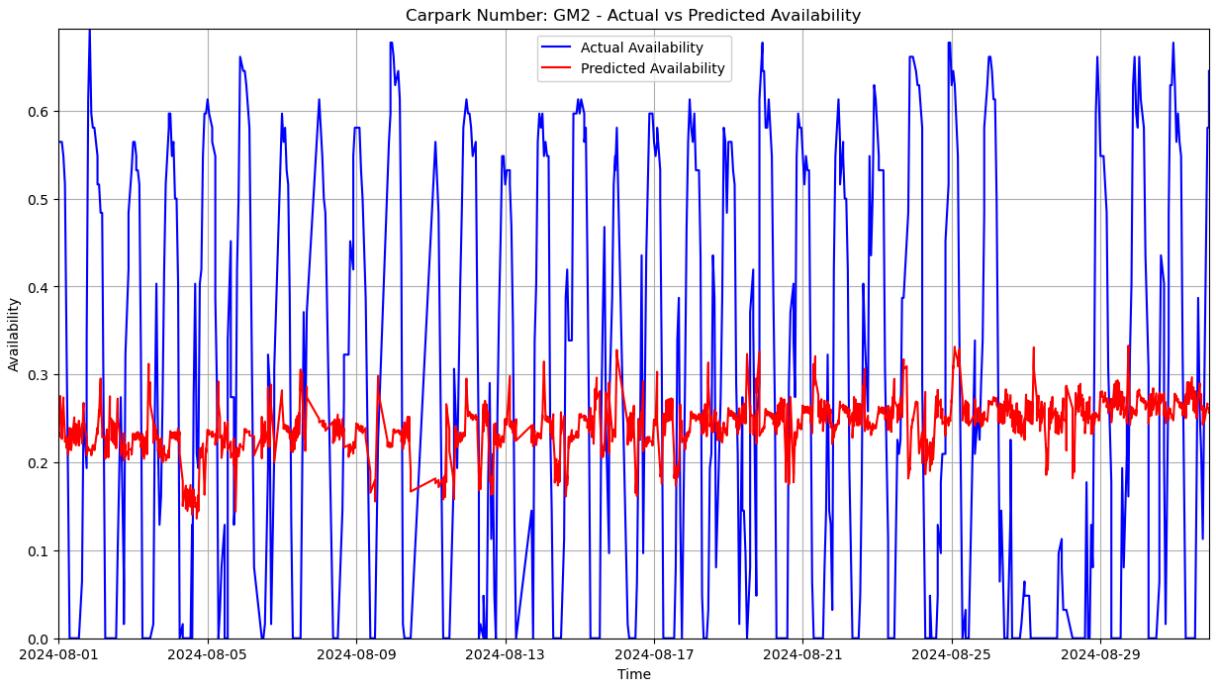
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: GM2A

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number GM2A: Ridge(alpha=1)

Model saved as model_GM2A.sav

Testing MSE: 0.008845176263105747

R-squared: 0.32211433040977455

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

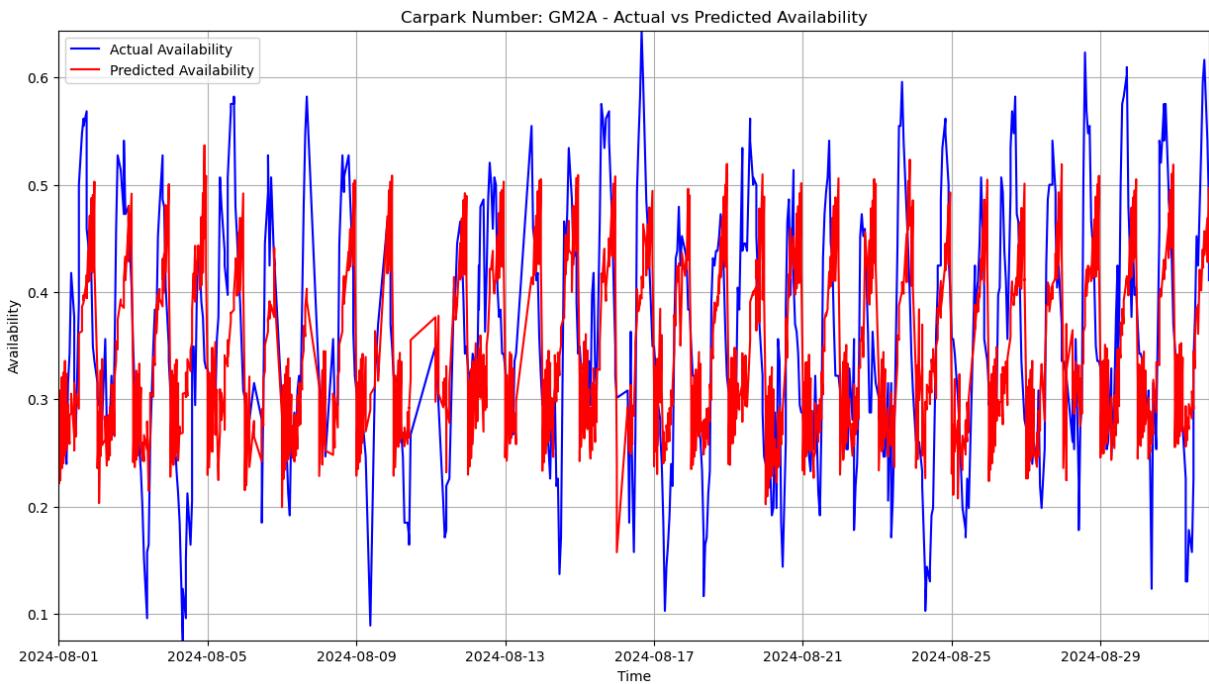
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

```
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: GM3

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number GM3: Ridge(alpha=1)

Model saved as model_GM3.sav

Testing MSE: 0.025460522604680486

R-squared: 0.7952717712494691

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

test_data['day'] = test_data['day'].clip(lower=1, upper=31)

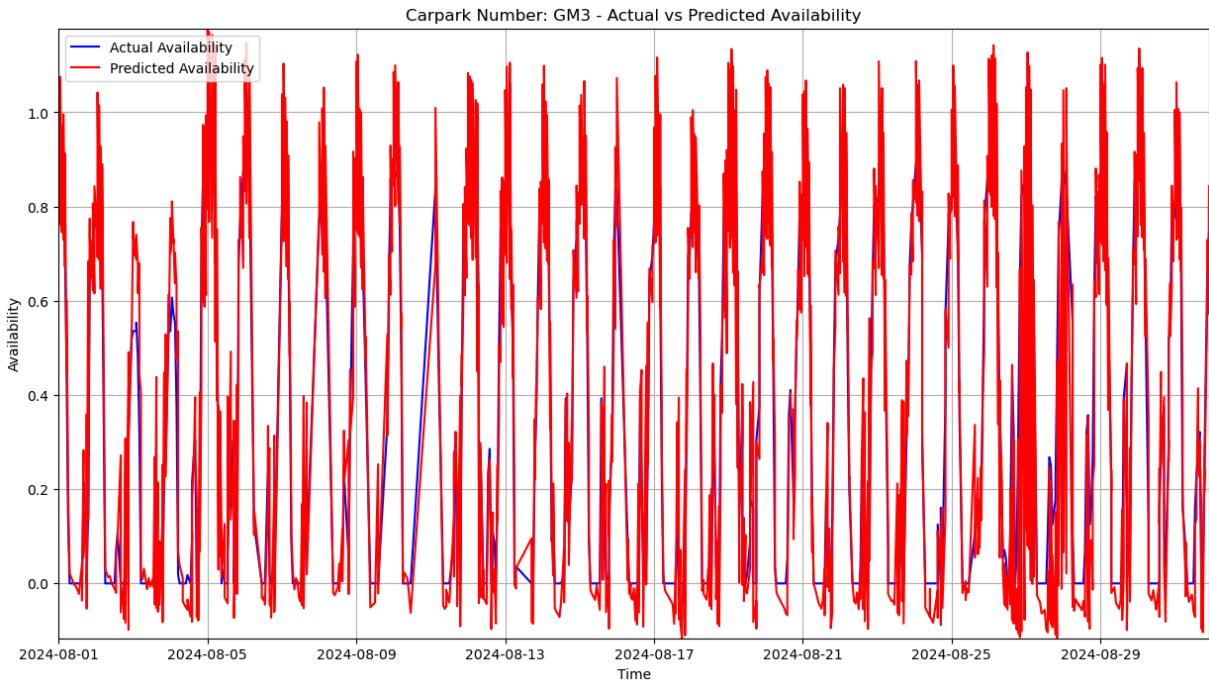
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)



Training model for carpark_number: GM5

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number GM5: Ridge(alpha=1)

Model saved as model_GM5.sav

Testing MSE: 0.022134723644515908

R-squared: 0.7731949525383719

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

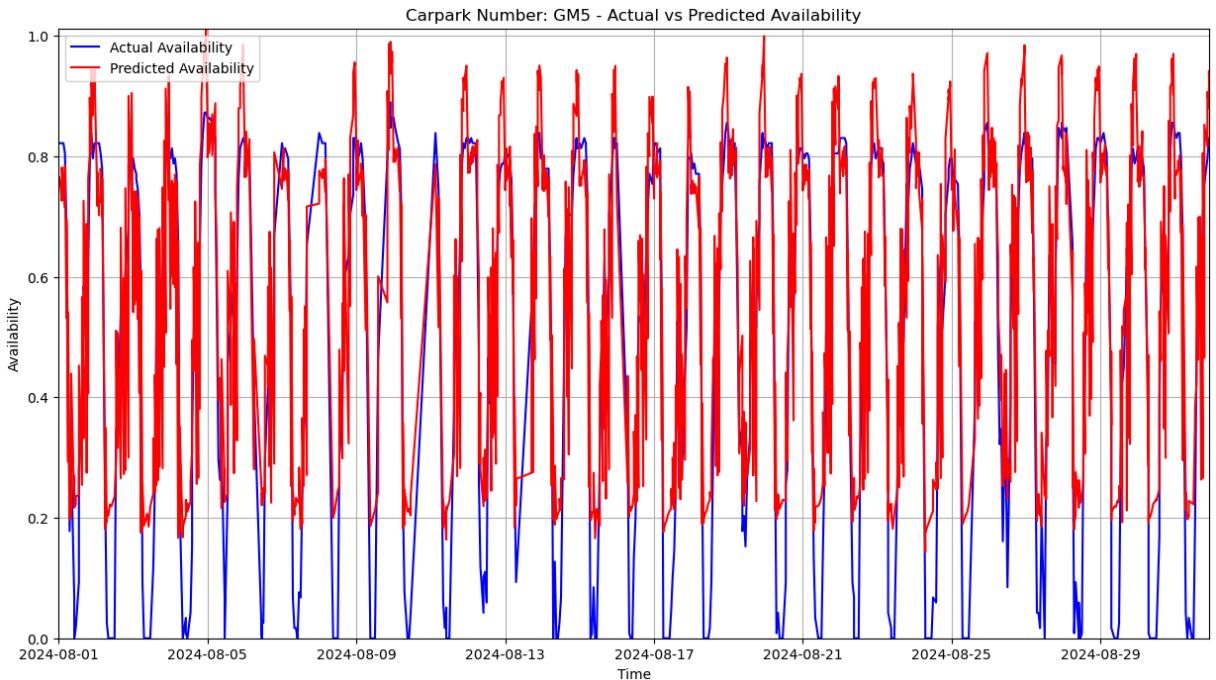
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

```
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: GM6A

Fitting 3 folds for each of 6 candidates, totalling 18 fits
Best Ridge model for carpark_number GM6A: Ridge(alpha=10)

Model saved as model_GM6A.sav

Testing MSE: 0.01111339428628479

R-squared: 0.04593366902957052

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

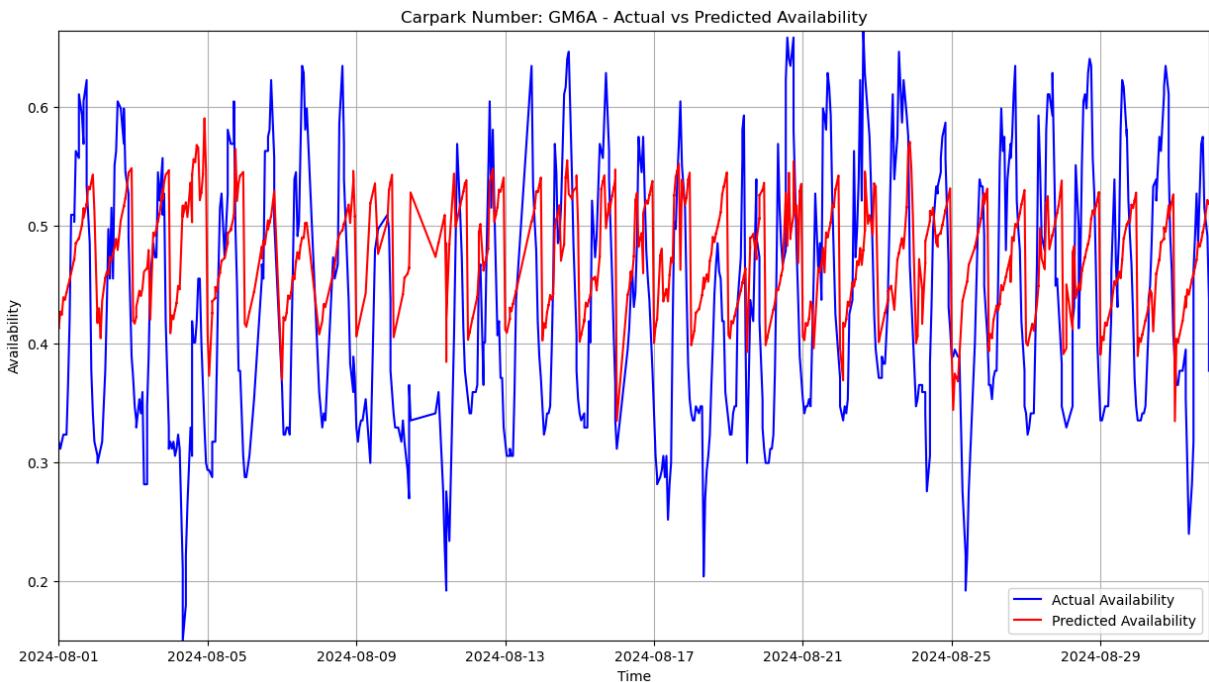
```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: GM6B

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)  
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

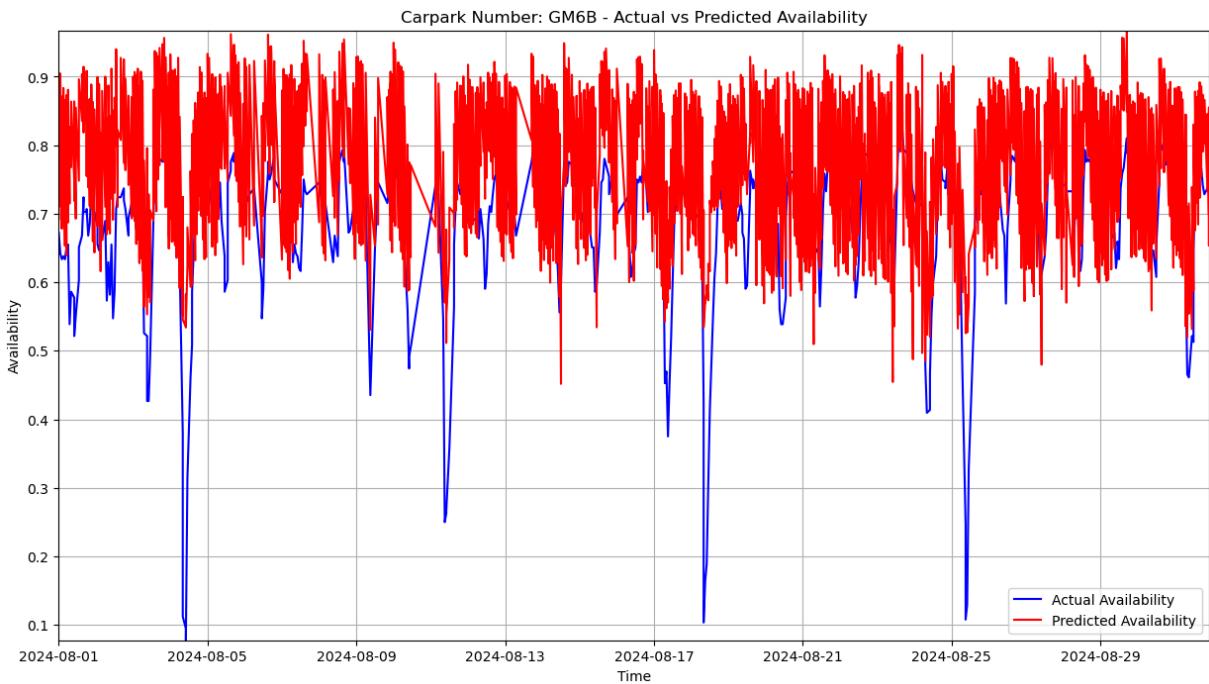
Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number GM6B: Ridge(alpha=1)

Model saved as model_GM6B.sav

Testing MSE: 0.022495127982182502

R-squared: -0.8304285509959557



Training model for carpark_number: HCM

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number HCM: Ridge(alpha=10)

Model saved as model_HCM.sav

Testing MSE: 0.0003350579888370864

R-squared: -0.00433441740748175

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

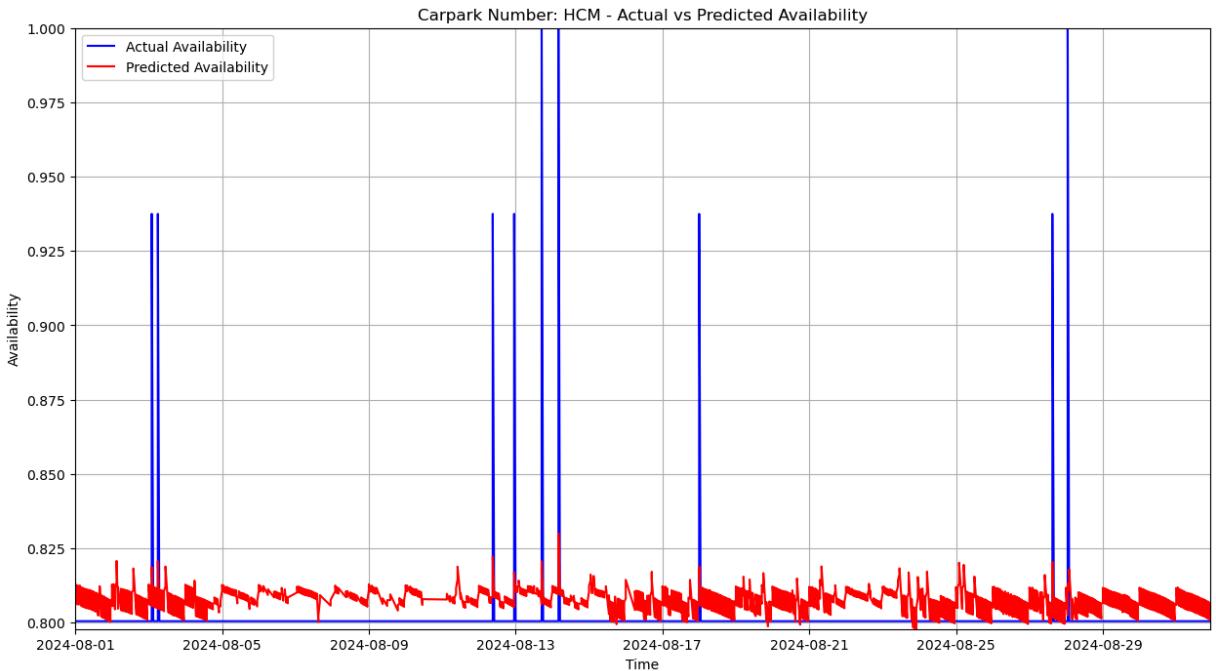
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: HE12

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number HE12: Ridge(alpha=1000)

Model saved as model_HE12.sav

Testing MSE: 0.09472947066100716

R-squared: -3.369739731894126

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

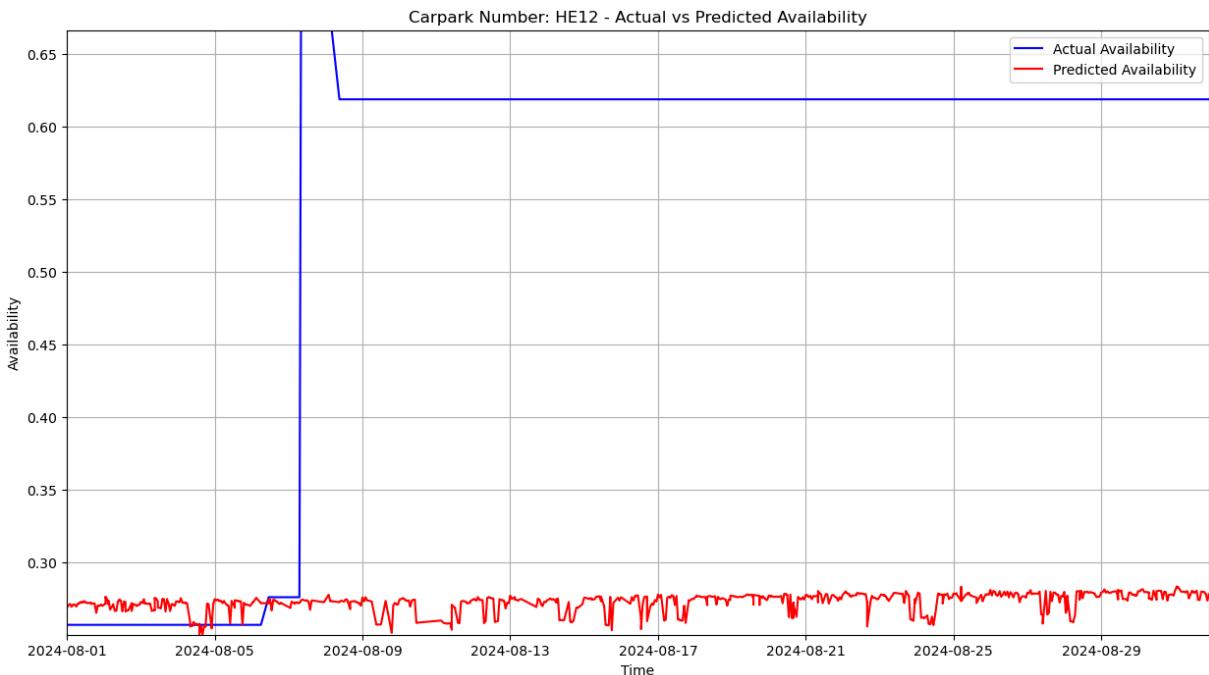
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: HE17

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number HE17: Ridge(alpha=10)

Model saved as model_HE17.sav

Testing MSE: 0.0028325501041345895

R-squared: -0.054803178533464614

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

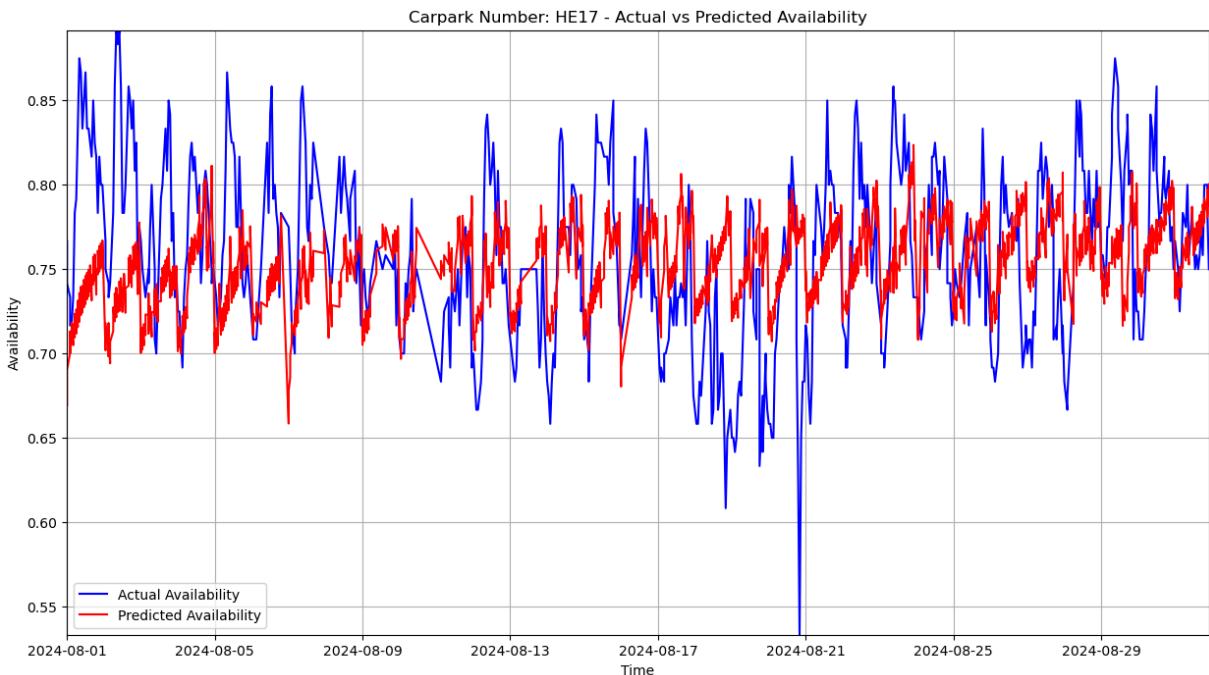
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: HE19

Fitting 3 folds for each of 6 candidates, totalling 18 fits

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

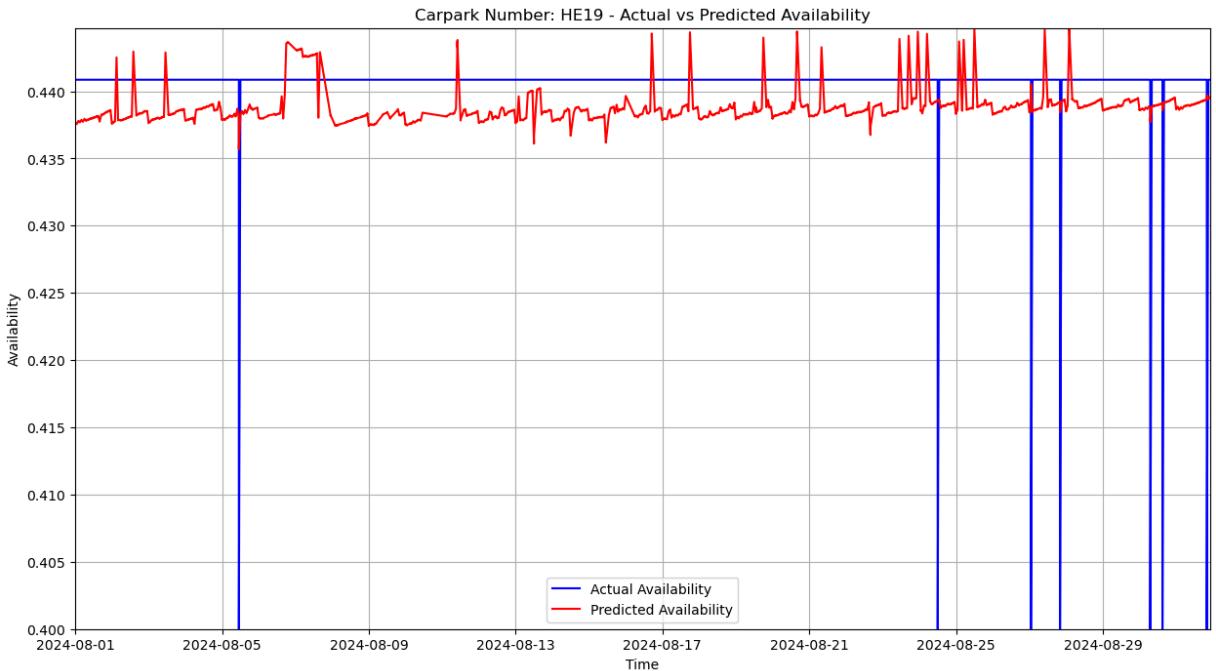
```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Best Ridge model for carpark_number HE19: Ridge(alpha=10)

Model saved as model_HE19.sav

Testing MSE: 2.1151935119454487e-05

R-squared: -0.2516657683382506



Training model for carpark_number: HE24

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number HE24: Ridge(alpha=1000)

Model saved as model_HE24.sav

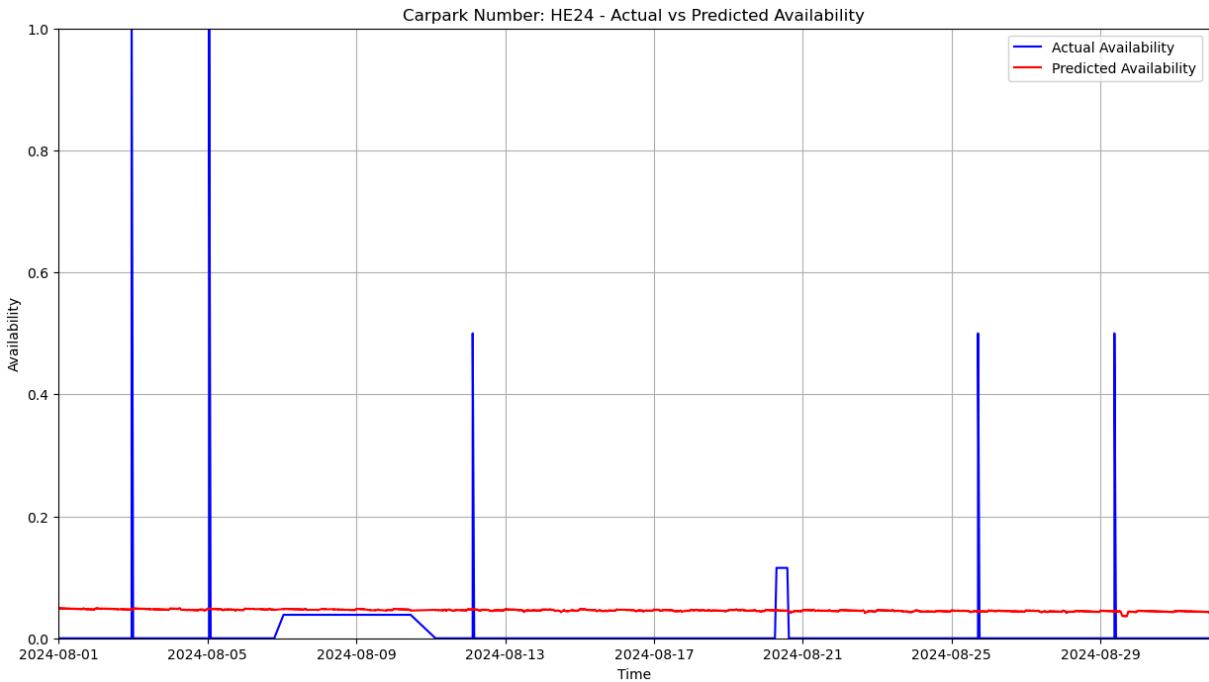
Testing MSE: 0.005495099820966212

R-squared: -0.30371515062426524

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: HE9

Fitting 3 folds for each of 6 candidates, totalling 18 fits

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

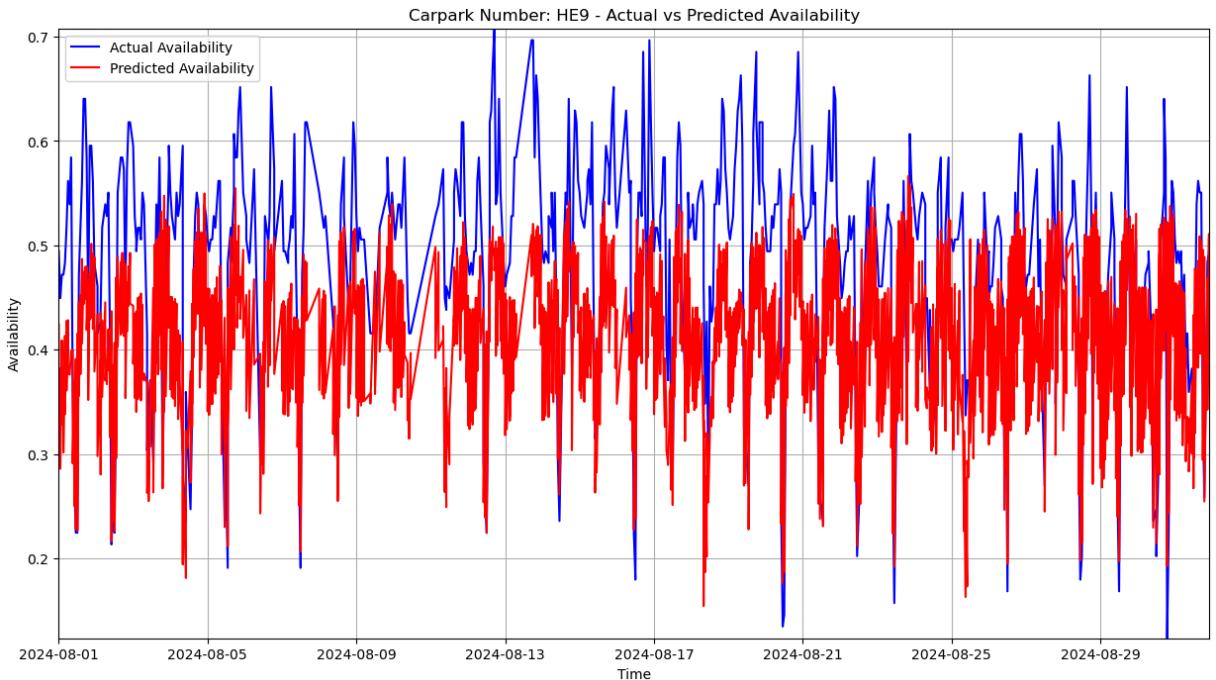
```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Best Ridge model for carpark_number HE9: Ridge(alpha=0.01)

Model saved as model_HE9.sav

Testing MSE: 0.01472518712854754

R-squared: -0.34635176858513583



Training model for carpark_number: HRM

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number HRM: Ridge(alpha=100)

Model saved as model_HRM.sav

Testing MSE: 0.0060136460360110545

R-squared: 0.20605256466412314

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

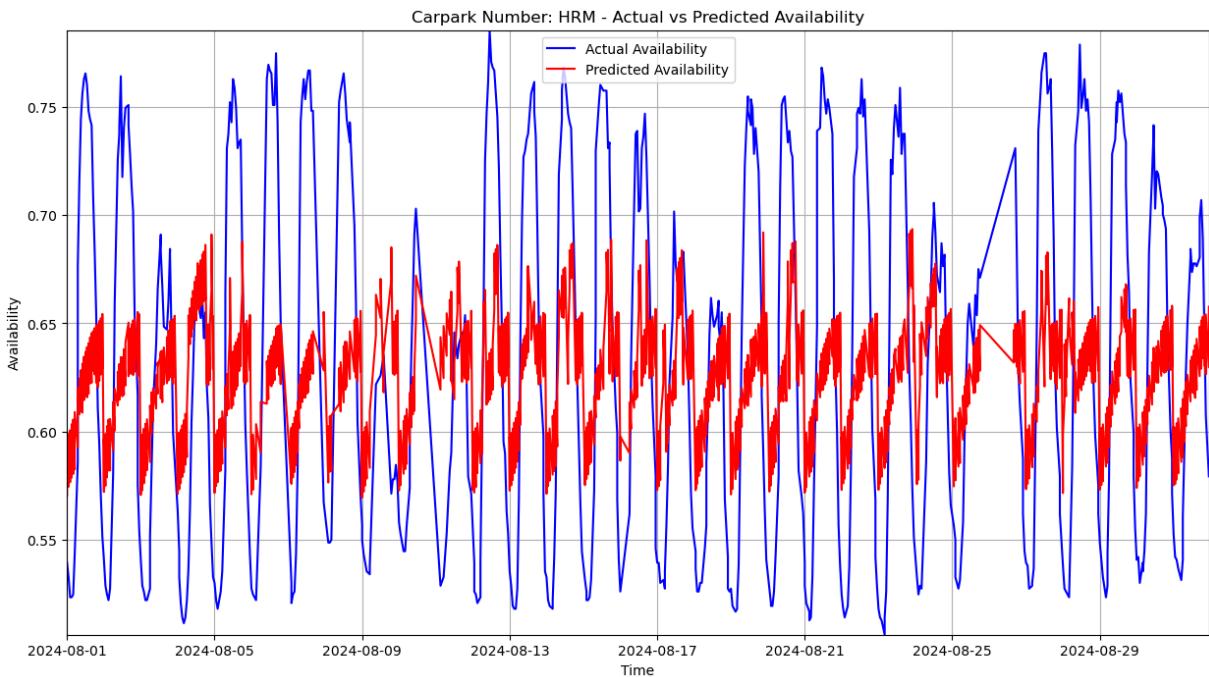
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

```
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: JRTM

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number JRTM: Ridge(alpha=0.01)

Model saved as model_JRTM.sav

Testing MSE: 0.000502337459811388

R-squared: -1.6573208929358922

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

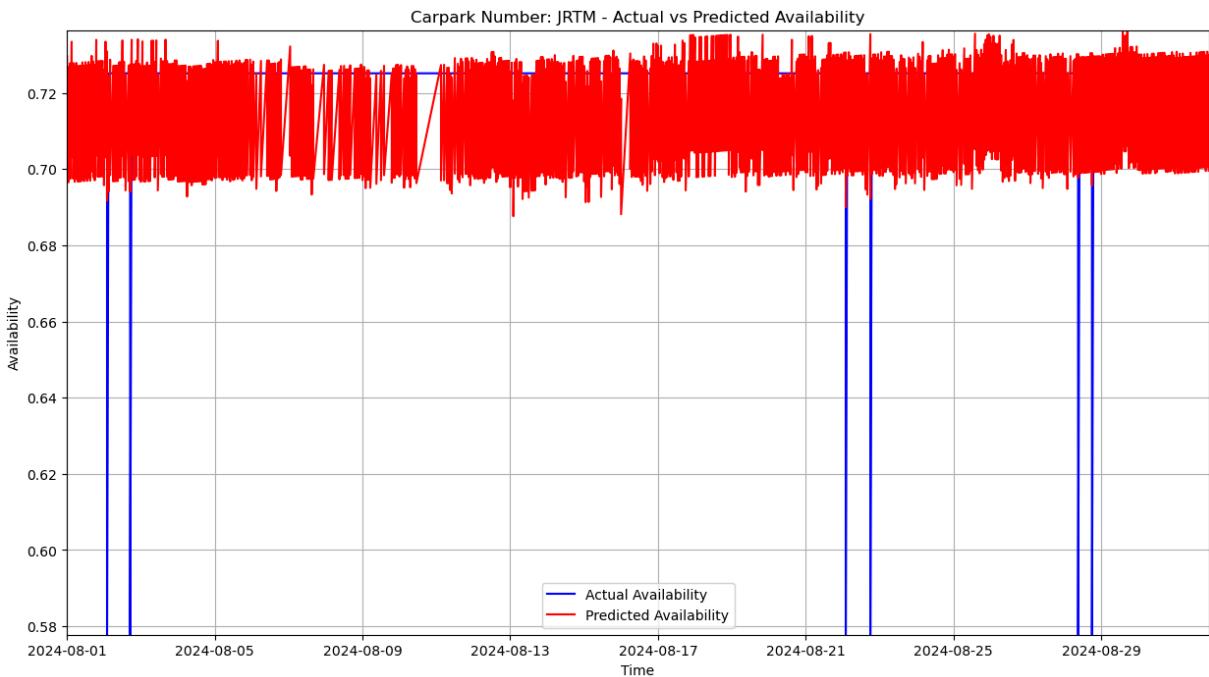
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

```
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: LBM

Fitting 3 folds for each of 6 candidates, totalling 18 fits

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

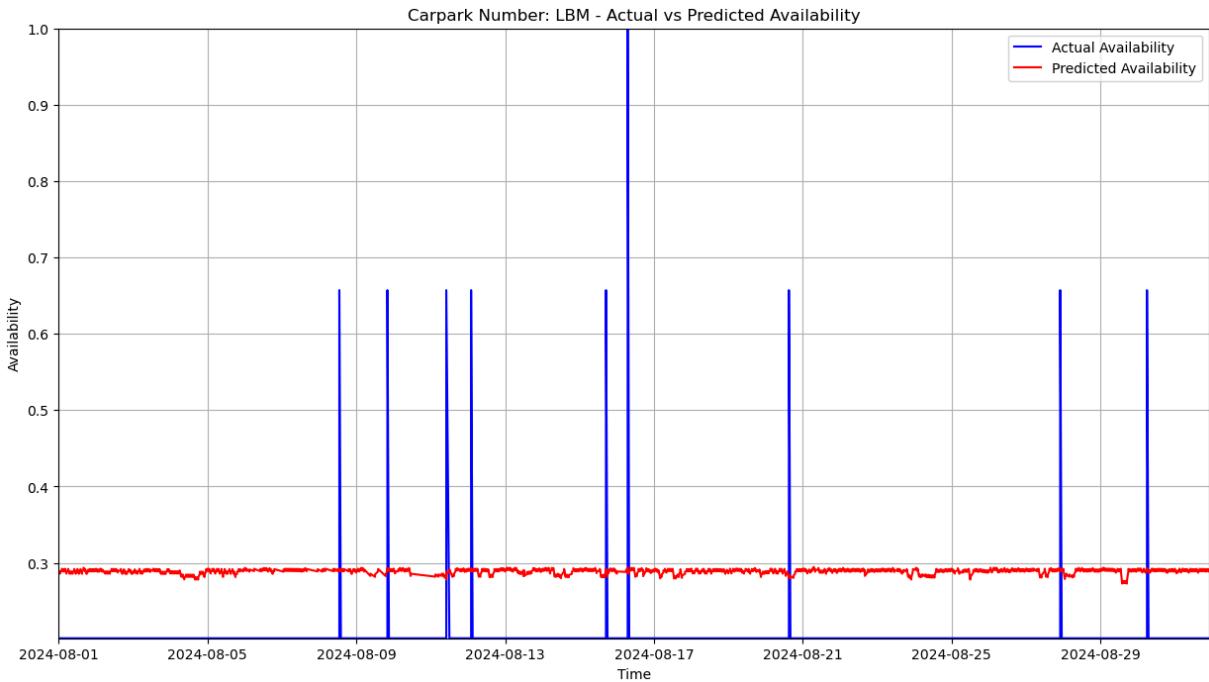
```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Best Ridge model for carpark_number LBM: Ridge(alpha=1000)

Model saved as model_LBM.sav

Testing MSE: 0.01010733074499278

R-squared: -1.8084539299132256



Training model for carpark_number: MLM

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number MLM: Ridge(alpha=10)

Model saved as model_MLM.sav

Testing MSE: 0.004677813629687973

R-squared: -0.581070595273244

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

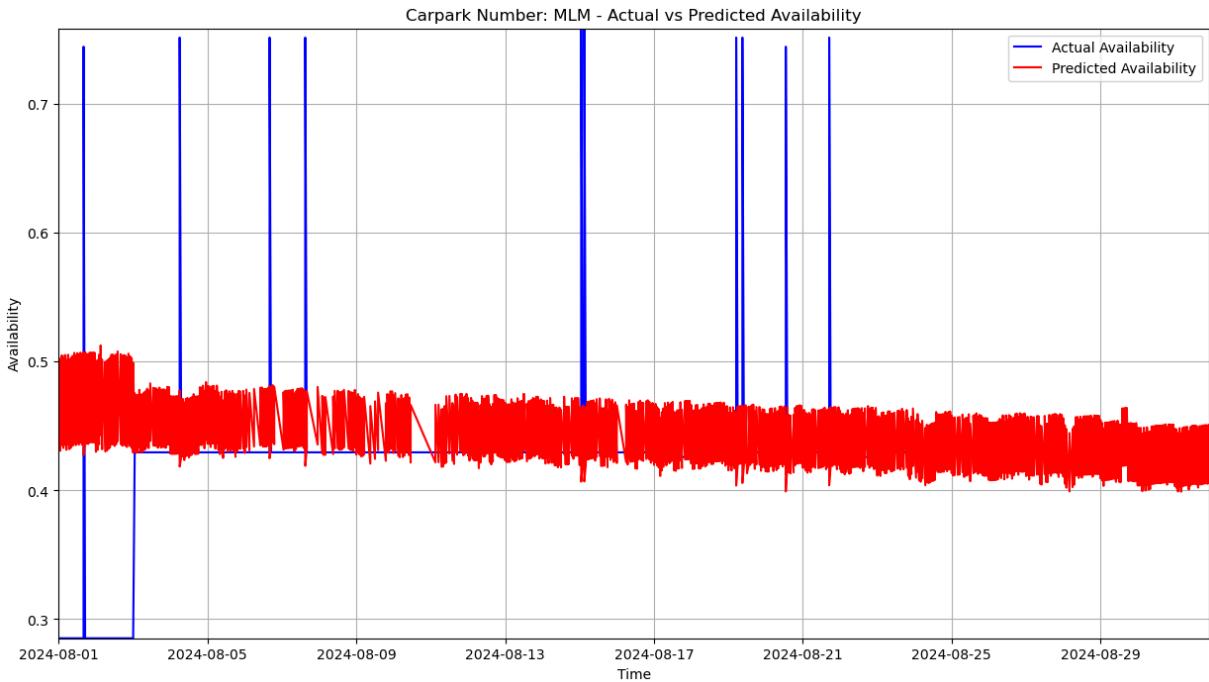
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: MLM1

Fitting 3 folds for each of 6 candidates, totalling 18 fits
Best Ridge model for carpark_number MLM1: Ridge(alpha=1000)

Model saved as model_MLM1.sav

Testing MSE: 0.0010994010059417216

R-squared: -0.13597304515723185

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

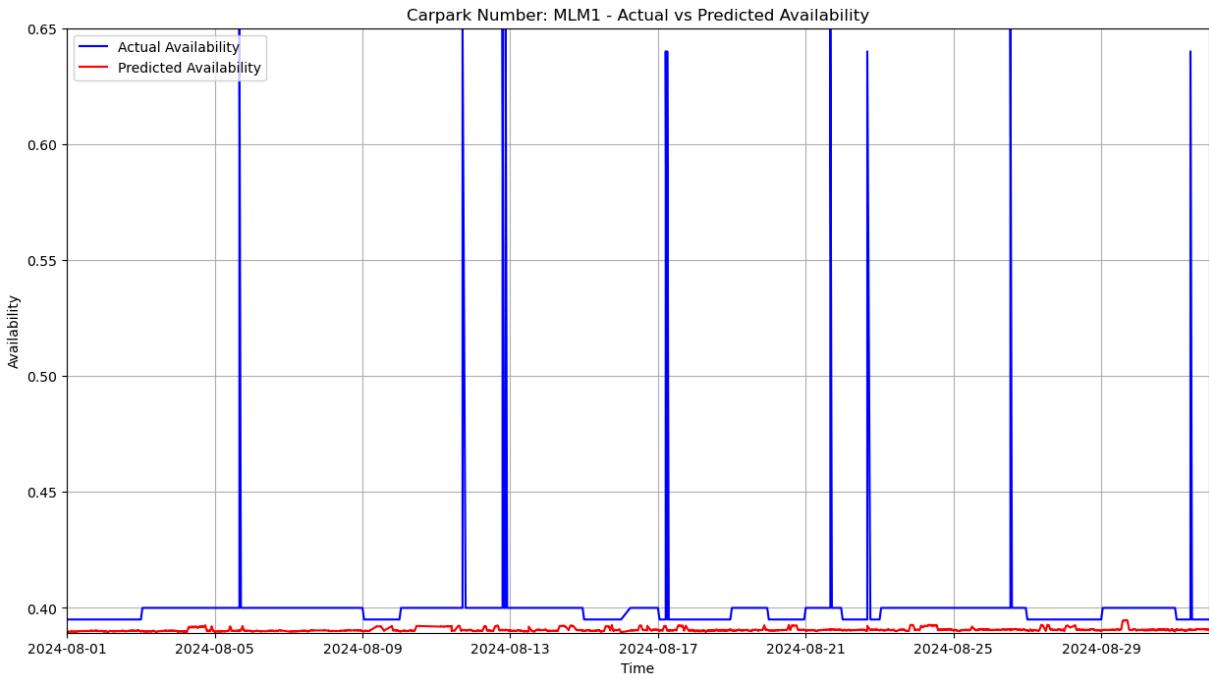
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: PDQ5

Fitting 3 folds for each of 6 candidates, totalling 18 fits

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

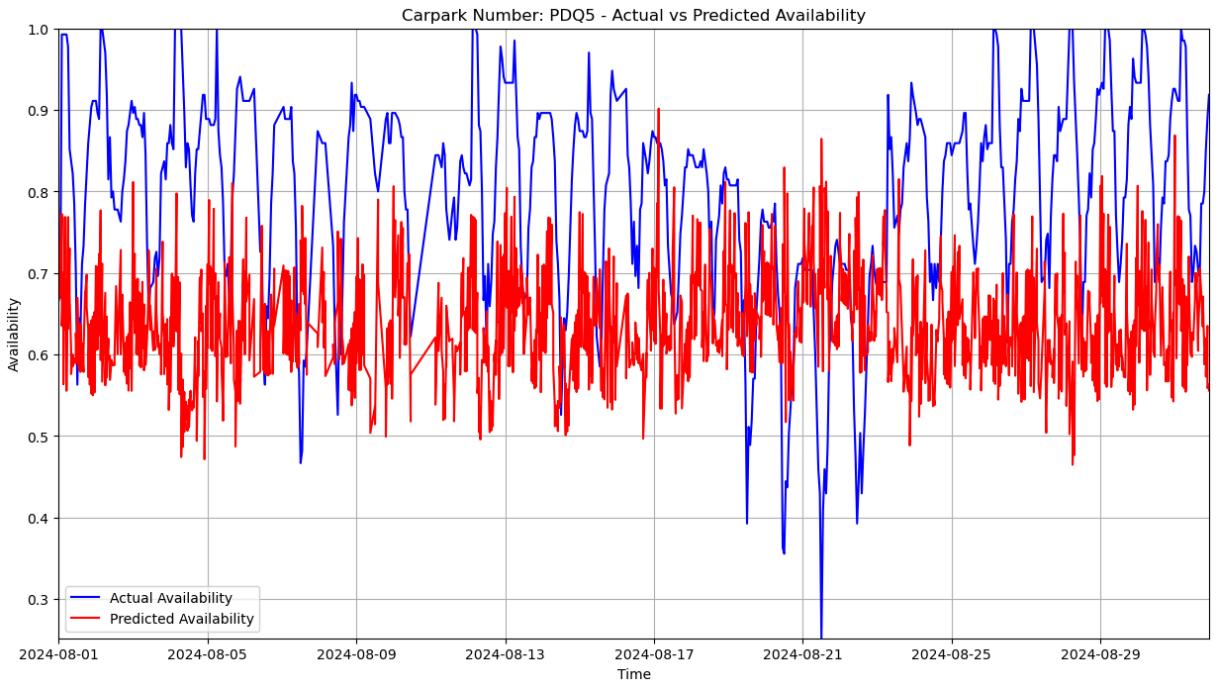
```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Best Ridge model for carpark_number PDQ5: Ridge(alpha=1)

Model saved as model_PDQ5.sav

Testing MSE: 0.04776089744063933

R-squared: -2.094875379629155



Training model for carpark_number: Q16

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number Q16: Ridge(alpha=1000)

Model saved as model_Q16.sav

Testing MSE: 0.0029965208129348305

R-squared: -0.07925112609930762

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

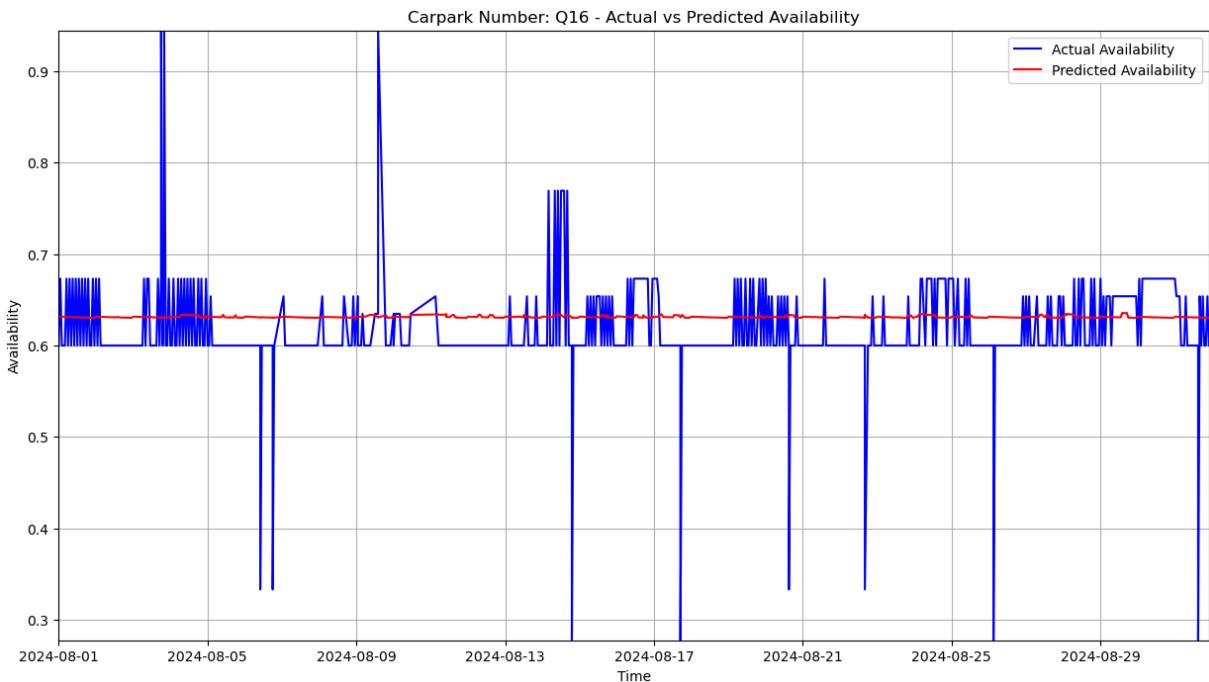
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: Q17

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)  
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

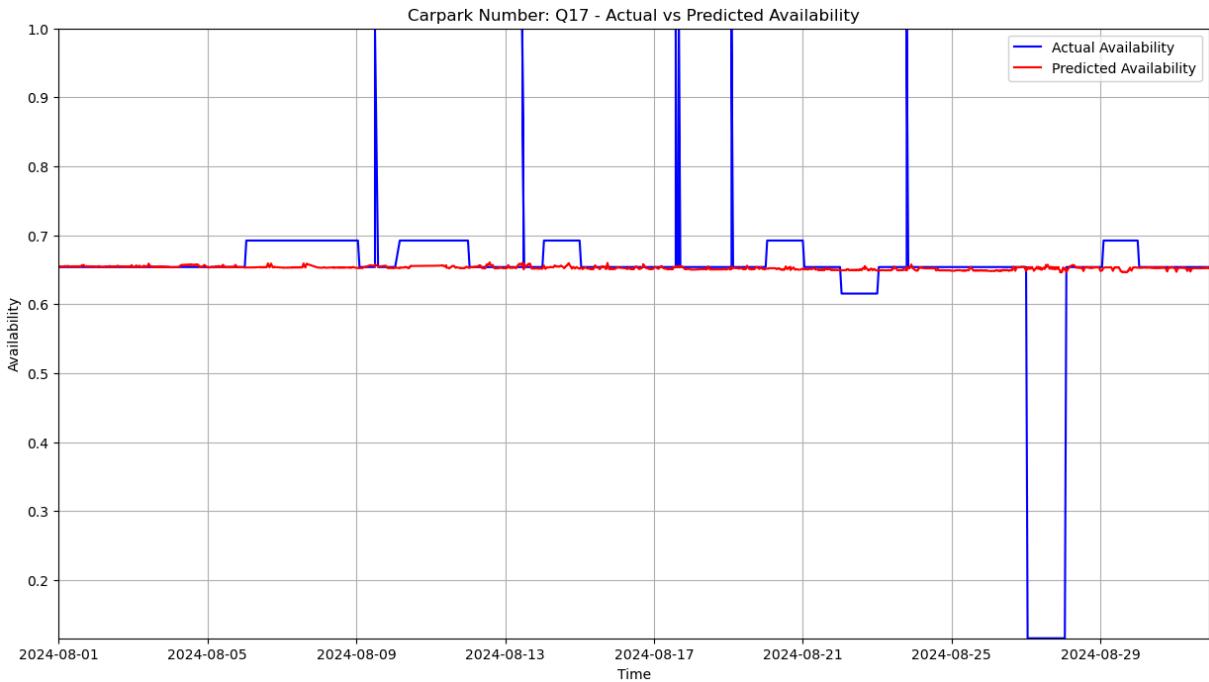
Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number Q17: Ridge(alpha=1000)

Model saved as model_Q17.sav

Testing MSE: 0.011508875751399814

R-squared: -0.0010809713993218395



Training model for carpark_number: Q19

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number Q19: Ridge(alpha=1000)

Model saved as model_Q19.sav

Testing MSE: 0.010627248698565468

R-squared: -0.026744157858125117

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

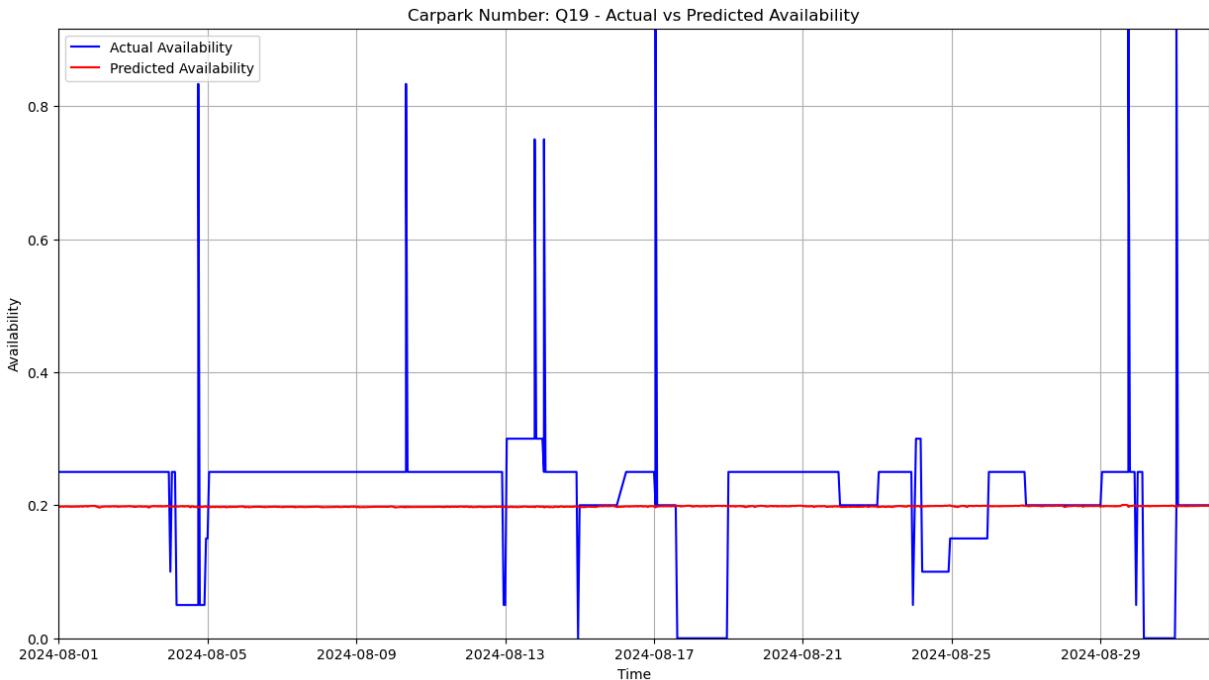
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: Q41

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number Q41: Ridge(alpha=100)

Model saved as model_Q41.sav

Testing MSE: 0.026224411314945763

R-squared: 0.08880901017814524

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

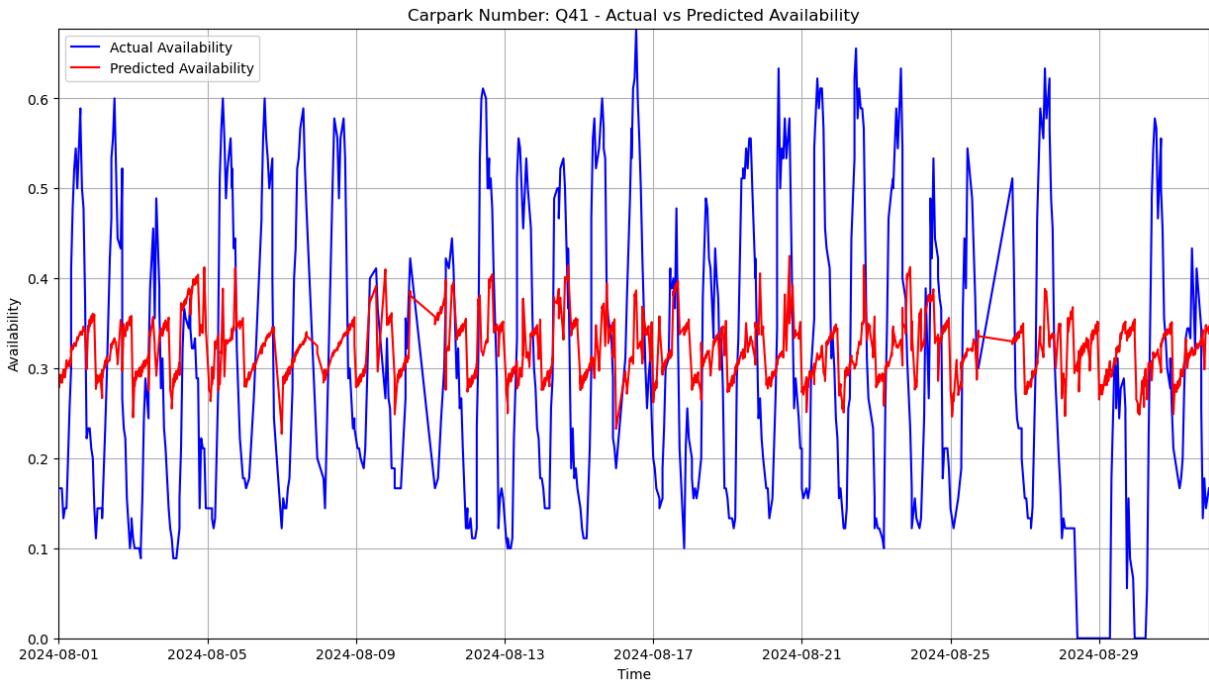
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

```
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: Q65

Fitting 3 folds for each of 6 candidates, totalling 18 fits

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

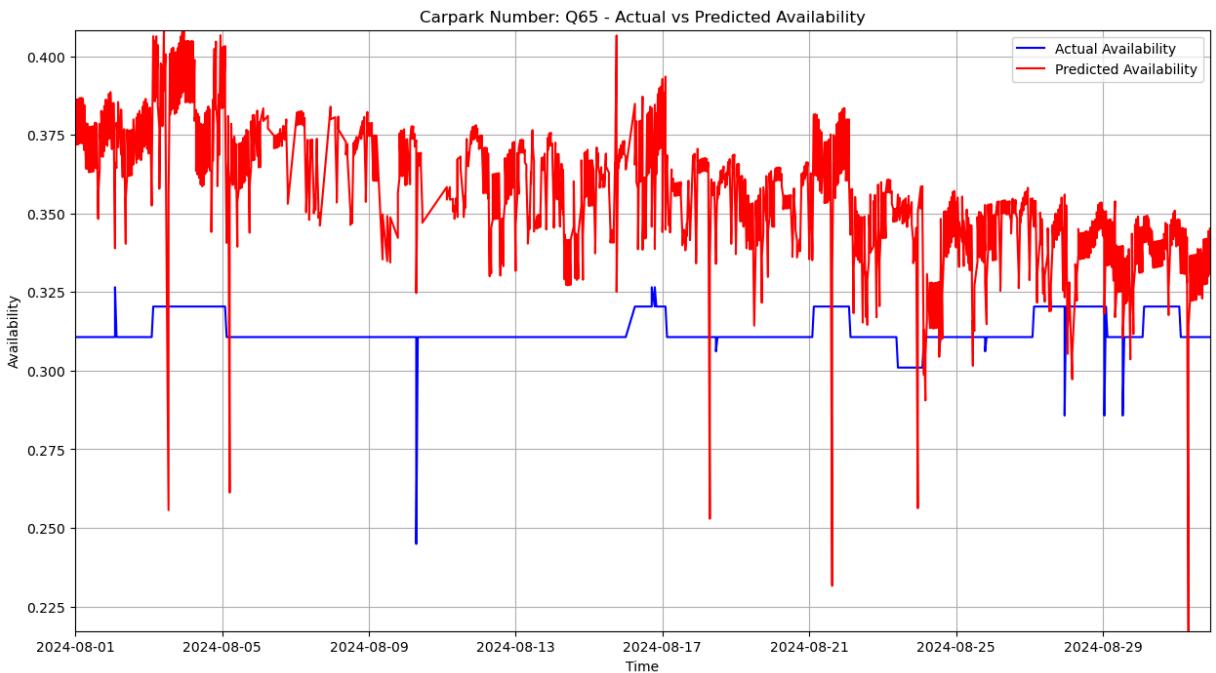
```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Best Ridge model for carpark_number Q65: Ridge(alpha=0.01)

Model saved as model_Q65.sav

Testing MSE: 0.0022453130501847197

R-squared: -70.32087711661762



Training model for carpark_number: Q66

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number Q66: Ridge(alpha=100)

Model saved as model_Q66.sav

Testing MSE: 0.0005735793736589093

R-squared: -0.5026019913698325

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

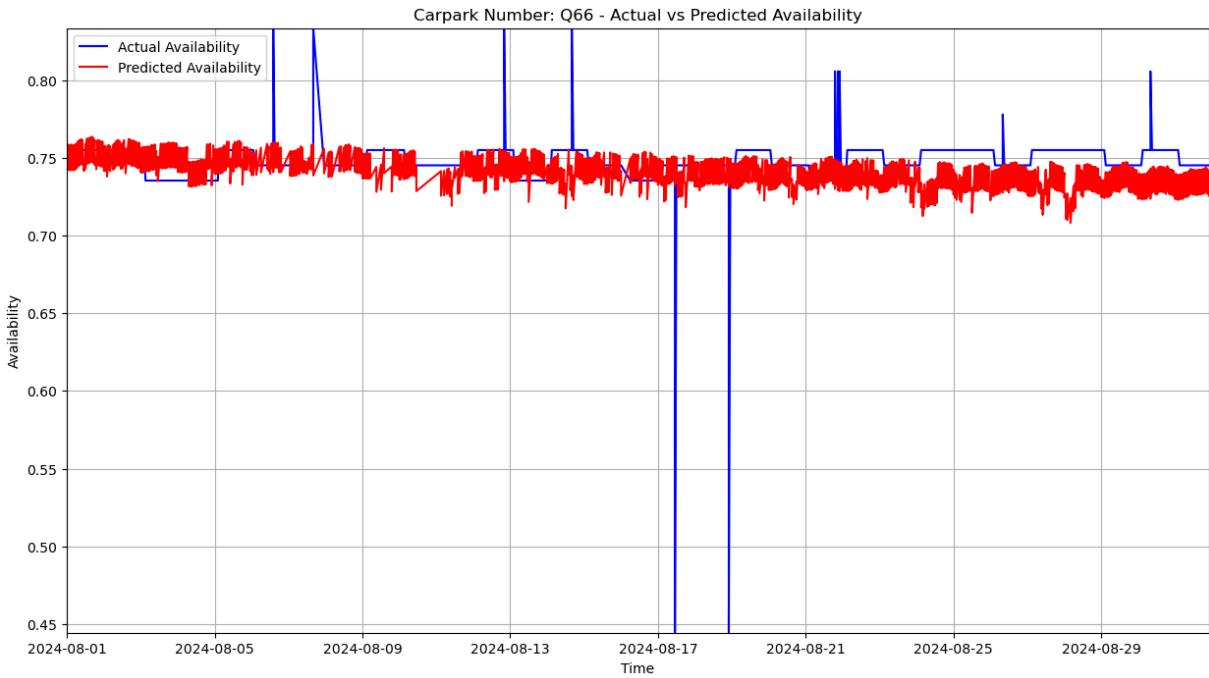
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: Q67

Fitting 3 folds for each of 6 candidates, totalling 18 fits

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

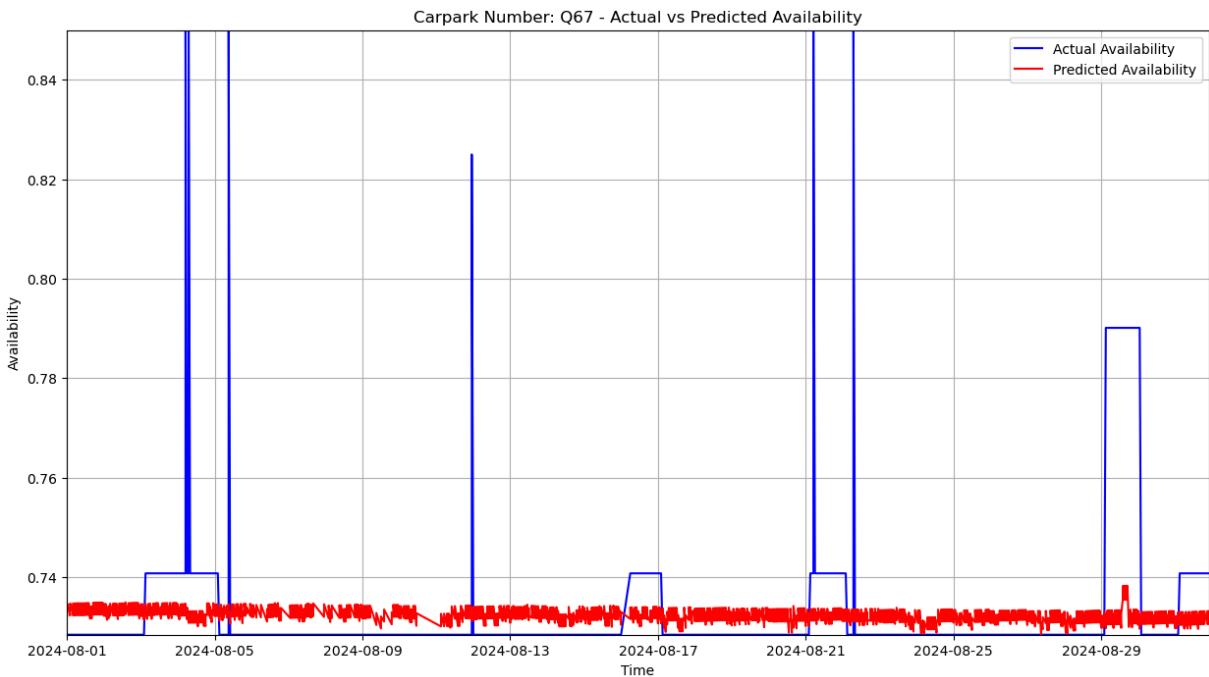
```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Best Ridge model for carpark_number Q67: Ridge(alpha=1000)

Model saved as model_Q67.sav

Testing MSE: 0.0002489970460752044

R-squared: -0.0010484462780564474



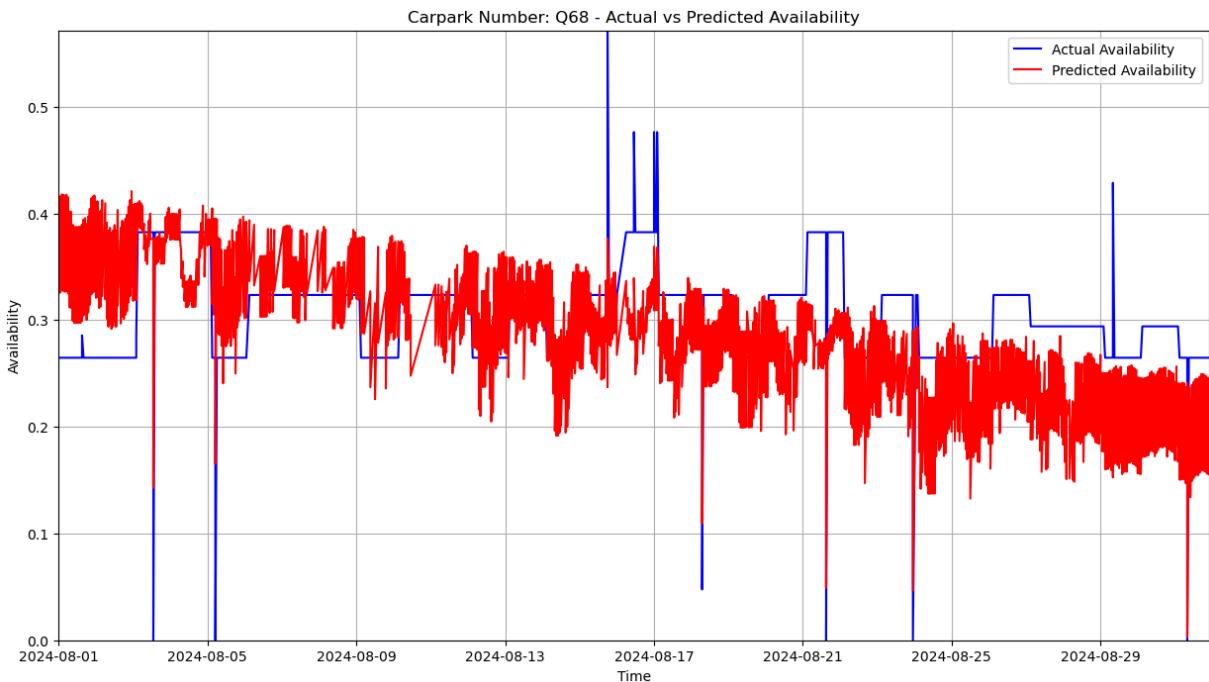
```
Training model for carpark_number: Q68
Fitting 3 folds for each of 6 candidates, totalling 18 fits
Best Ridge model for carpark_number Q68: Ridge(alpha=0.01)
```

```
Model saved as model_Q68.sav
Testing MSE: 0.005265785091231709
R-squared: -0.9294721138070834
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: Q70

Fitting 3 folds for each of 6 candidates, totalling 18 fits

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
```

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
```

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

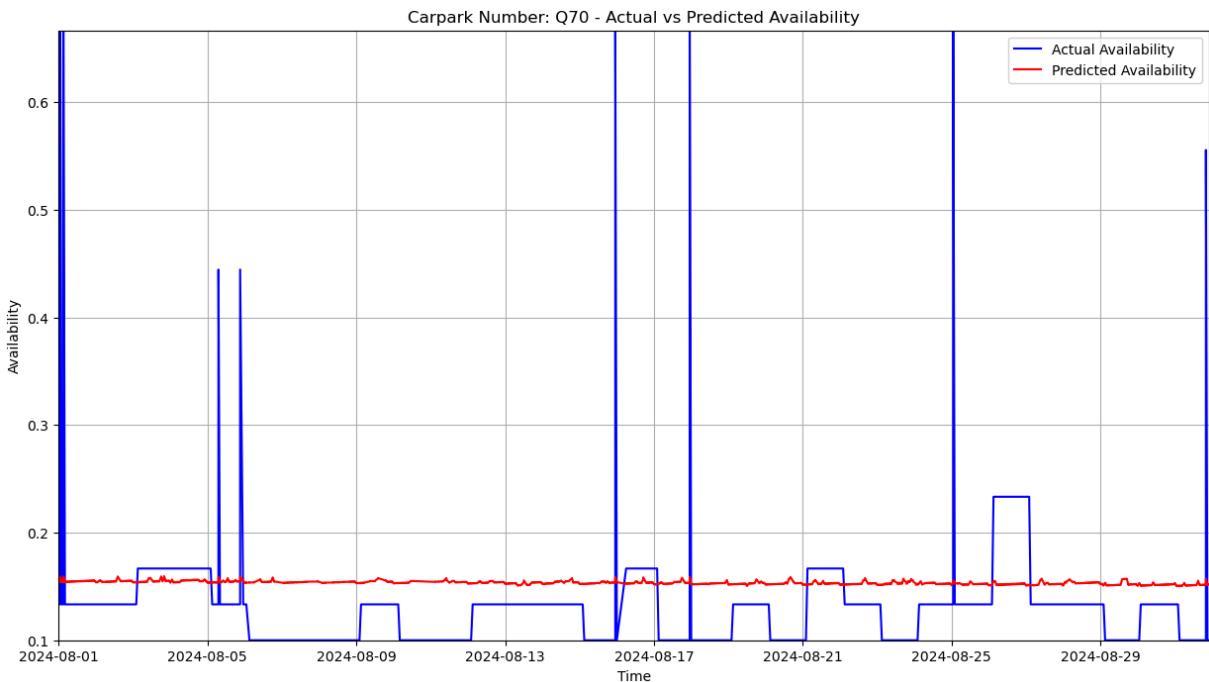
```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Best Ridge model for carpark_number Q70: Ridge(alpha=1000)

Model saved as model_Q70.sav

Testing MSE: 0.003783488000388059

R-squared: -0.08201451387453229



Training model for carpark_number: Q73

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number Q73: Ridge(alpha=1000)

Model saved as model_Q73.sav

Testing MSE: 0.00665595667271952

R-squared: -0.1863510418838934

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

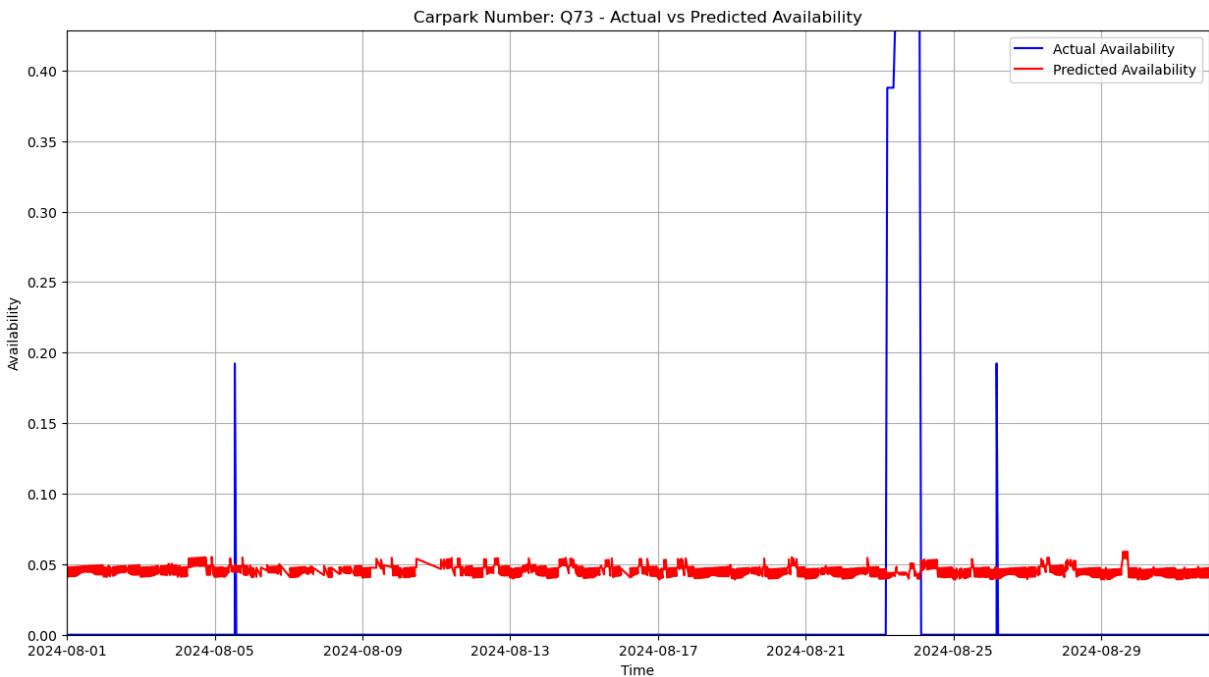
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

```
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



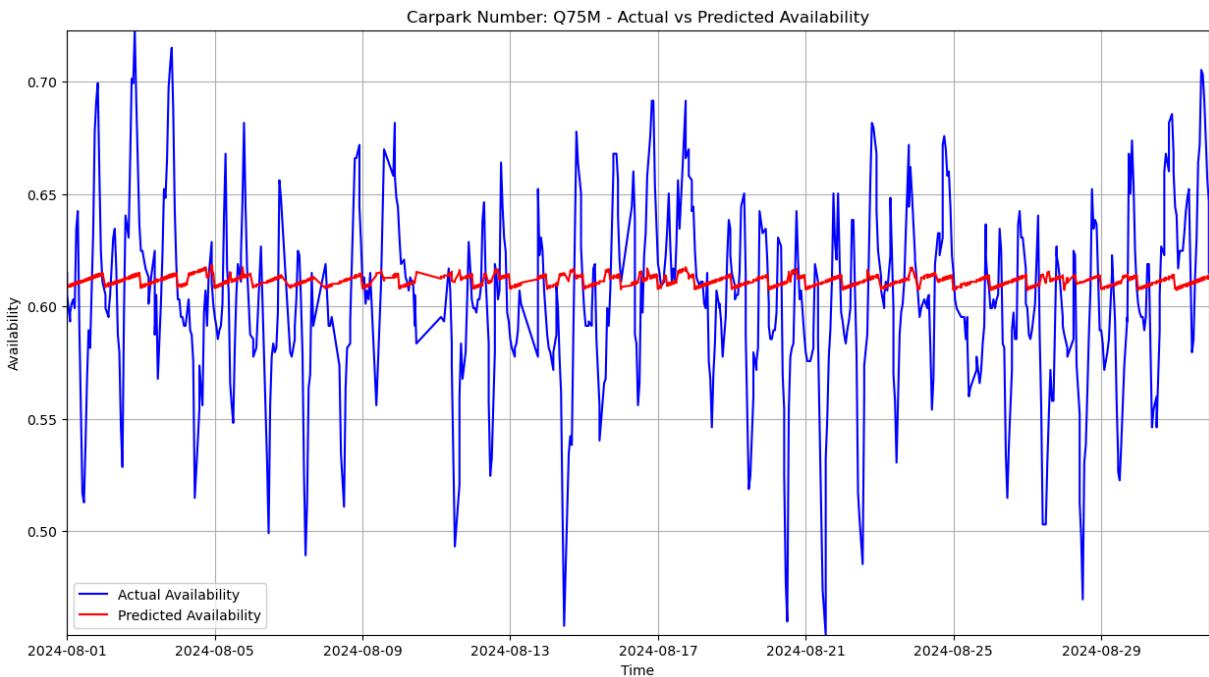
```
Training model for carpark_number: Q75M
Fitting 3 folds for each of 6 candidates, totalling 18 fits
Best Ridge model for carpark_number Q75M: Ridge(alpha=1000)
```

```
Model saved as model_Q75M.sav
Testing MSE: 0.001748743379652809
R-squared: -0.02316670514651542
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: Q77M

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

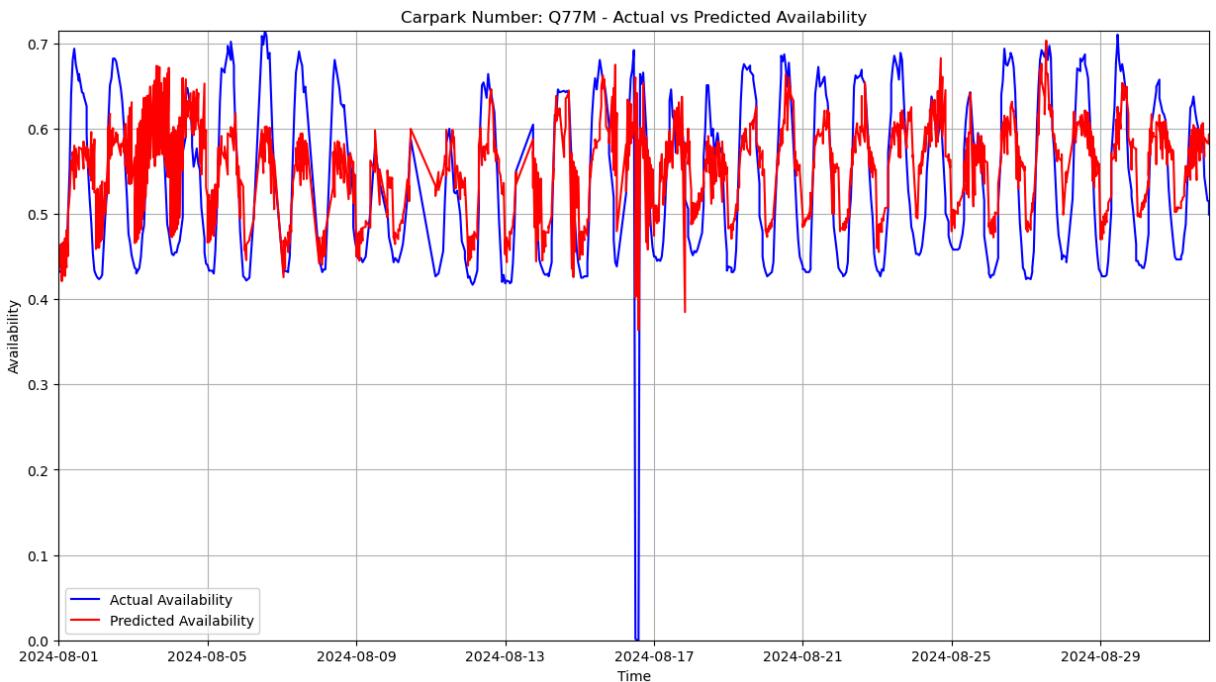
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)  
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)  
Fitting 3 folds for each of 6 candidates, totalling 18 fits  
Best Ridge model for carpark_number Q77M: Ridge(alpha=10)
```

Model saved as model_Q77M.sav
Testing MSE: 0.005516176270745146
R-squared: 0.42567767136913126



Training model for carpark_number: Q8

Fitting 3 folds for each of 6 candidates, totalling 18 fits
Best Ridge model for carpark_number Q8: Ridge(alpha=10)

Model saved as model_Q8.sav

Testing MSE: 0.003902129402359935

R-squared: -0.6015941913379037

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

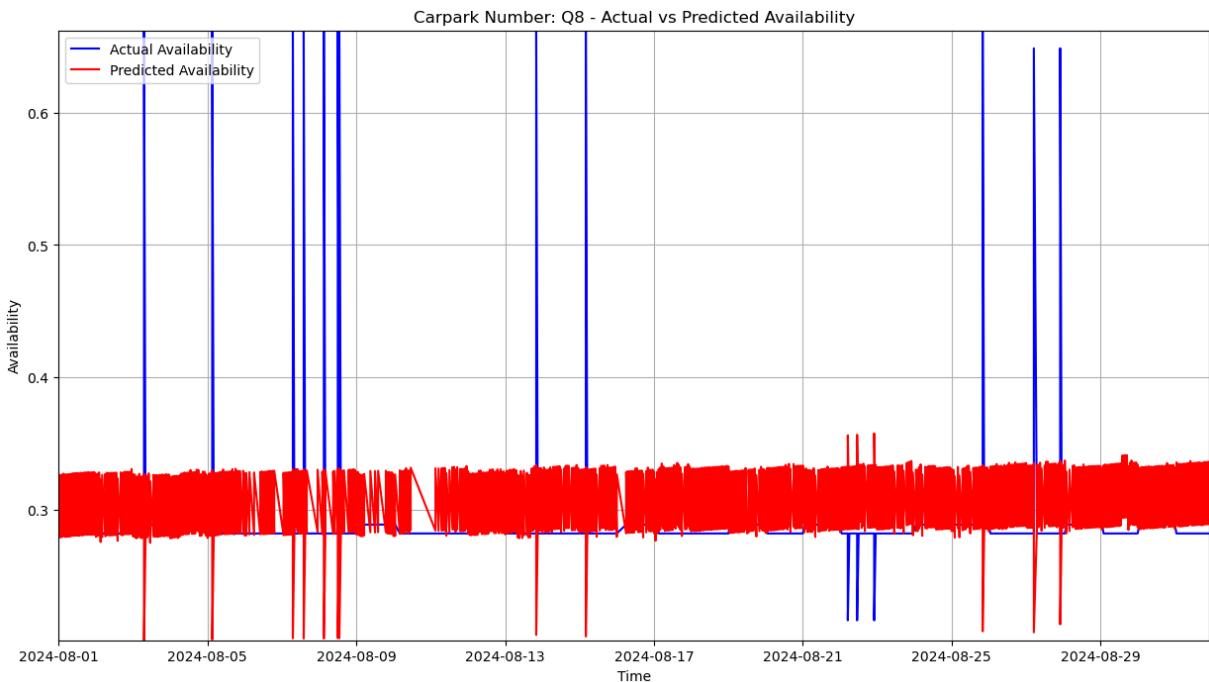
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: Q80

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number Q80: Ridge(alpha=10)

Model saved as model_Q80.sav

Testing MSE: 0.07790623984268218

R-squared: -0.39311720132971595

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

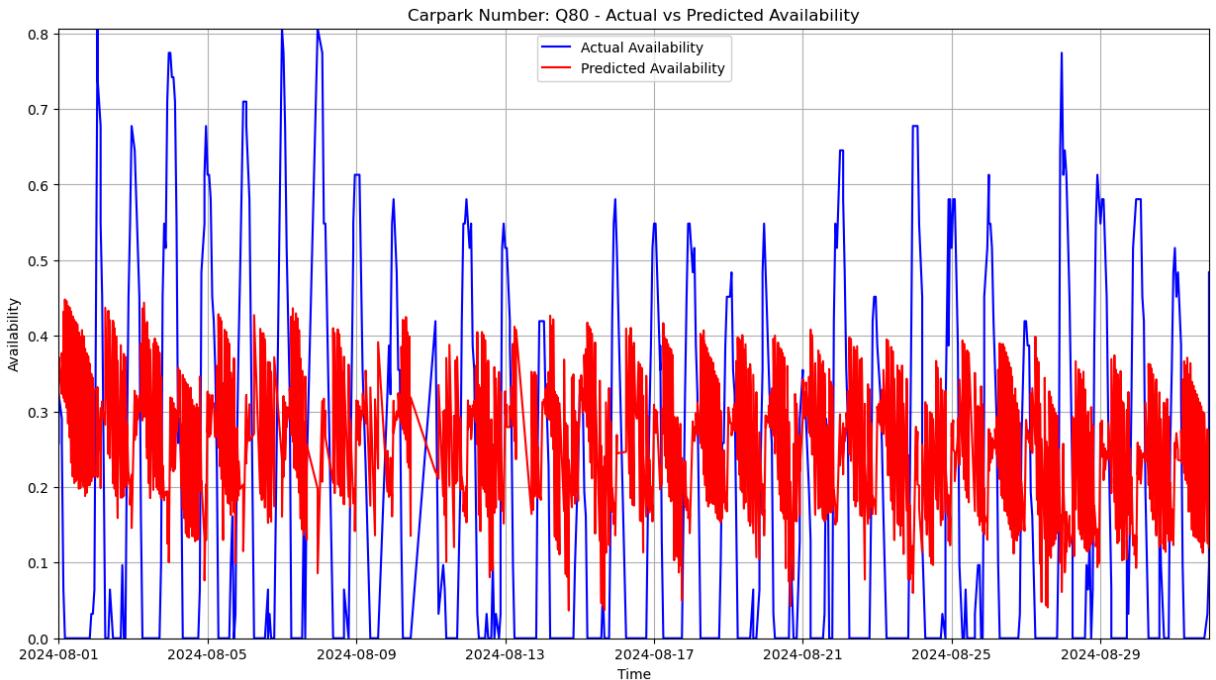
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: Q81

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number Q81: Ridge(alpha=10)

Model saved as model_Q81.sav

Testing MSE: 0.016605625996120598

R-squared: 0.8557686457152206

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

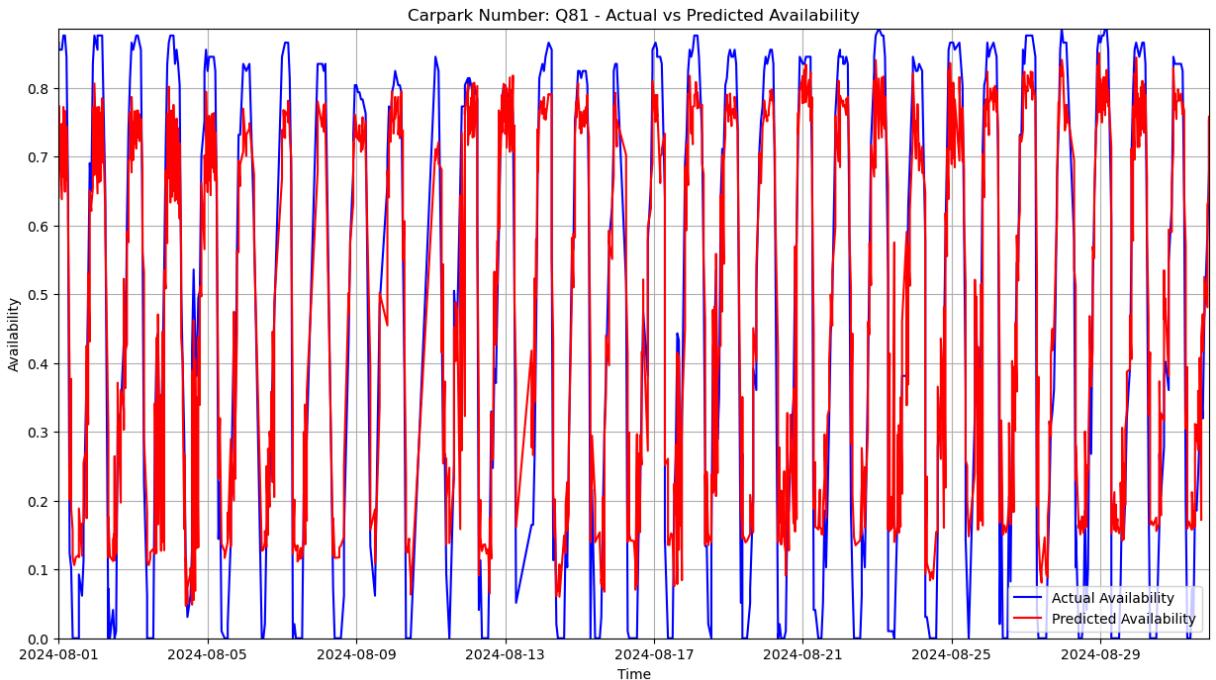
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

```
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: Q84

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number Q84: Ridge(alpha=1000)

Model saved as model_Q84.sav

Testing MSE: 0.0062704055023935935

R-squared: -0.7004956061119647

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

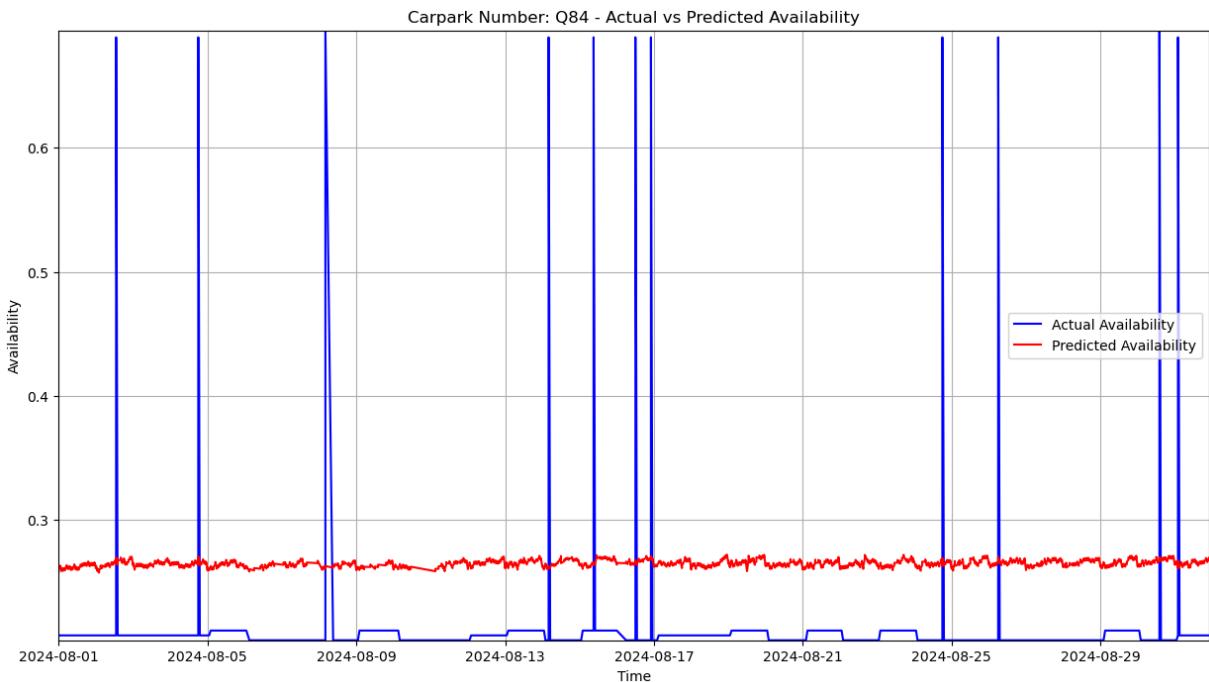
```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.
```

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: Q85

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number Q85: Ridge(alpha=10)

Model saved as model_Q85.sav

Testing MSE: 0.021077956845110893

R-squared: 0.4285979566000193

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

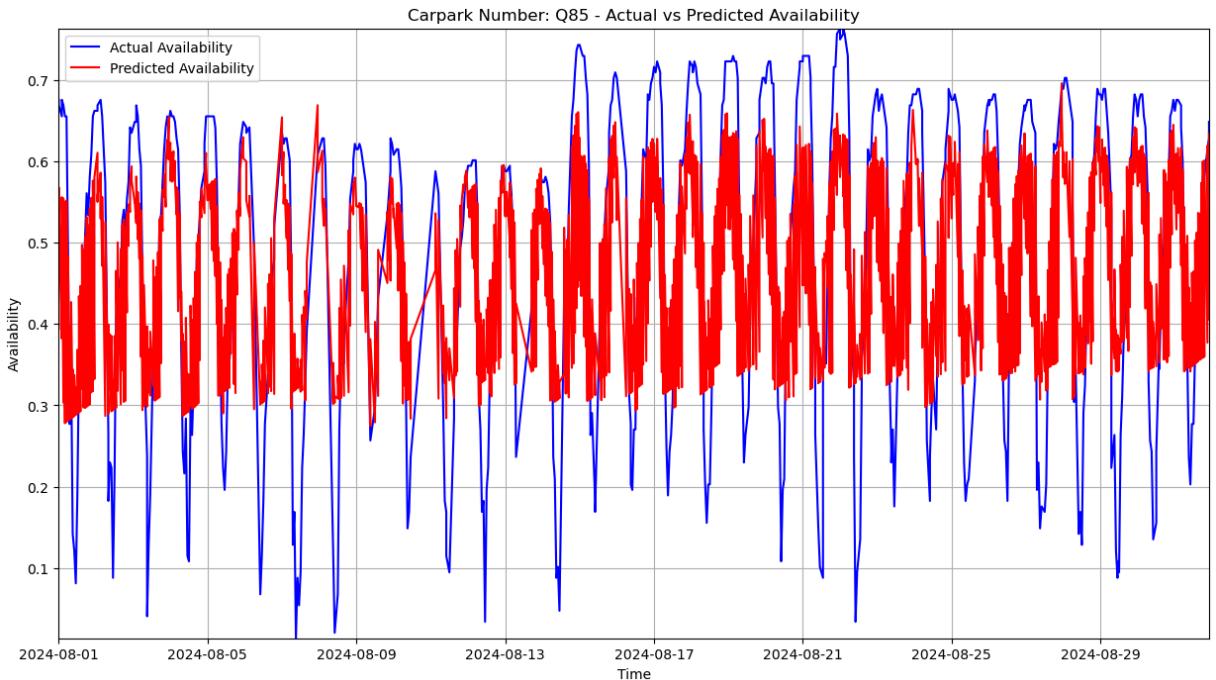
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: Q86

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number Q86: Ridge(alpha=1000)

Model saved as model_Q86.sav

Testing MSE: 0.00005055814552198697

R-squared: -0.09759441928368195

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

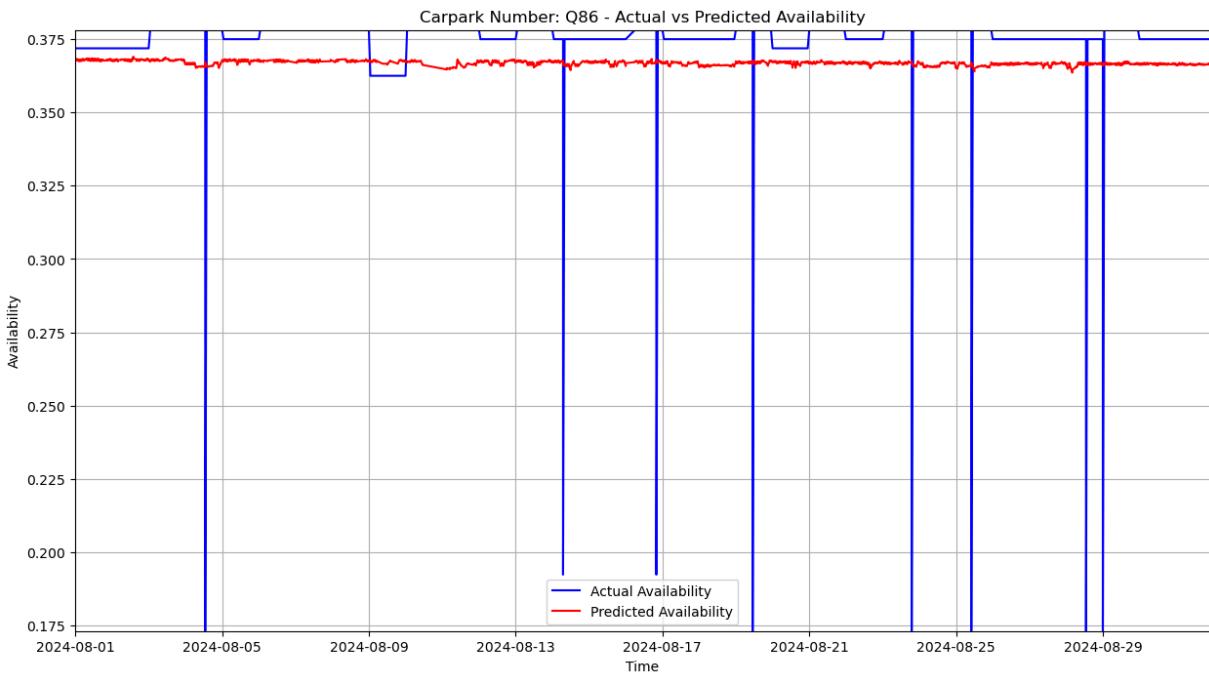
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: Q87

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number Q87: Ridge(alpha=1000)

Model saved as model_Q87.sav

Testing MSE: 0.0004430860661571844

R-squared: -0.6786569685476112

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

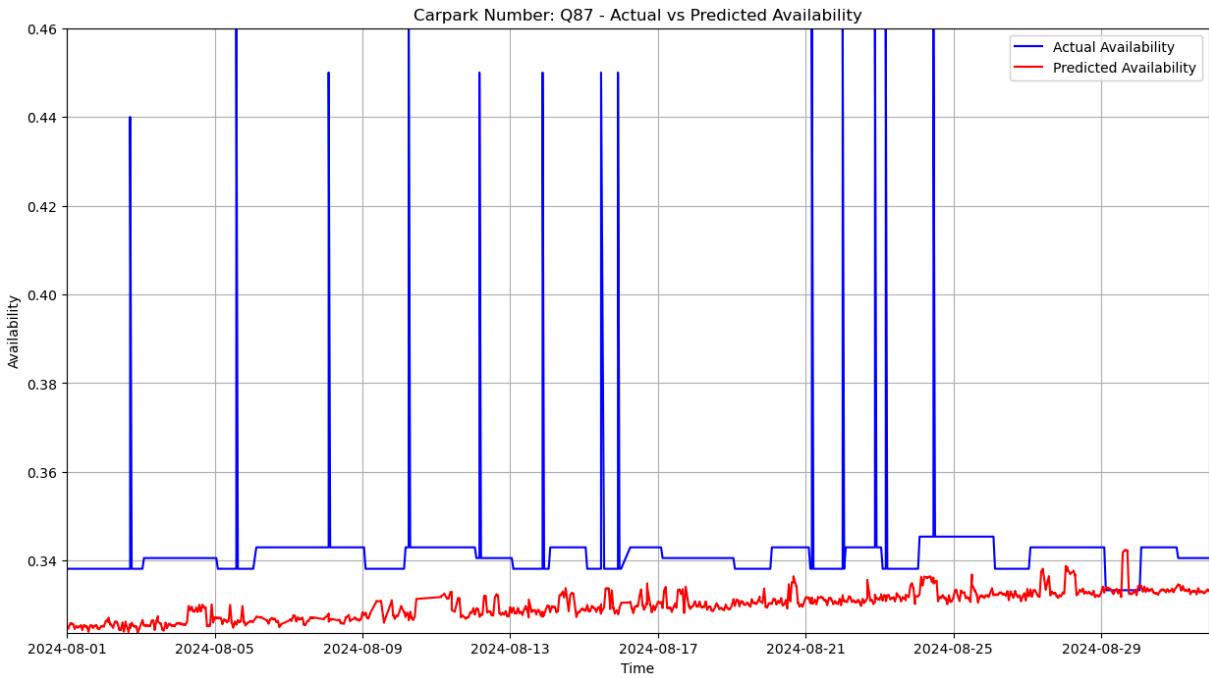
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: Q88

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number Q88: Ridge(alpha=1000)

Model saved as model_Q88.sav

Testing MSE: 2.1264247220670017e-05

R-squared: -2.8448883840980566

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

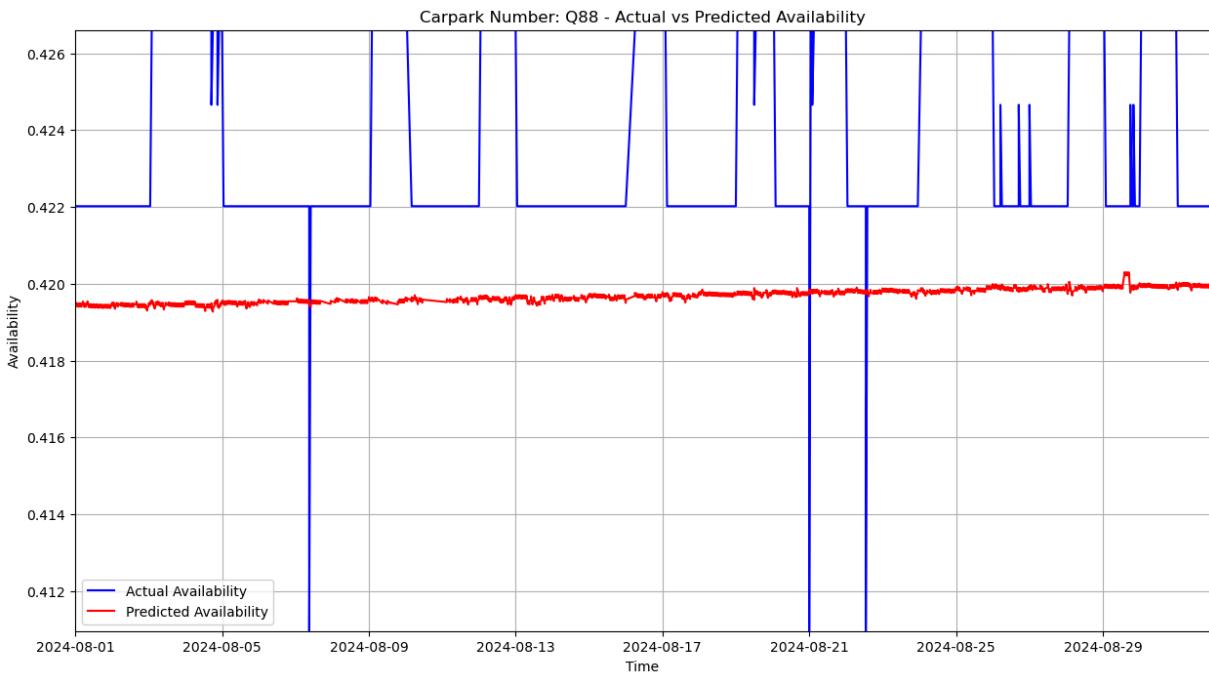
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: Q89

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number Q89: Ridge(alpha=0.01)

Model saved as model_Q89.sav

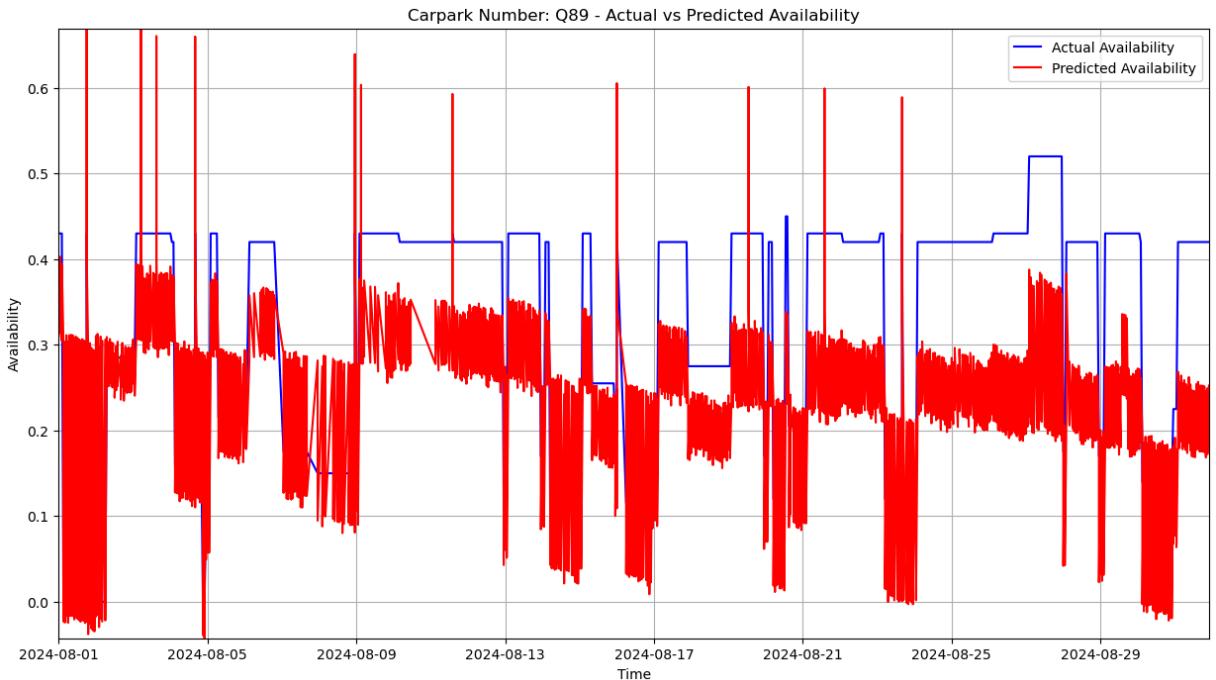
Testing MSE: 0.020859234554613033

R-squared: -0.03062535644018949

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: Q94

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number Q94: Ridge(alpha=0.01)

Model saved as model_Q94.sav

Testing MSE: 0.009735682718950823

R-squared: -1.0389159598247049

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

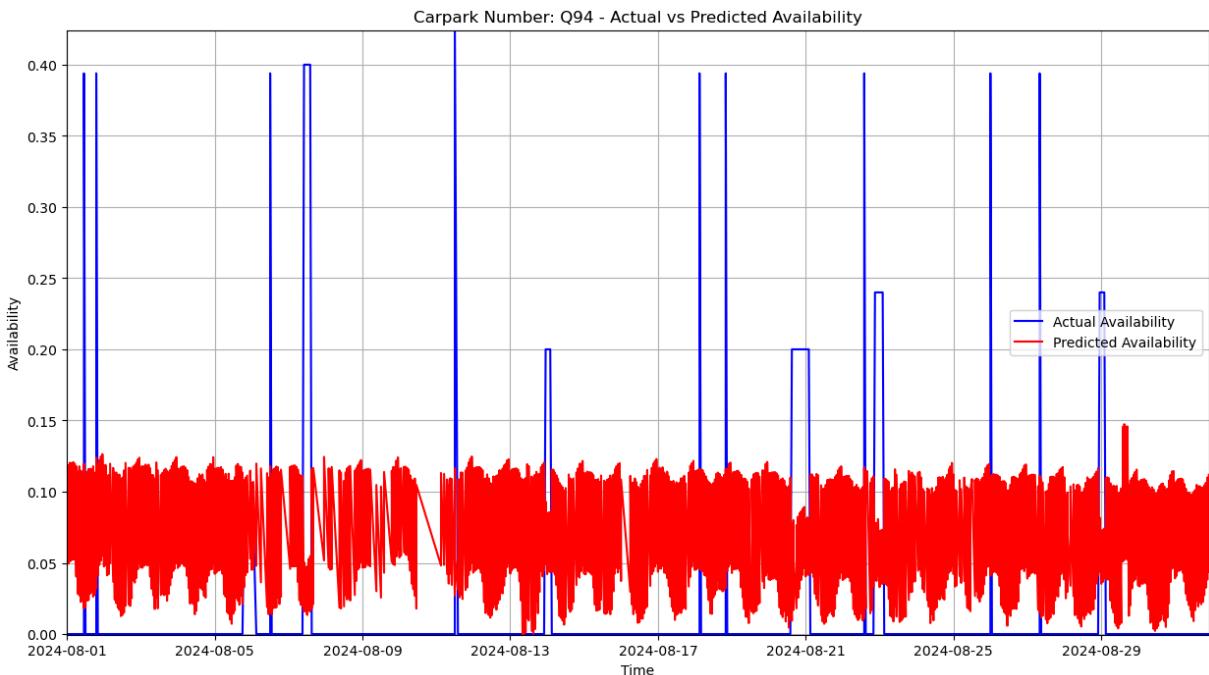
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

```
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: Q96

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number Q96: Ridge(alpha=1000)

Model saved as model_Q96.sav

Testing MSE: 0.004059114075489474

R-squared: -1.1775568921398074

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

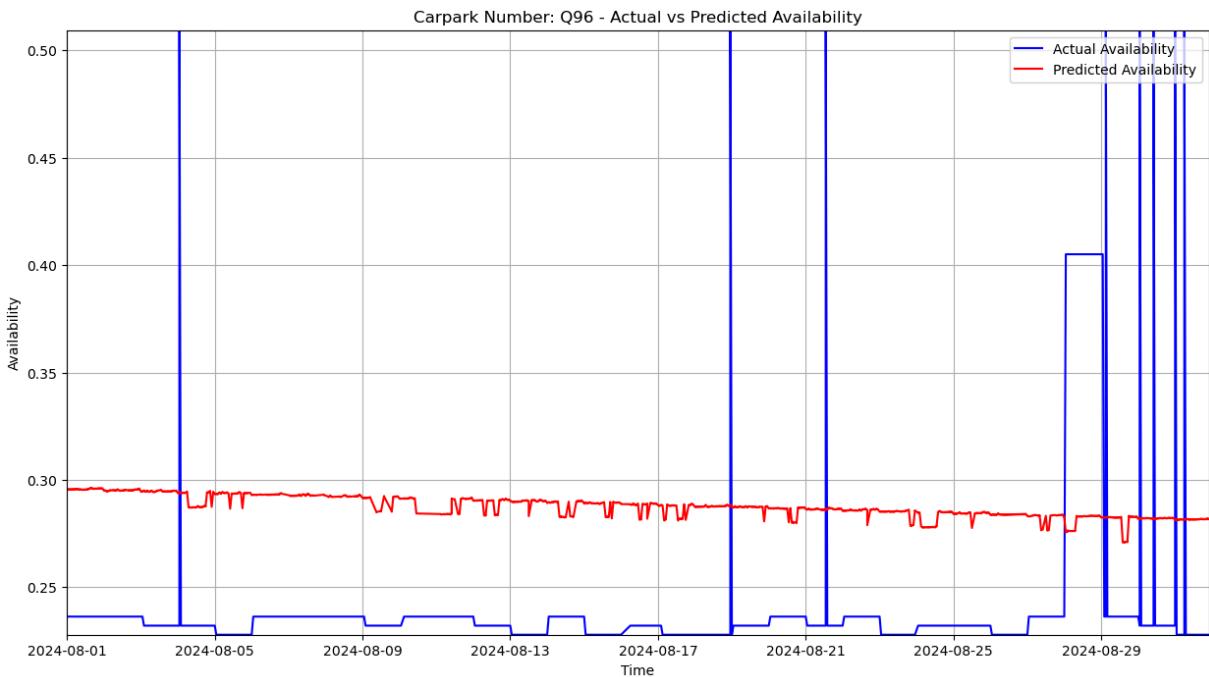
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



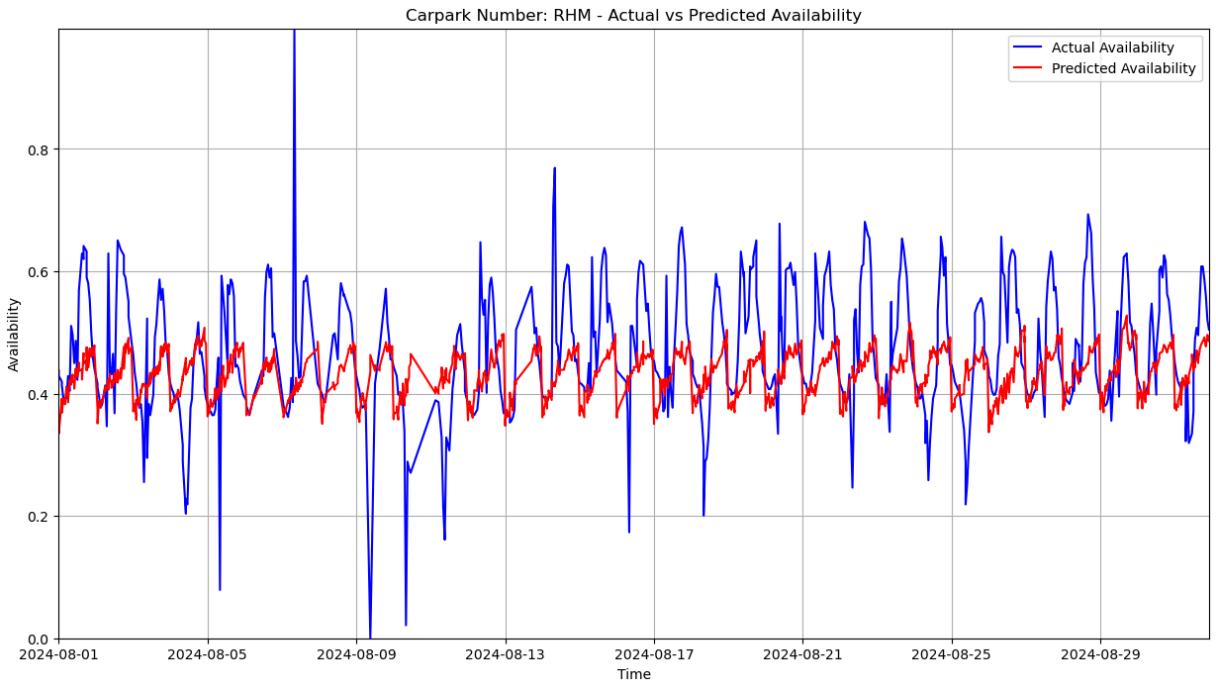
```
Training model for carpark_number: RHM
Fitting 3 folds for each of 6 candidates, totalling 18 fits
Best Ridge model for carpark_number RHM: Ridge(alpha=10)
```

```
Model saved as model_RHM.sav
Testing MSE: 0.010219536072100592
R-squared: 0.033562599332836784
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: RHM

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number RHM2: Ridge(alpha=100)

Model saved as model_RHM2.sav

Testing MSE: 0.0030429913148479143

R-squared: -1.2628765030437963

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

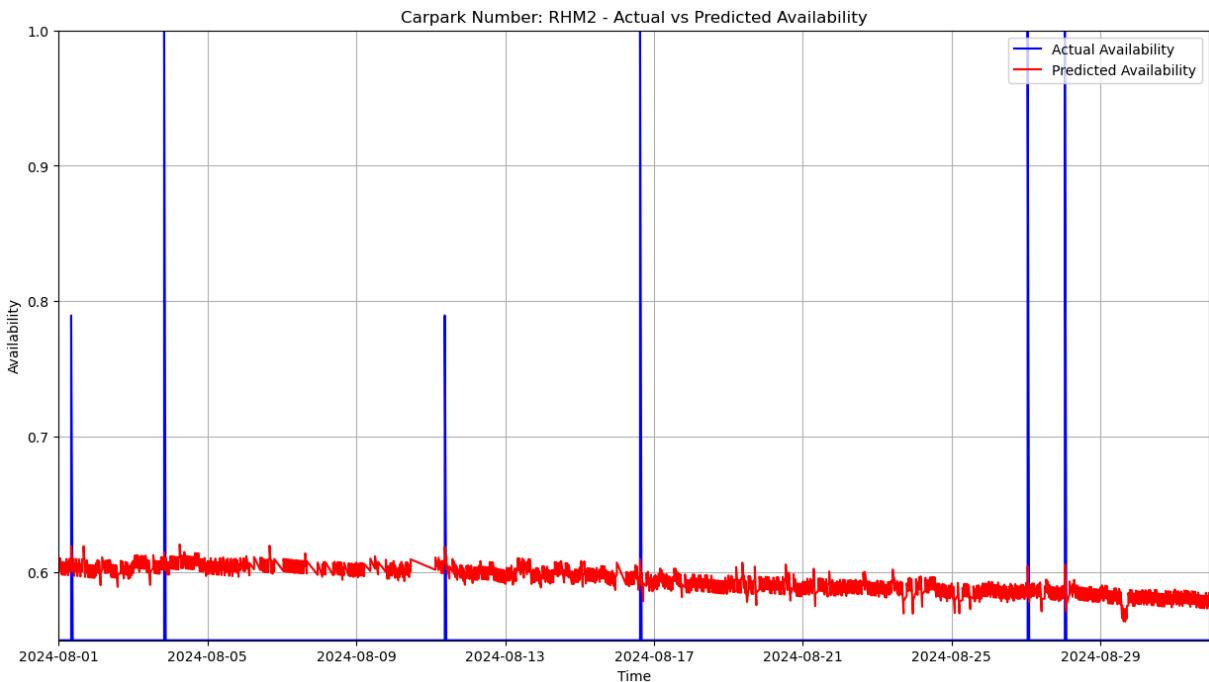
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: RHM3

Fitting 3 folds for each of 6 candidates, totalling 18 fits
Best Ridge model for carpark_number RHM3: Ridge(alpha=1000)

Model saved as model_RHM3.sav

Testing MSE: 0.0007595109577188374

R-squared: -7.358406245720047

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

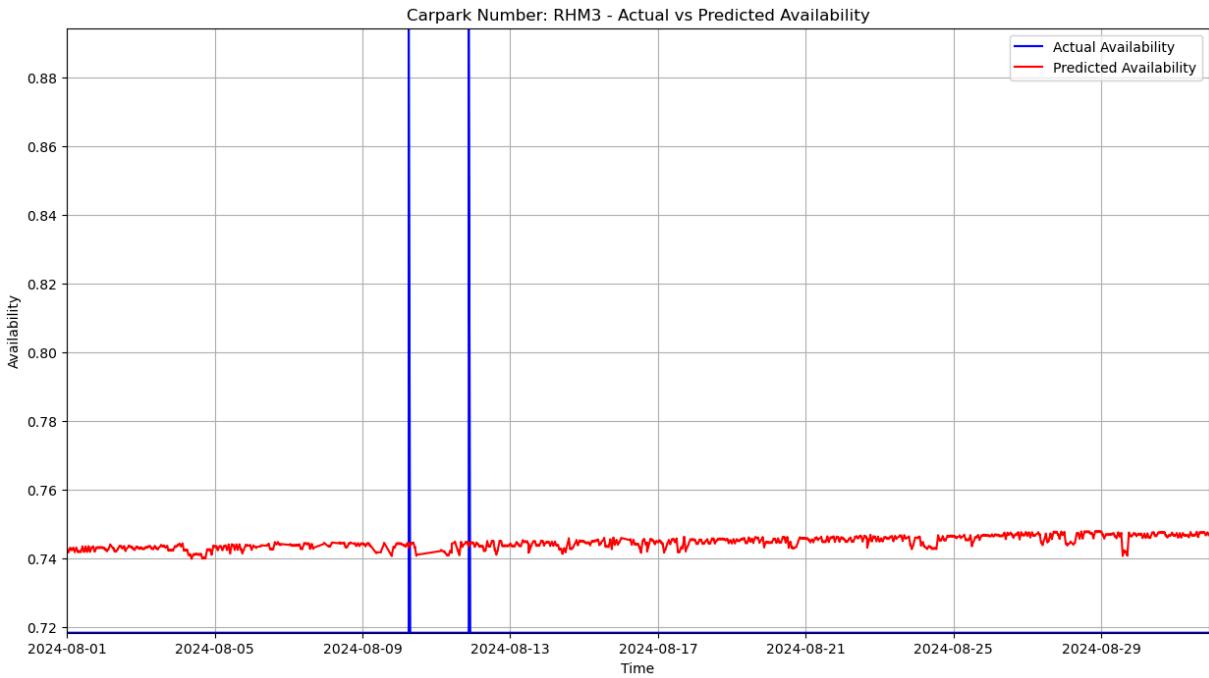
```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.
```

```
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: RHM4

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number RHM4: Ridge(alpha=1000)

Model saved as model_RHM4.sav

Testing MSE: 0.0036456473174872974

R-squared: -0.07988309288174023

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

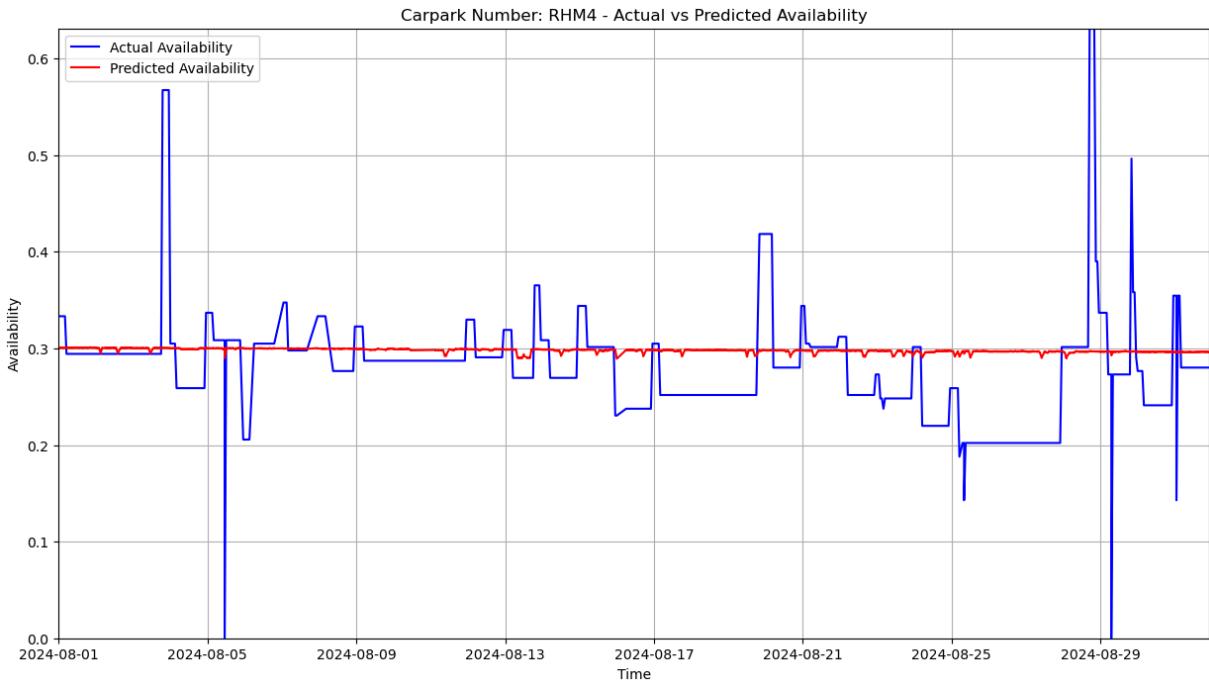
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: RHS

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number RHS: Ridge(alpha=0.01)

Model saved as model_RHS.sav

Testing MSE: 0.005485990245842992

R-squared: -1.0034806296183048

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

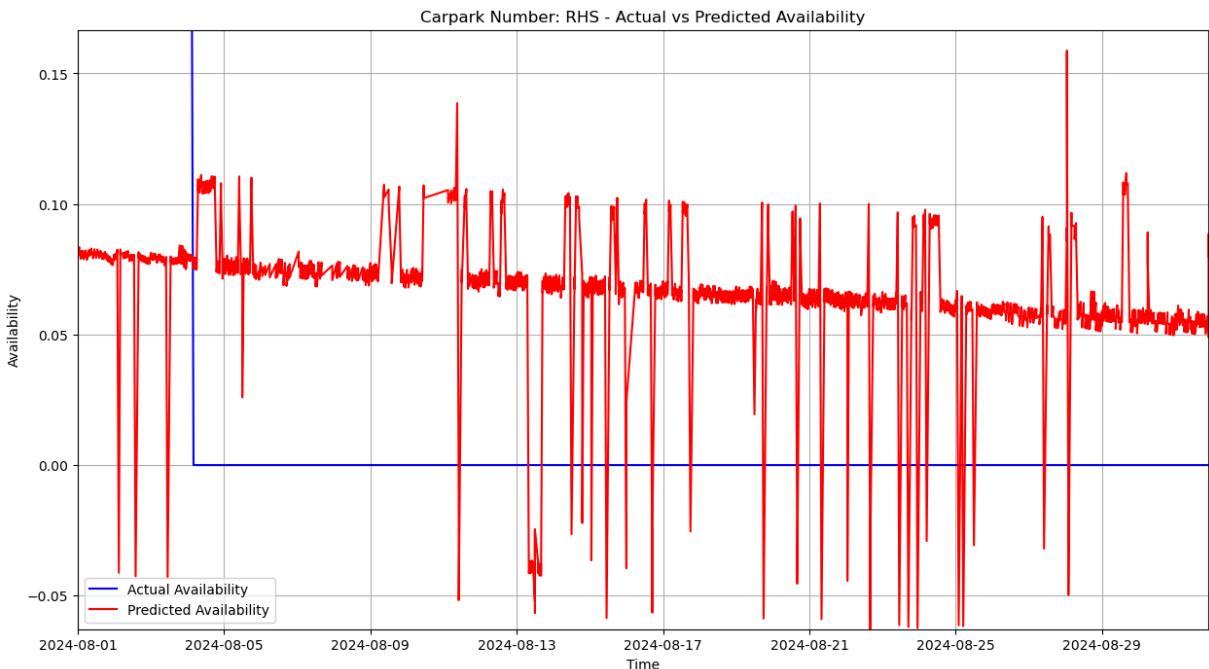
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



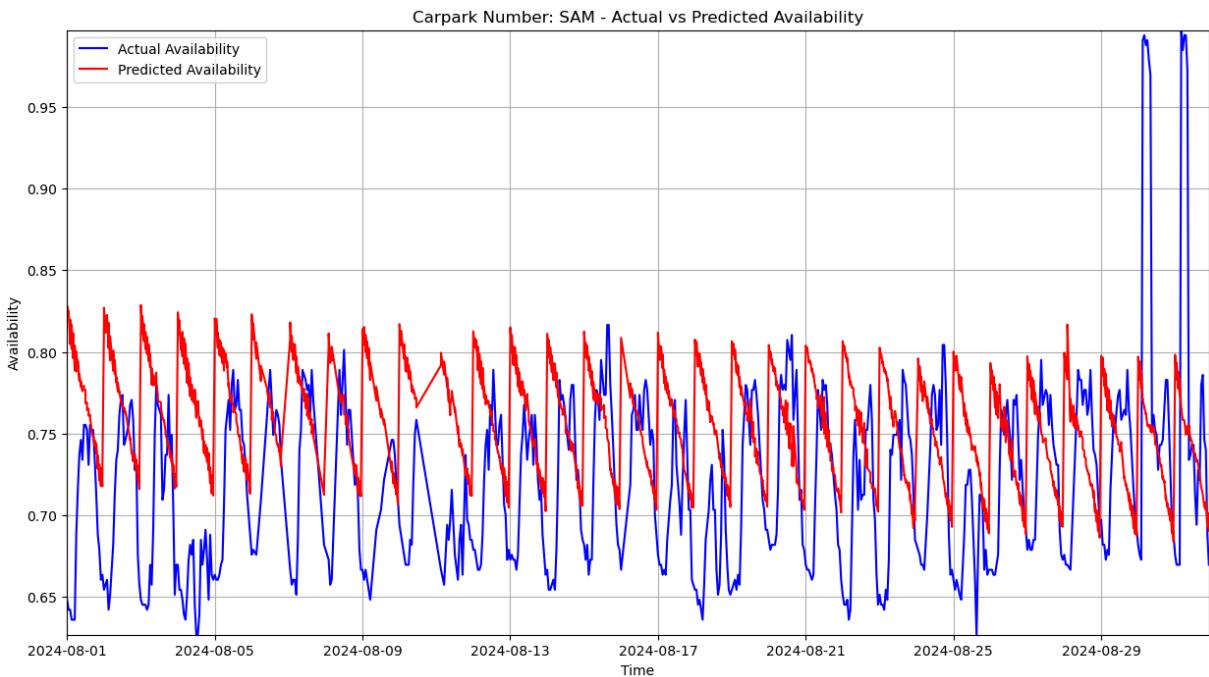
```
Training model for carpark_number: SAM
Fitting 3 folds for each of 6 candidates, totalling 18 fits
Best Ridge model for carpark_number SAM: Ridge(alpha=10)
```

```
Model saved as model_SAM.sav
Testing MSE: 0.006593454544484234
R-squared: -1.032013186974405
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: SAM2

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number SAM2: Ridge(alpha=1)

Model saved as model_SAM2.sav

Testing MSE: 0.03391696905968911

R-squared: -8.568740068433868

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

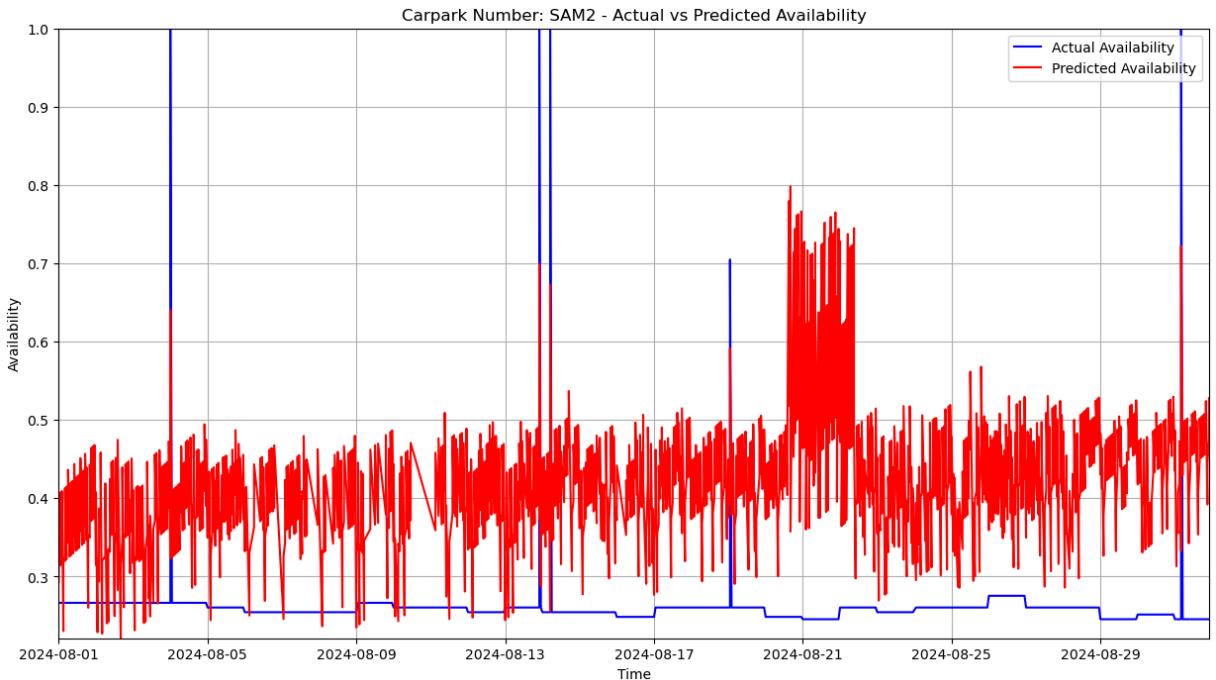
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: SMM

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number SMM: Ridge(alpha=1000)

Model saved as model_SMM.sav

Testing MSE: 0.0016159723888541577

R-squared: -0.0306659443518551

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

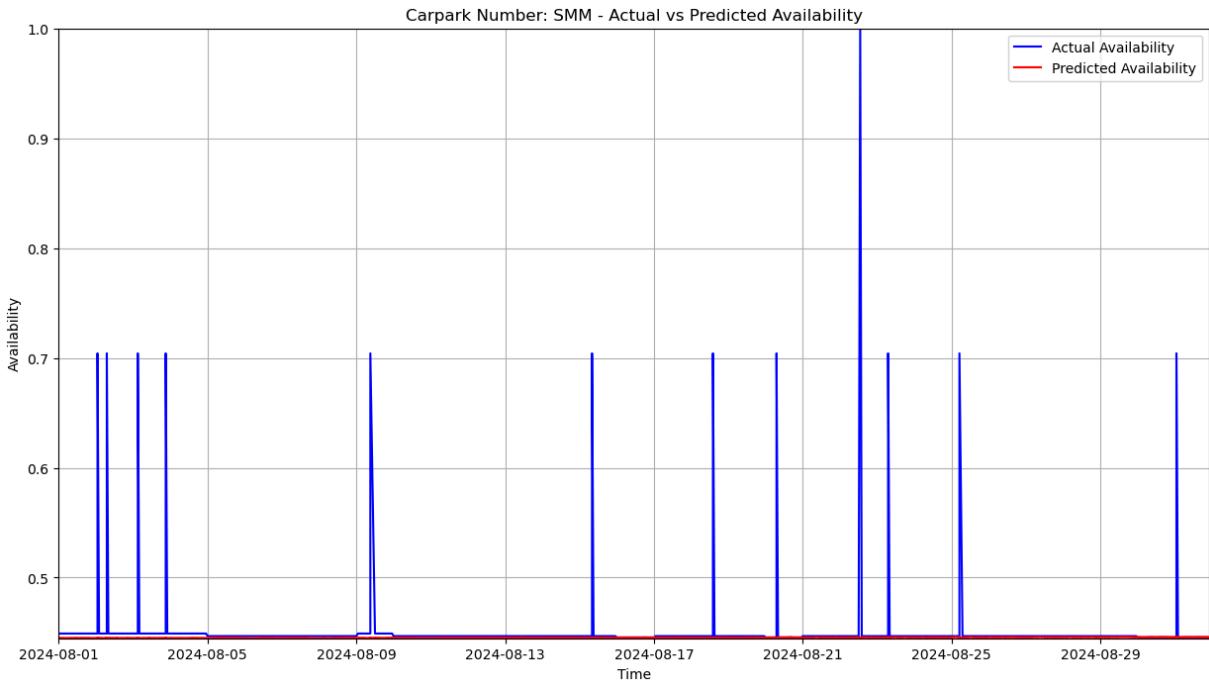
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

```
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: STAM

Fitting 3 folds for each of 6 candidates, totalling 18 fits
Best Ridge model for carpark_number STAM: Ridge(alpha=1000)

Model saved as model_STAM.sav

Testing MSE: 0.0006460565508471182

R-squared: -0.0037683352338744314

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

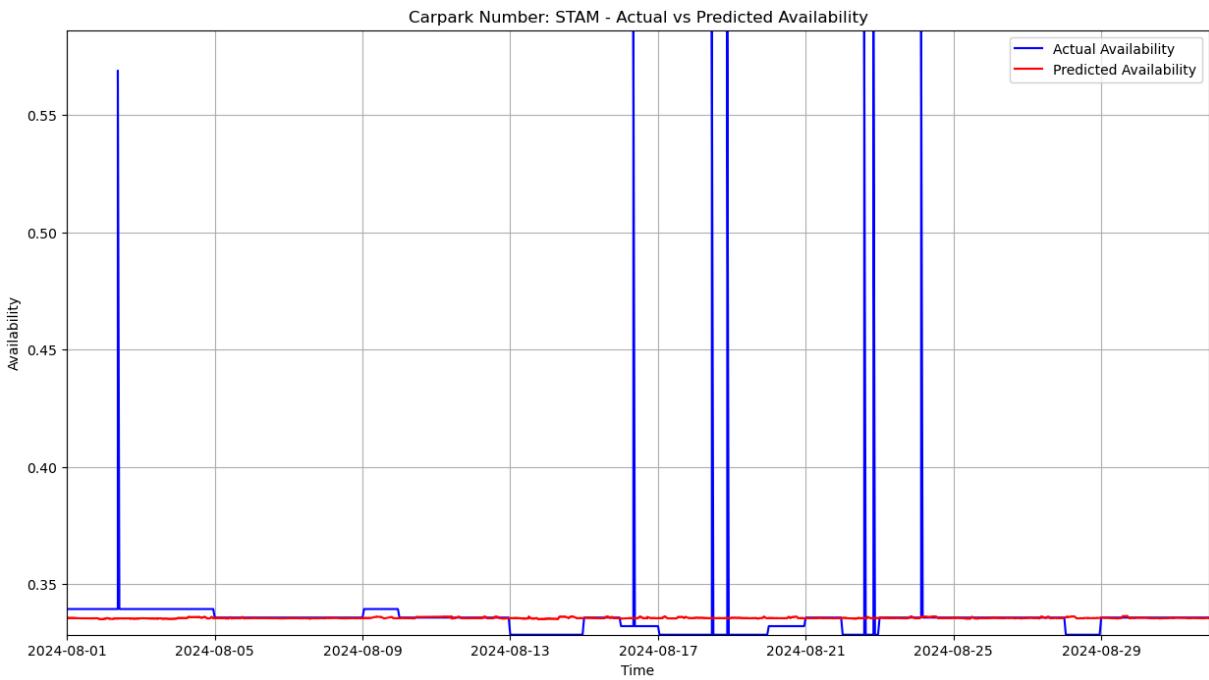
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: STM1

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number STM1: Ridge(alpha=1000)

Model saved as model_STM1.sav

Testing MSE: 0.0006551573565630211

R-squared: -0.32198662365220576

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

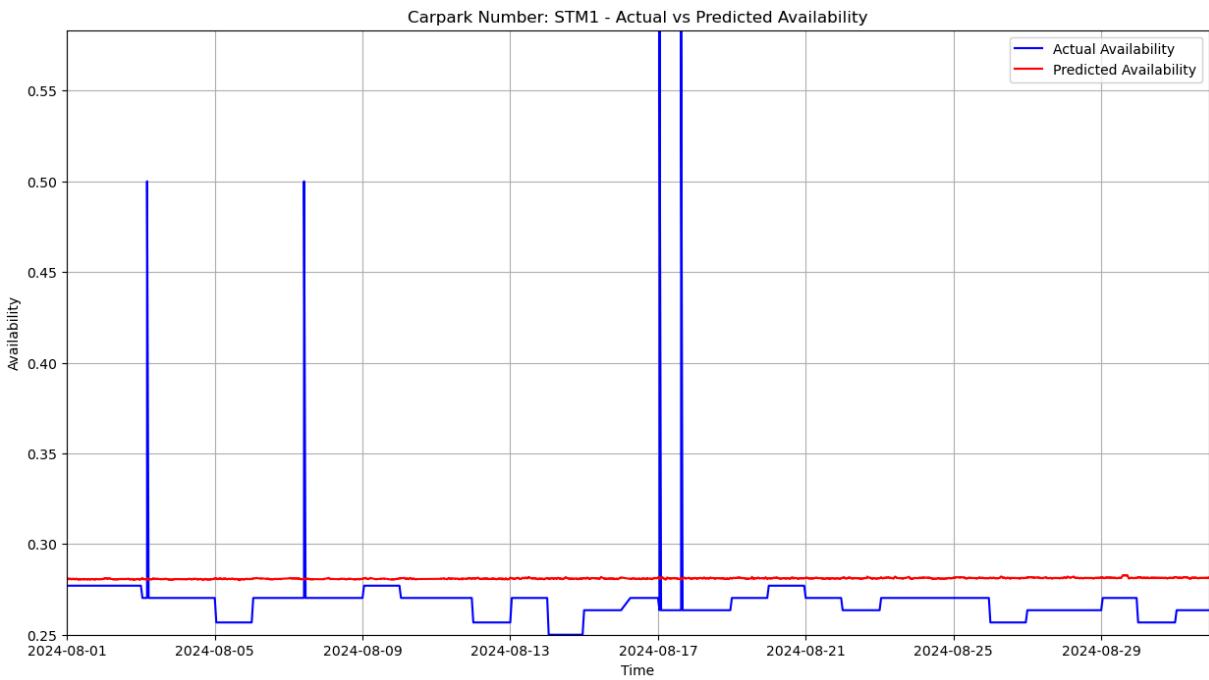
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: STM2

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number STM2: Ridge(alpha=1000)

Model saved as model_STM2.sav

Testing MSE: 0.0009152569239406408

R-squared: -0.07667598731101588

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

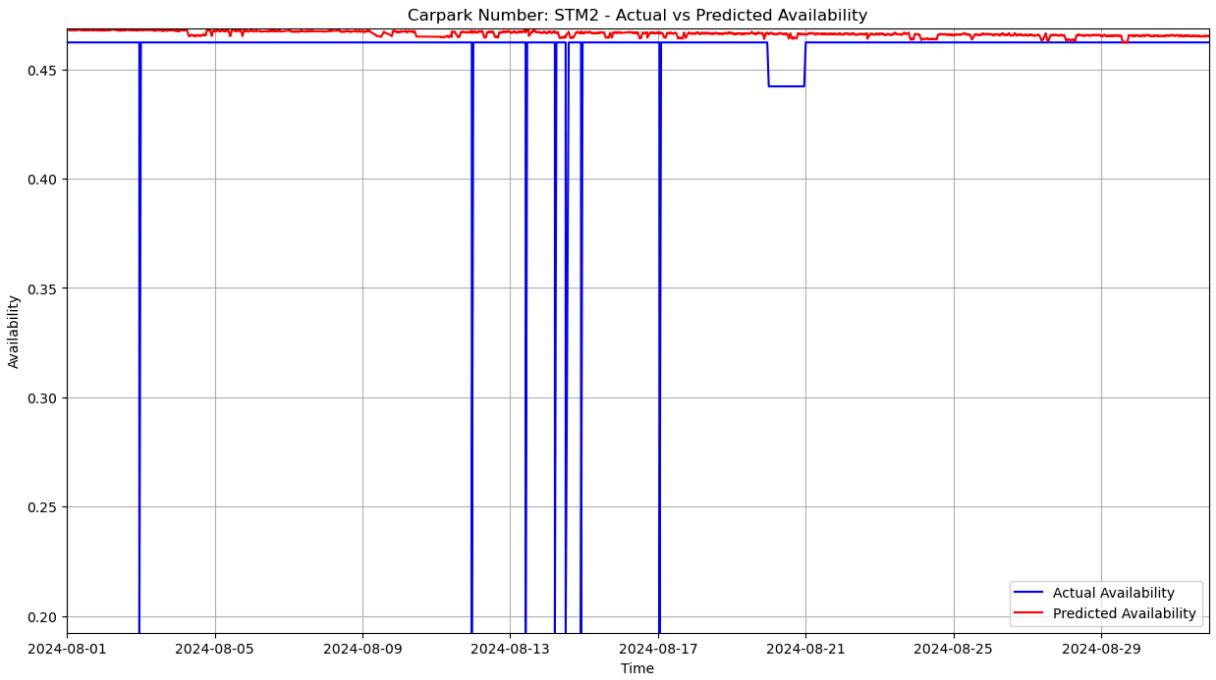
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: STM3

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number STM3: Ridge(alpha=1000)

Model saved as model_STM3.sav

Testing MSE: 0.0018999873536724814

R-squared: -0.0015788572067914064

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

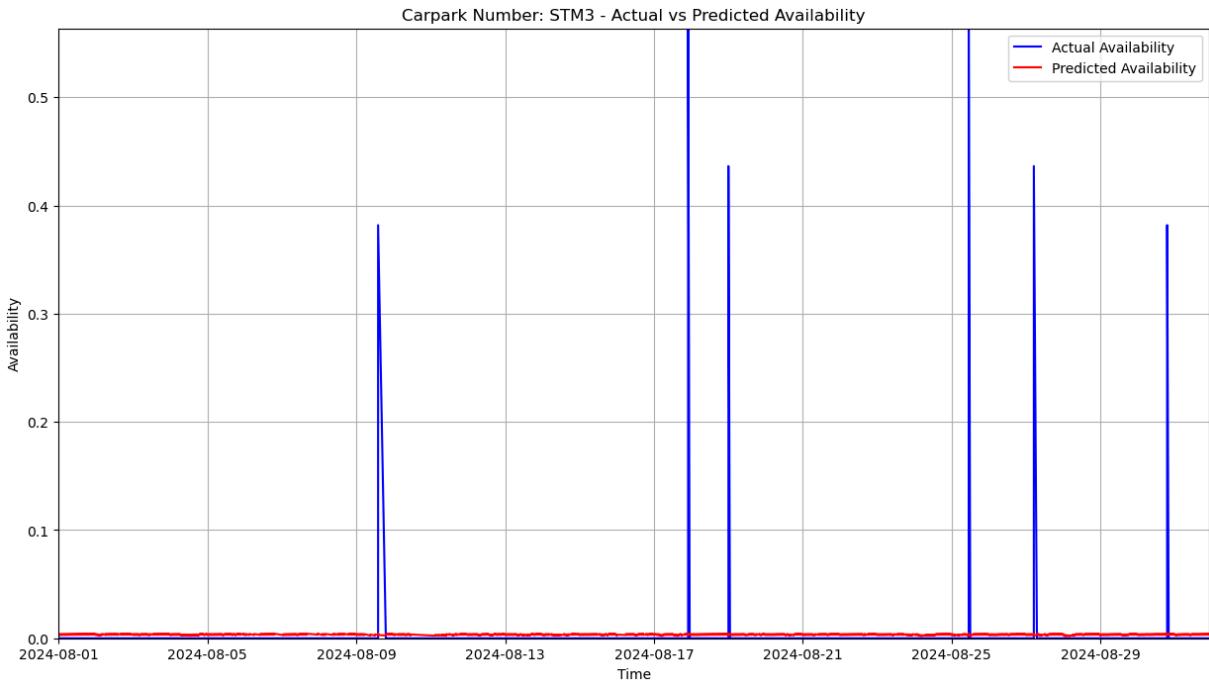
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: TB1

Fitting 3 folds for each of 6 candidates, totalling 18 fits
Best Ridge model for carpark_number TB1: Ridge(alpha=0.01)

Model saved as model_TB1.sav

Testing MSE: 0.009662432848321328

R-squared: -0.8535253134668936

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

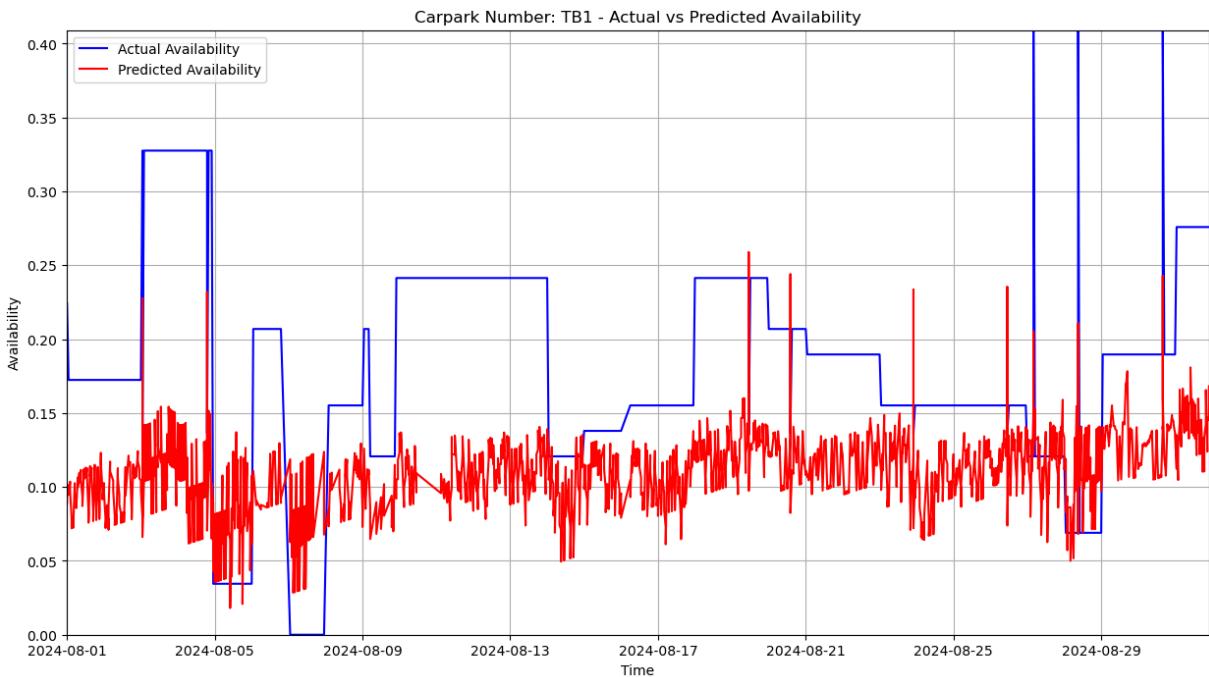
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: TB14

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number TB14: Ridge(alpha=100)

Model saved as model_TB14.sav

Testing MSE: 0.013529658567507173

R-squared: 0.02232842424125636

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

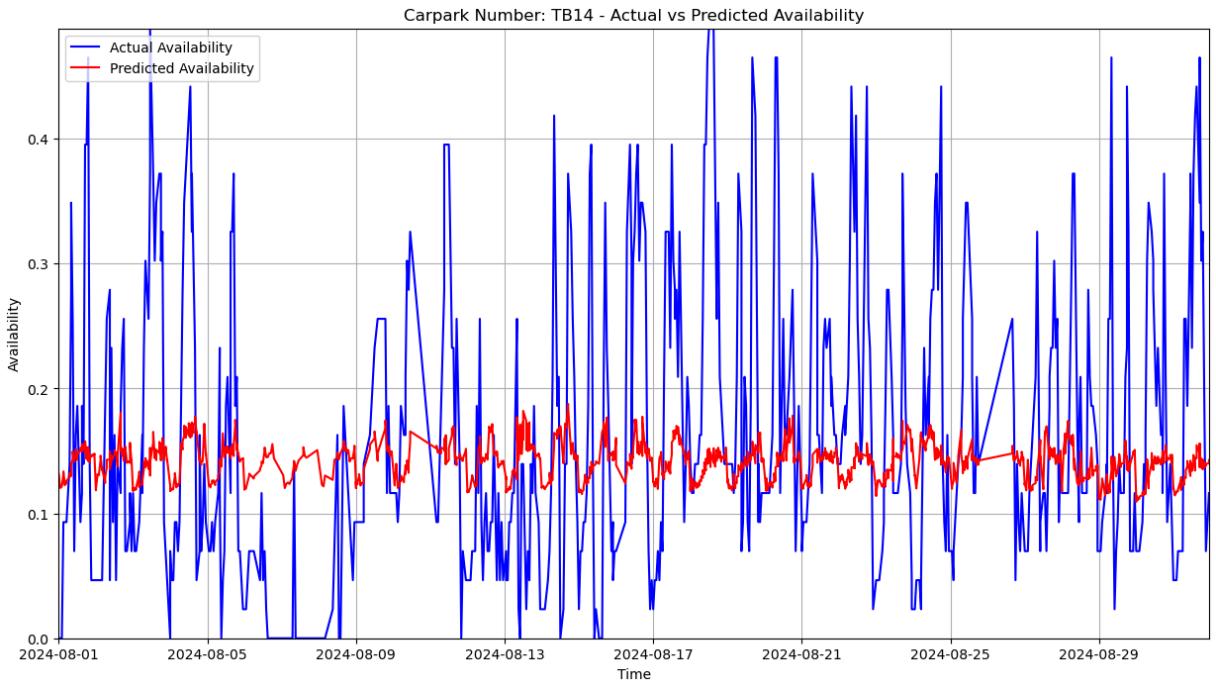
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: TB17

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number TB17: Ridge(alpha=0.01)

Model saved as model_TB17.sav

Testing MSE: 0.01684524705831142

R-squared: -0.190086431308242

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

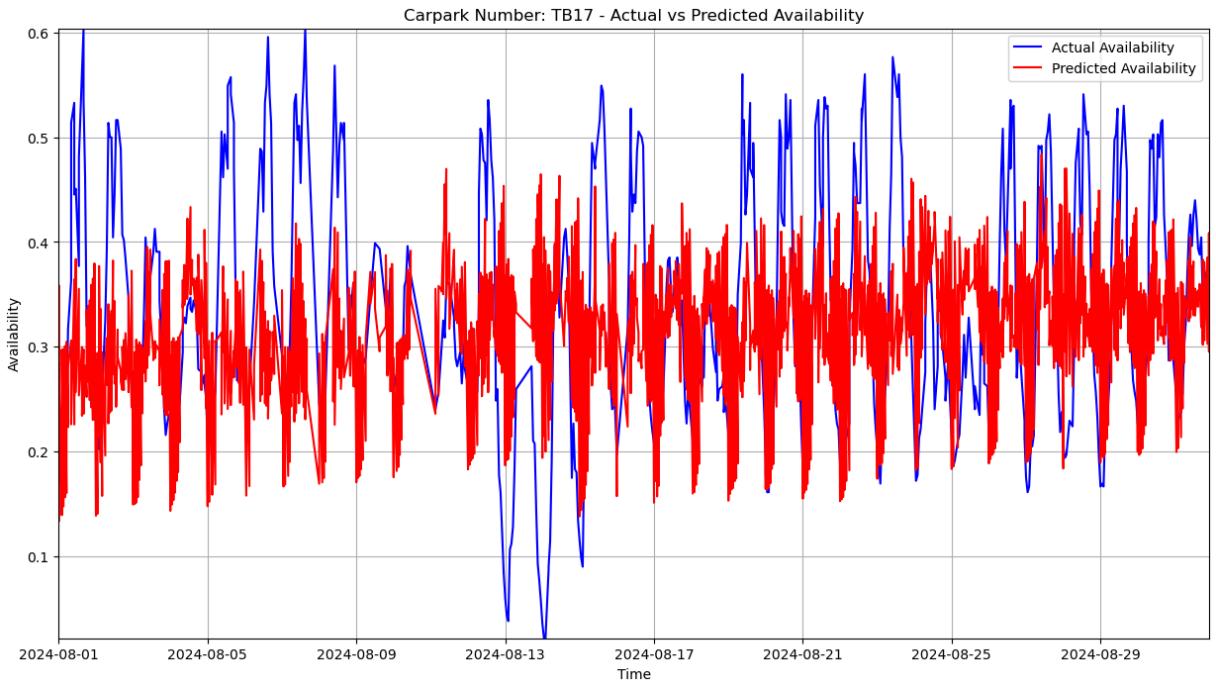
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

```
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: TB18

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number TB18: Ridge(alpha=10)

Model saved as model_TB18.sav

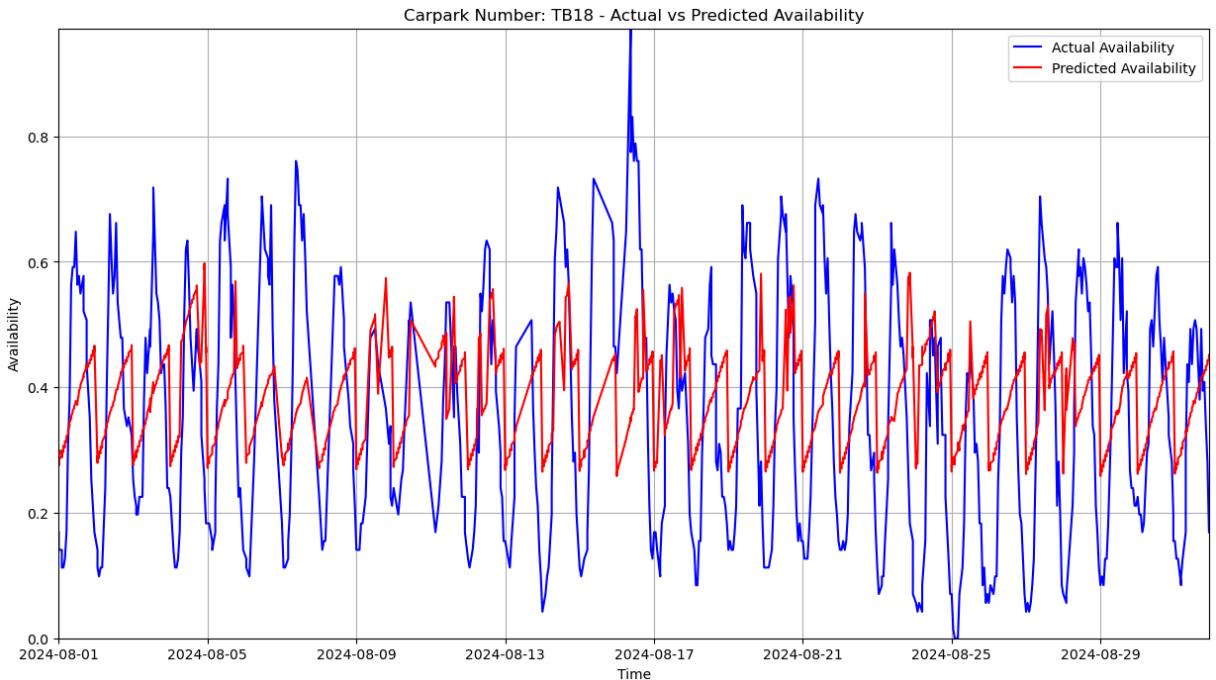
Testing MSE: 0.03667182100294453

R-squared: 0.08639480580072645

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: TB19

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number TB19: Ridge(alpha=1)

Model saved as model_TB19.sav

Testing MSE: 0.016309062058147444

R-squared: 0.09869078108186236

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

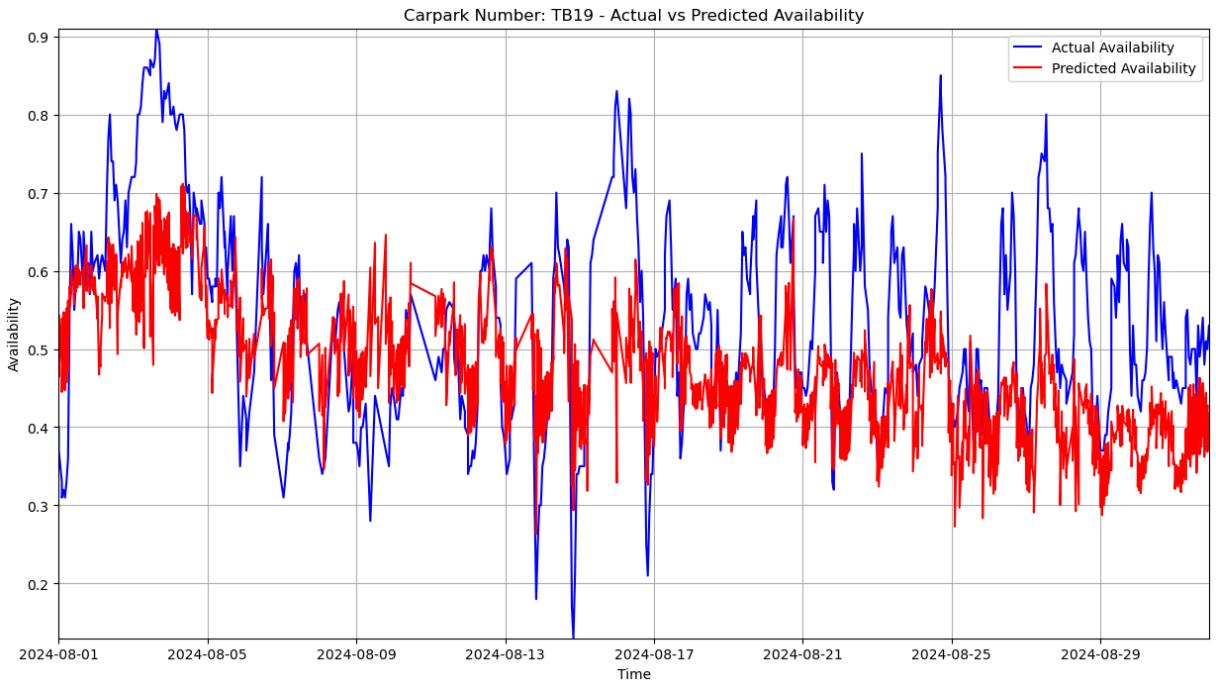
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

```
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: TB2

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number TB2: Ridge(alpha=1000)

Model saved as model_TB2.sav

Testing MSE: 0.026025742851366034

R-squared: -0.13565147730153537

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

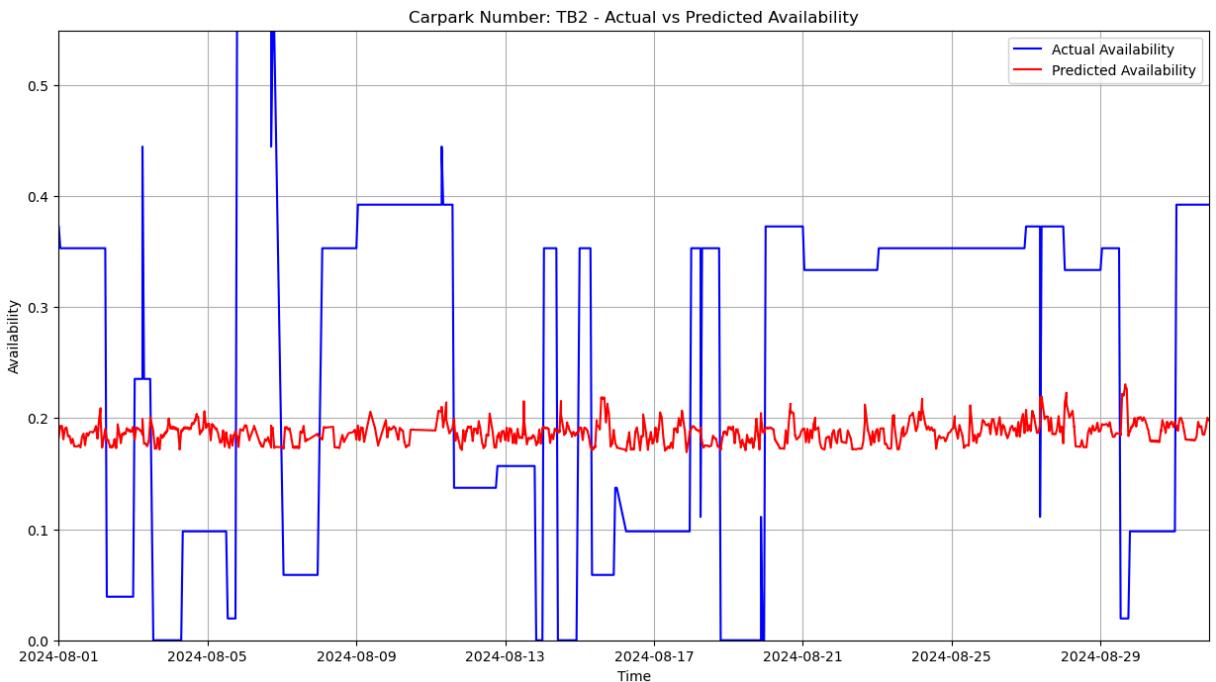
```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.
```

```
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: TB22

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number TB22: Ridge(alpha=10)

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

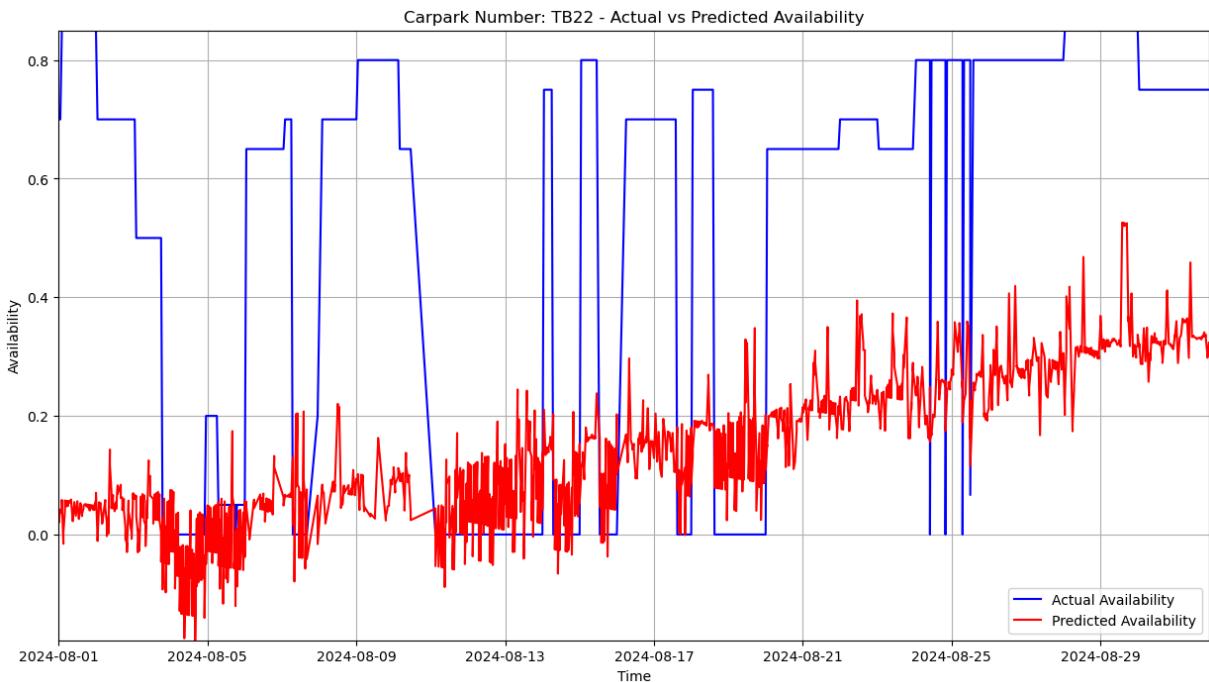
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Model saved as model_TB22.sav

Testing MSE: 0.21199151646294526

R-squared: -0.8189500681069464



Training model for carpark_number: TB23

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number TB23: Ridge(alpha=1000)

Model saved as model_TB23.sav

Testing MSE: 0.0268744384775553

R-squared: -1.1352791646191802

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

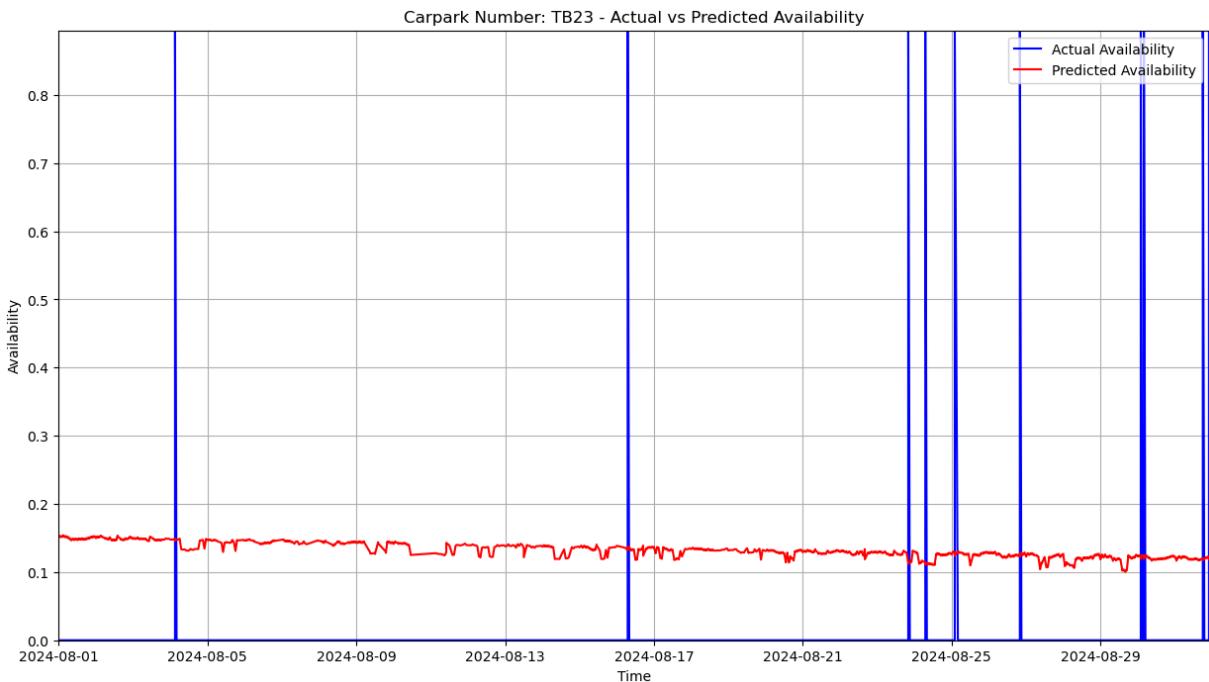
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: TB28

Fitting 3 folds for each of 6 candidates, totalling 18 fits

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

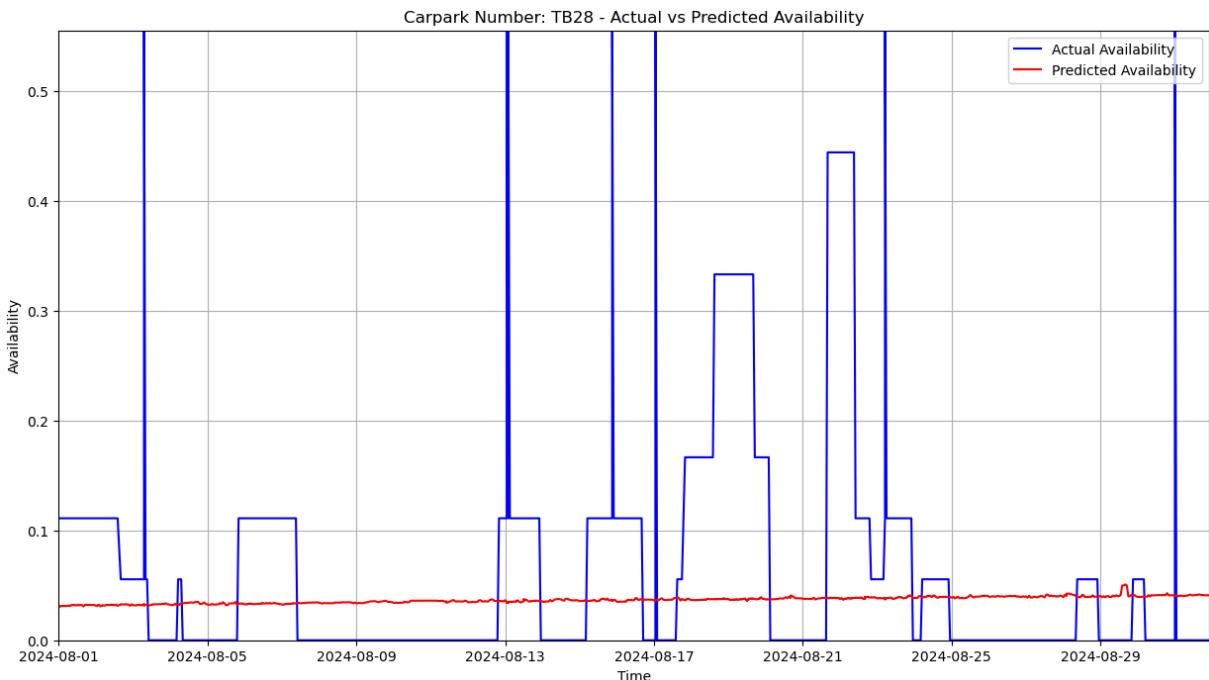
```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Best Ridge model for carpark_number TB28: Ridge(alpha=1000)

Model saved as model_TB28.sav

Testing MSE: 0.01317819224643688

R-squared: -0.08234309774626669



Training model for carpark_number: TB3

Fitting 3 folds for each of 6 candidates, totalling 18 fits

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

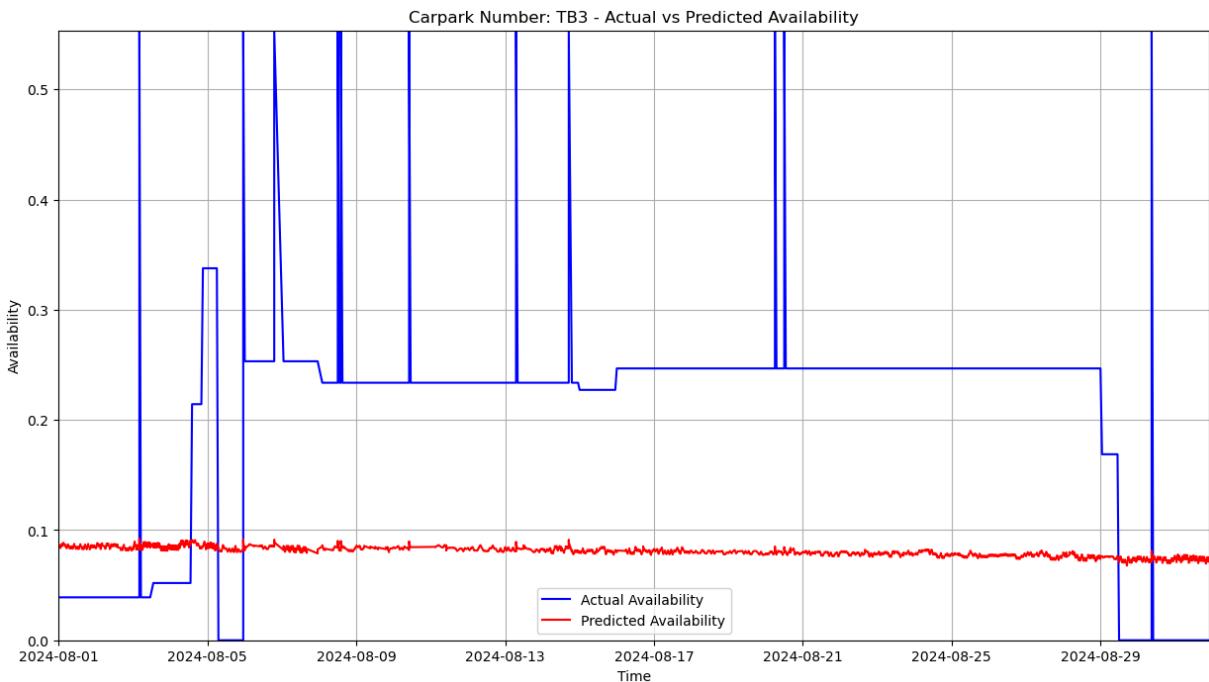
```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Best Ridge model for carpark_number TB3: Ridge(alpha=1000)

Model saved as model_TB3.sav

Testing MSE: 0.02435326204574989

R-squared: -1.2014603360008667



Training model for carpark_number: TB7

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number TB7: Ridge(alpha=10)

Model saved as model_TB7.sav

Testing MSE: 0.0031554360382613036

R-squared: -1.2834125387263562

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

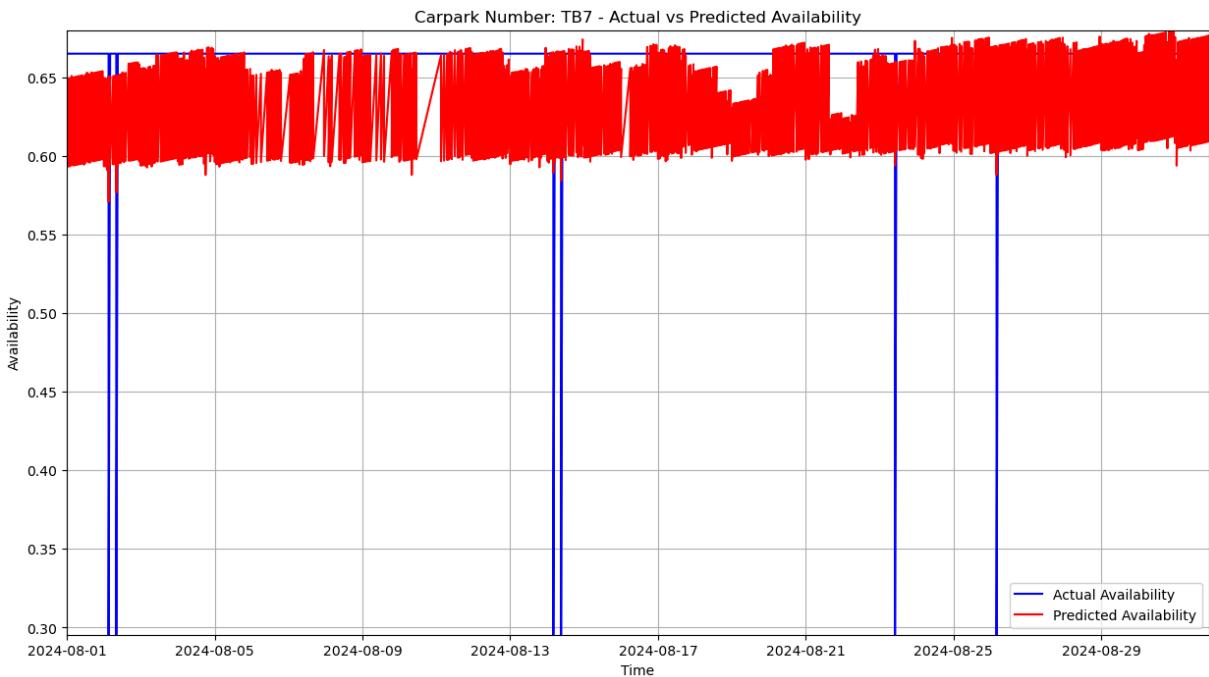
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: TB8

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

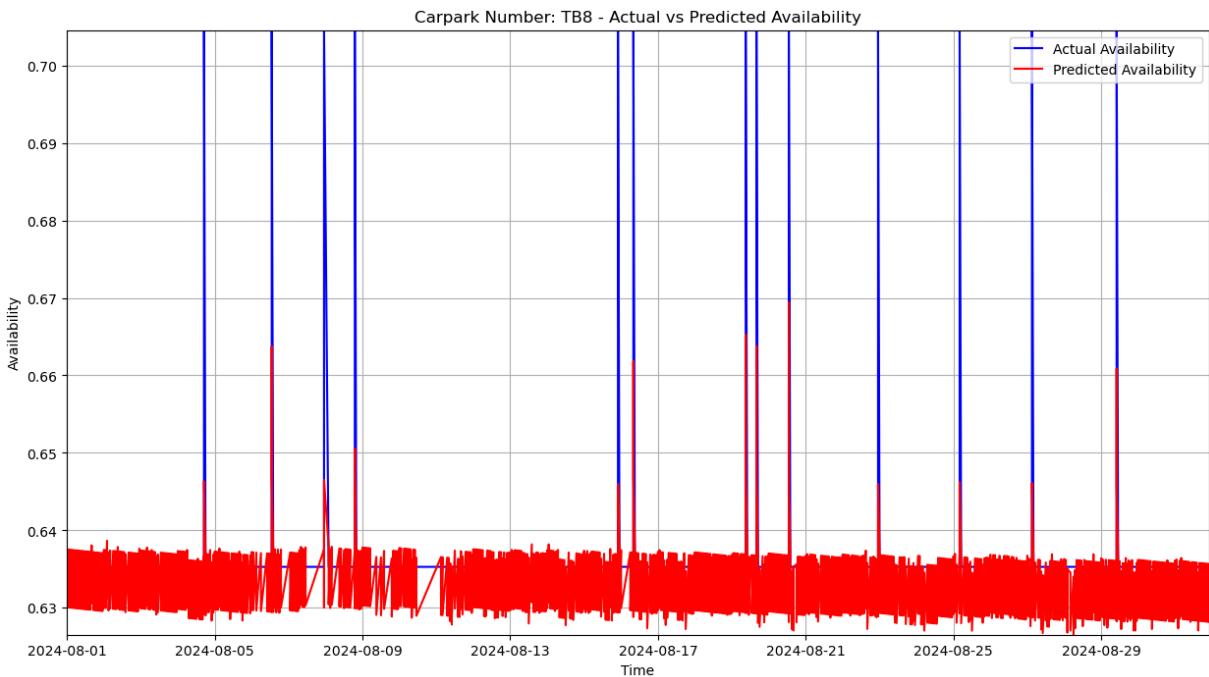
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)  
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)  
Fitting 3 folds for each of 6 candidates, totalling 18 fits  
Best Ridge model for carpark_number TB8: Ridge(alpha=0.1)
```

Model saved as model_TB8.sav
Testing MSE: 8.211168697925298e-05
R-squared: 0.07970316534353239



Training model for carpark_number: TBC2

Fitting 3 folds for each of 6 candidates, totalling 18 fits

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

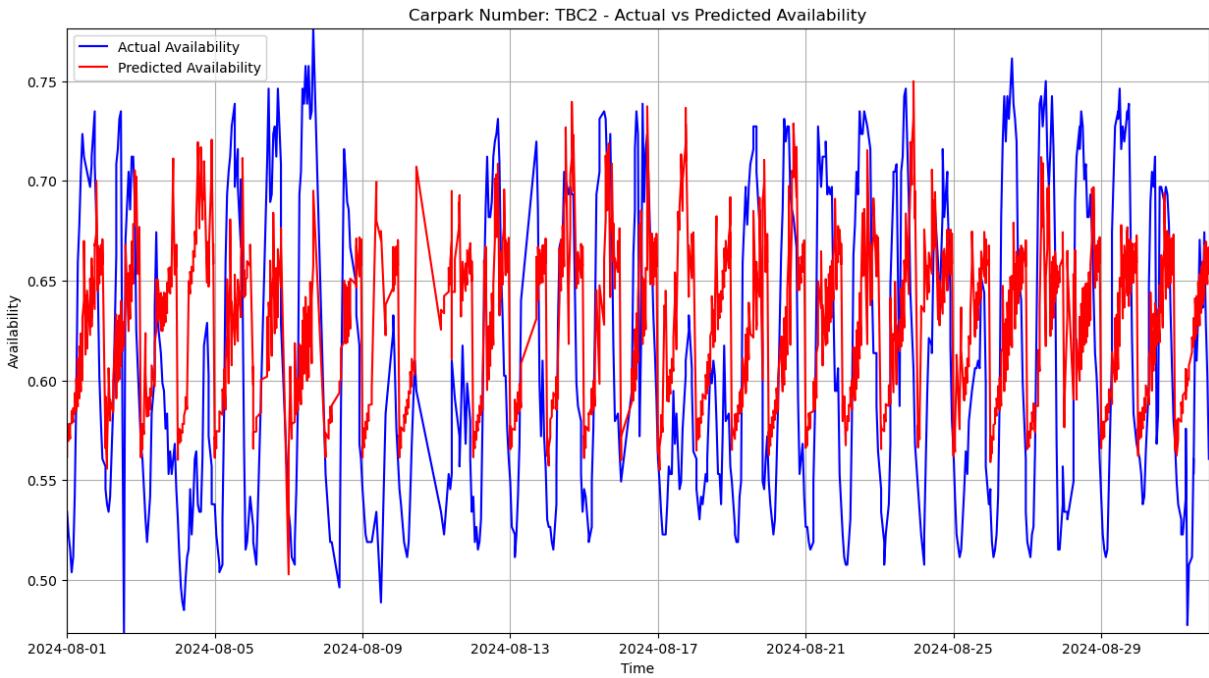
```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Best Ridge model for carpark_number TBC2: Ridge(alpha=1)

Model saved as model_TBC2.sav

Testing MSE: 0.005536152641874997

R-squared: 0.07008694652768677



Training model for carpark_number: TBC3

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number TBC3: Ridge(alpha=1000)

Model saved as model_TBC3.sav

Testing MSE: 0.013039614233494352

R-squared: -0.4562584694588532

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

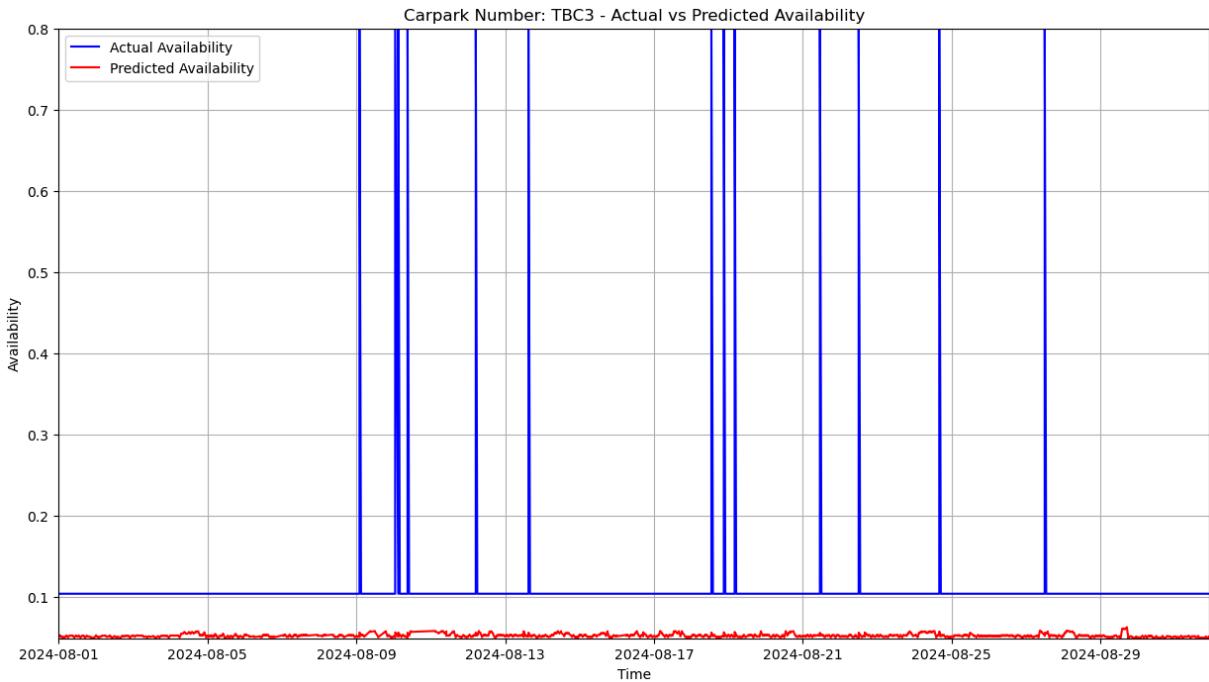
```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.
```

```
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: TBCM

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number TBCM: Ridge(alpha=1000)

Model saved as model_TBCM.sav

Testing MSE: 2.4920771976994538e-05

R-squared: -0.002070325584795585

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

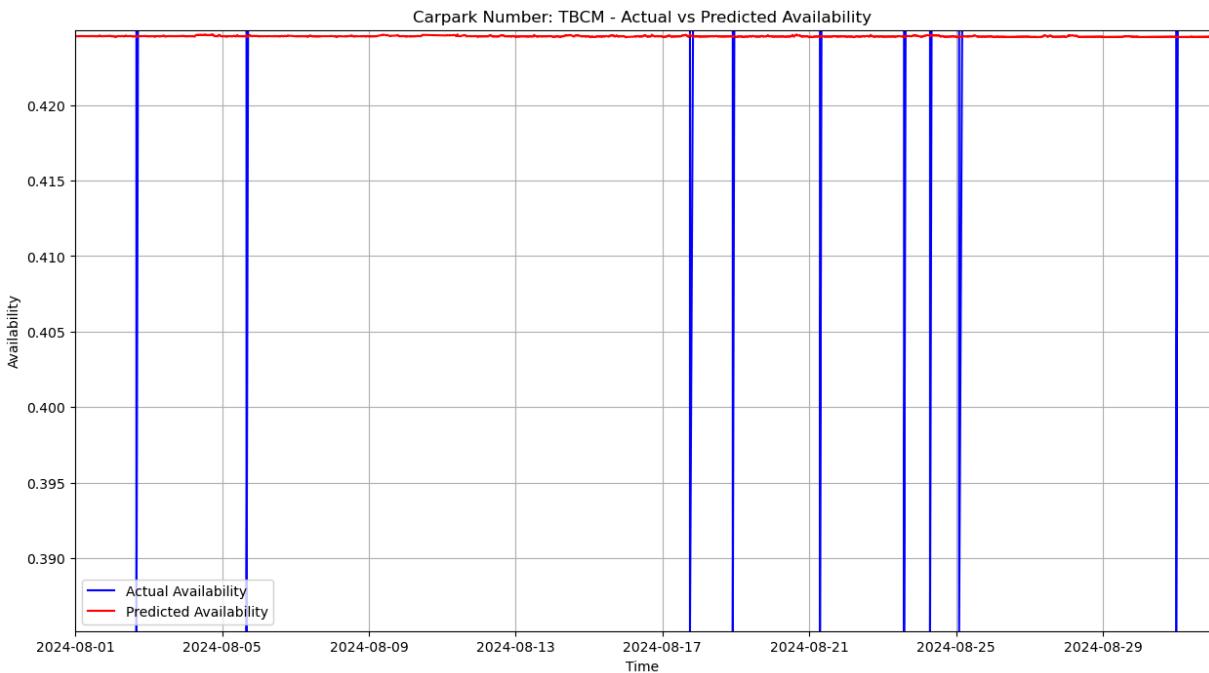
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



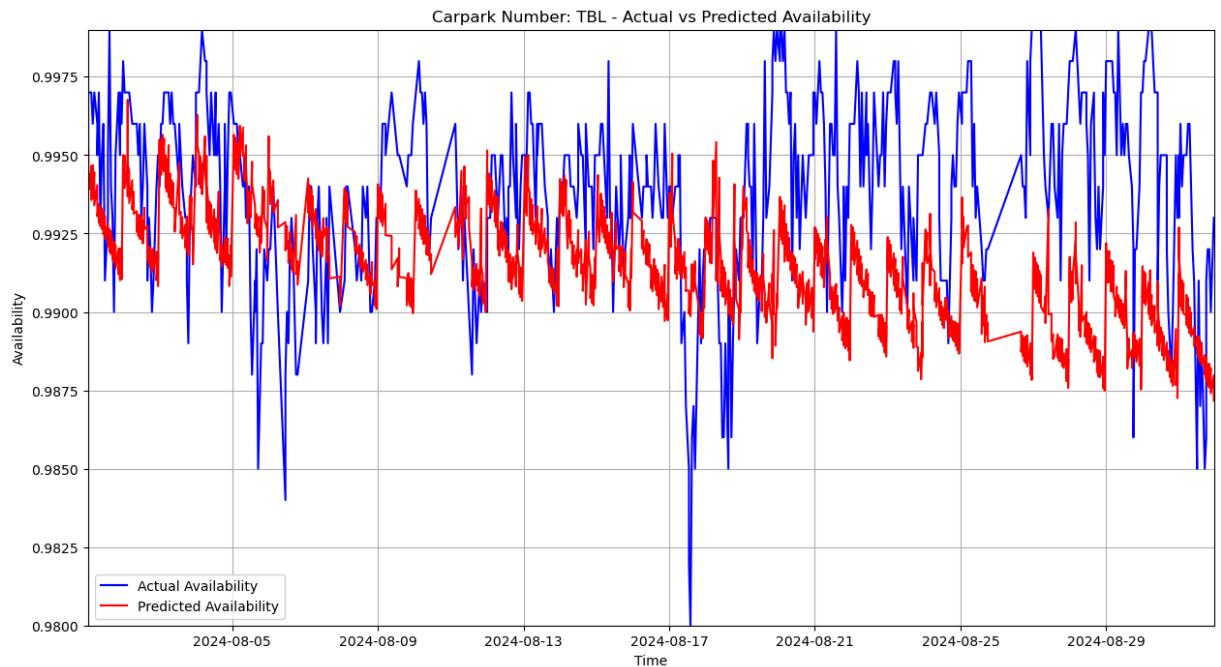
```
Training model for carpark_number: TBL
Fitting 3 folds for each of 6 candidates, totalling 18 fits
Best Ridge model for carpark_number TBL: Ridge(alpha=10)
```

```
Model saved as model_TBL.sav
Testing MSE: 1.682489718351884e-05
R-squared: -0.9154259372307252
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



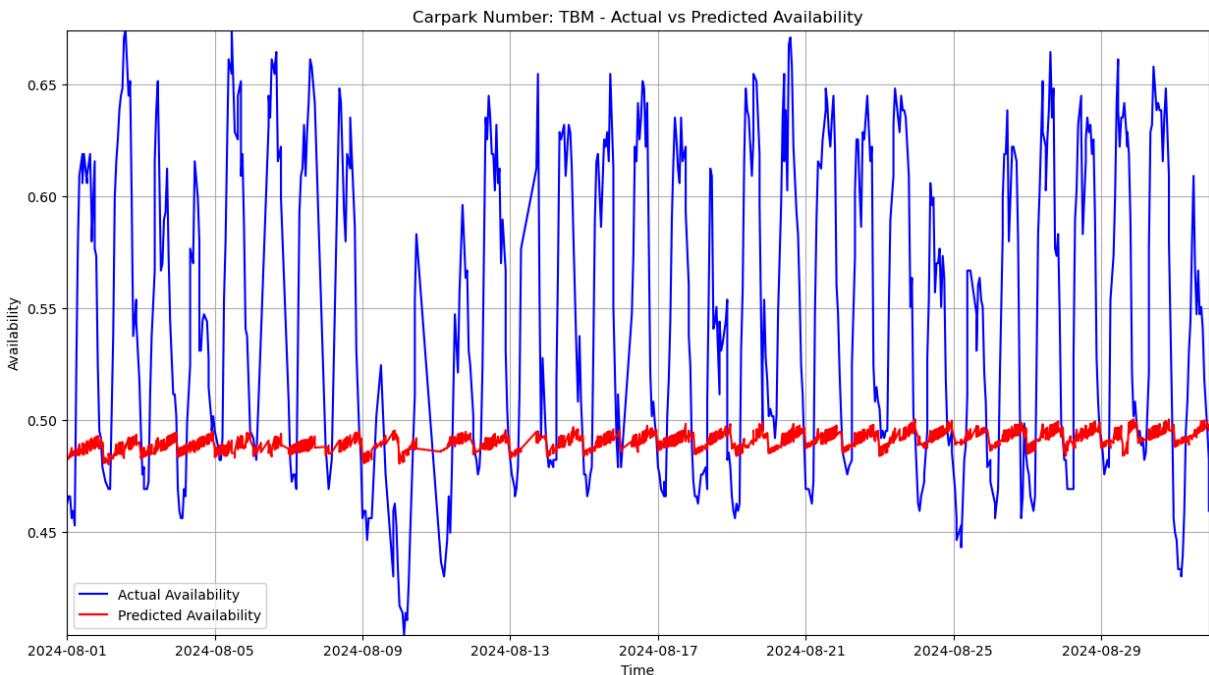
```
Training model for carpark_number: TBM
Fitting 3 folds for each of 6 candidates, totalling 18 fits
Best Ridge model for carpark_number TBM: Ridge(alpha=1000)
```

```
Model saved as model_TBM.sav
Testing MSE: 0.00788474237212633
R-squared: -0.6814254151772434
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: TBM2

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number TBM2: Ridge(alpha=10)

Model saved as model_TBM2.sav

Testing MSE: 0.00232411009721933

R-squared: 0.341519579662771

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

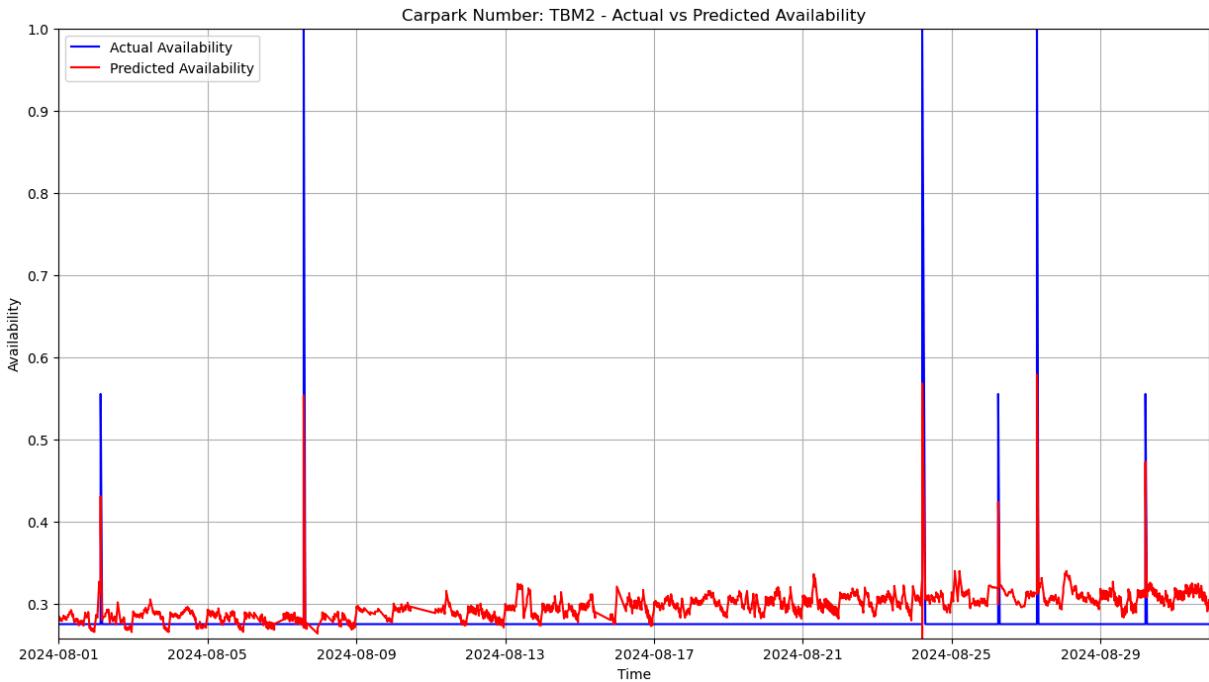
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: TBM3

Fitting 3 folds for each of 6 candidates, totalling 18 fits

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

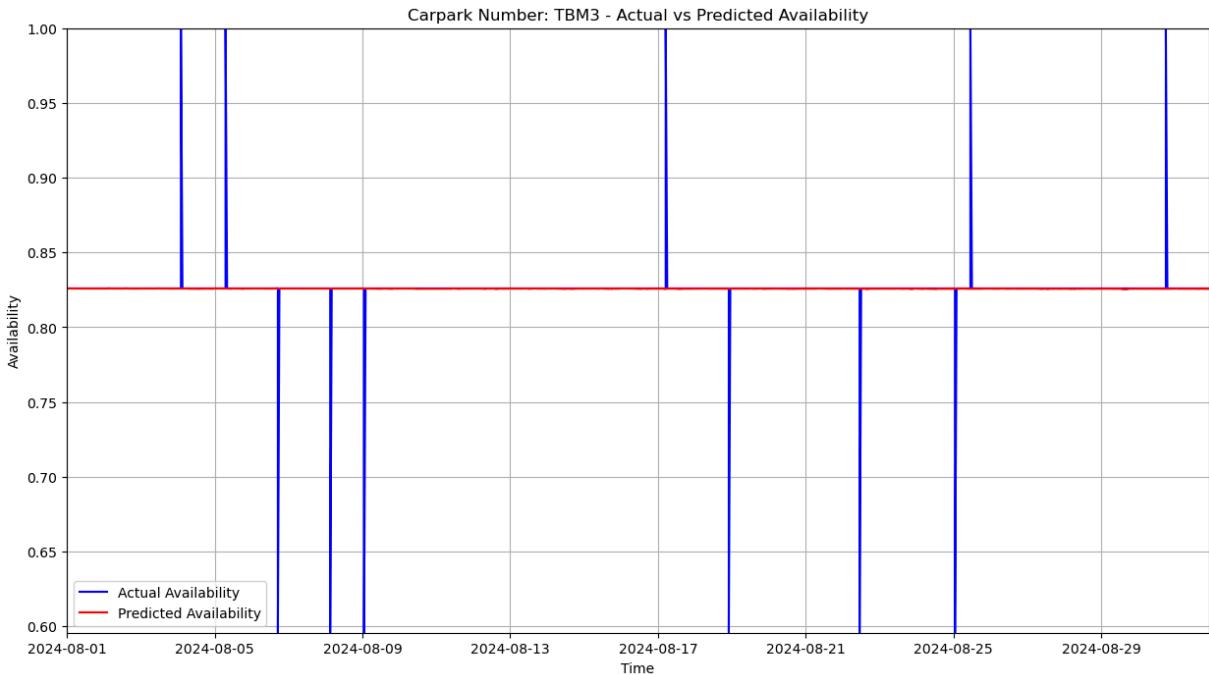
```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Best Ridge model for carpark_number TBM3: Ridge(alpha=1000)

Model saved as model_TBM3.sav

Testing MSE: 0.0006829771811742513

R-squared: -0.0009987333814525101



Training model for carpark_number: TBM4

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number TBM4: Ridge(alpha=0.01)

Model saved as model_TBM4.sav

Testing MSE: 0.0008497989698604773

R-squared: -0.7214061086397712

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

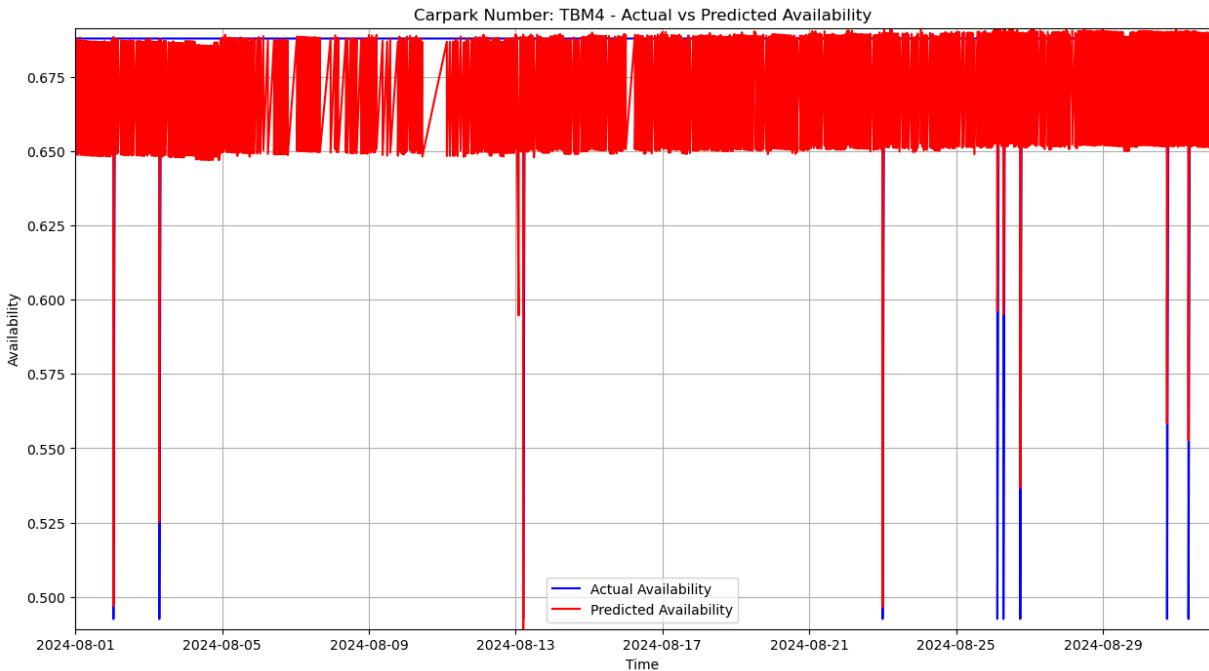
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



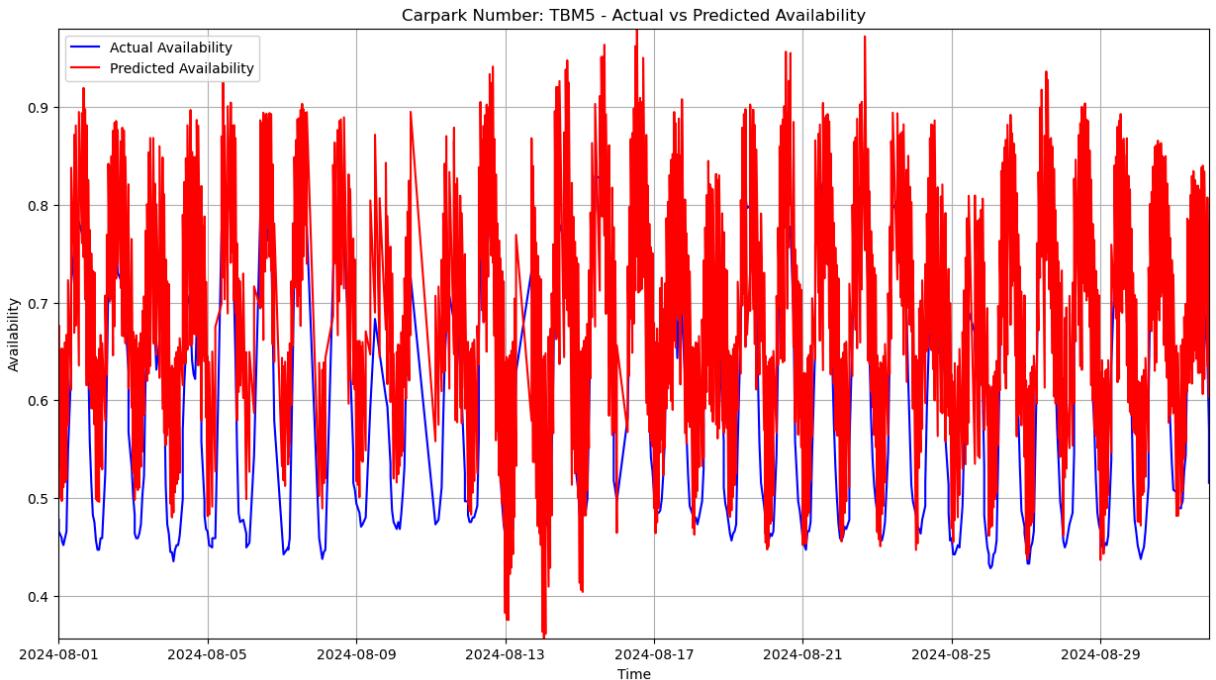
```
Training model for carpark_number: TBM5
Fitting 3 folds for each of 6 candidates, totalling 18 fits
Best Ridge model for carpark_number TBM5: Ridge(alpha=1)
```

```
Model saved as model_TBM5.sav
Testing MSE: 0.01746871992102194
R-squared: -0.05213311531376963
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: TBM6

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number TBM6: Ridge(alpha=1)

Model saved as model_TBM6.sav

Testing MSE: 0.0018808756856574774

R-squared: -0.1539662903940806

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

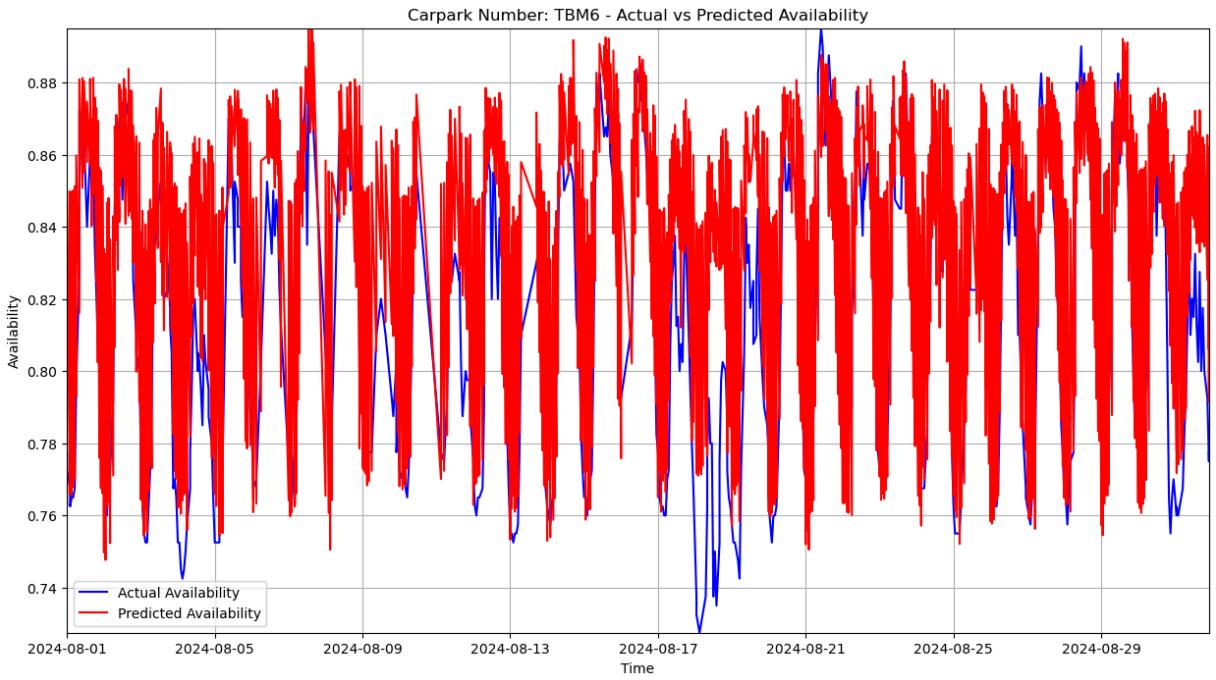
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: TBM7

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number TBM7: Ridge(alpha=0.01)

Model saved as model_TBM7.sav

Testing MSE: 0.00213866223786765

R-squared: 0.3960936004836981

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

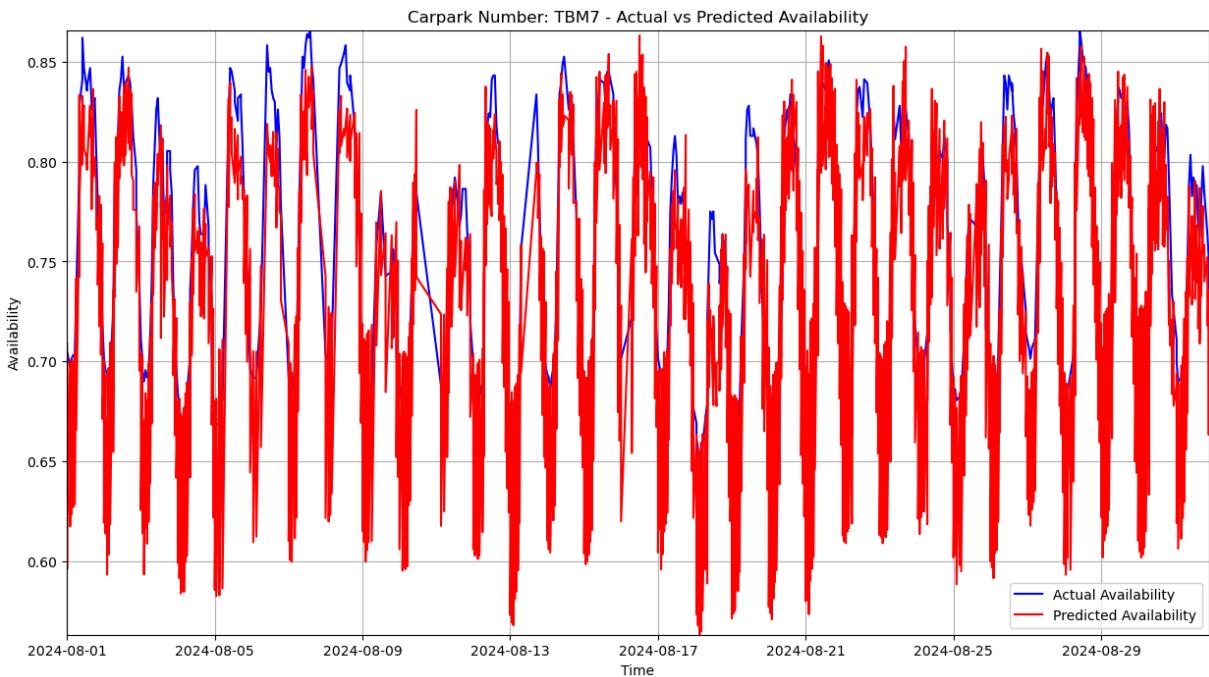
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: TBM8

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number TBM8: Ridge(alpha=10)

Model saved as model_TBM8.sav

Testing MSE: 0.01382932444401284

R-squared: 0.025716172969050932

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

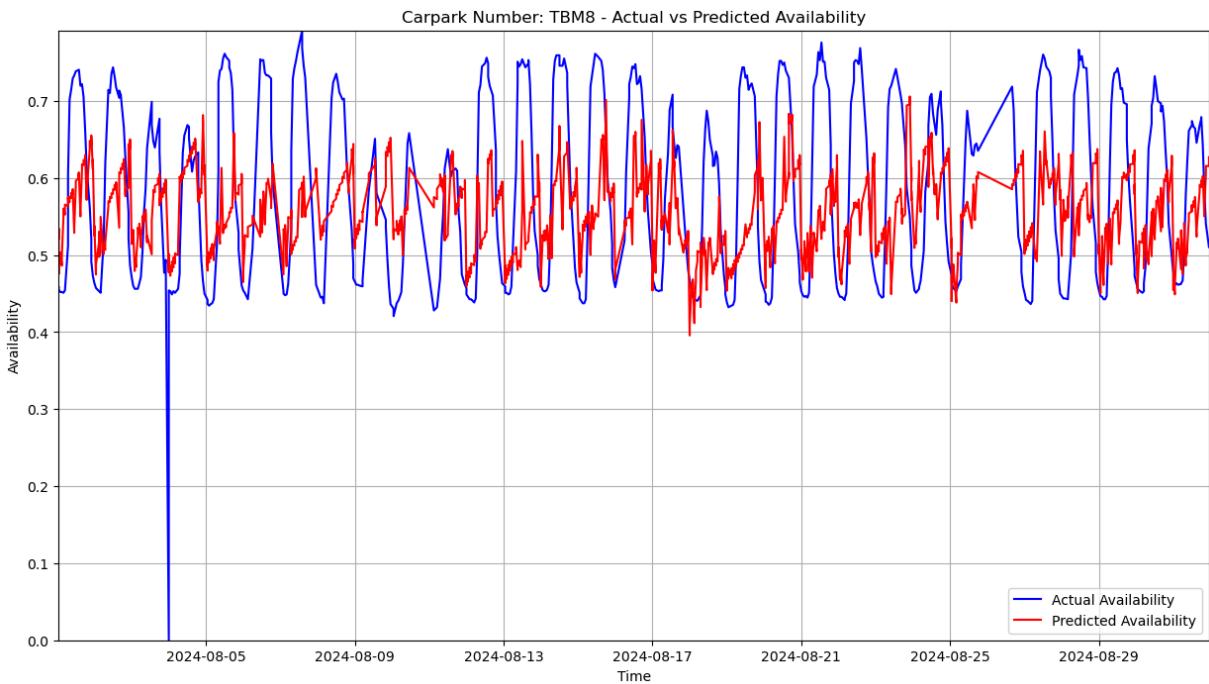
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Training model for carpark_number: TBMT

Fitting 3 folds for each of 6 candidates, totalling 18 fits

Best Ridge model for carpark_number TBMT: Ridge(alpha=100)

Model saved as model_TBMT.sav

Testing MSE: 0.003915815203924017

R-squared: -0.33827316831619303

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:29: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

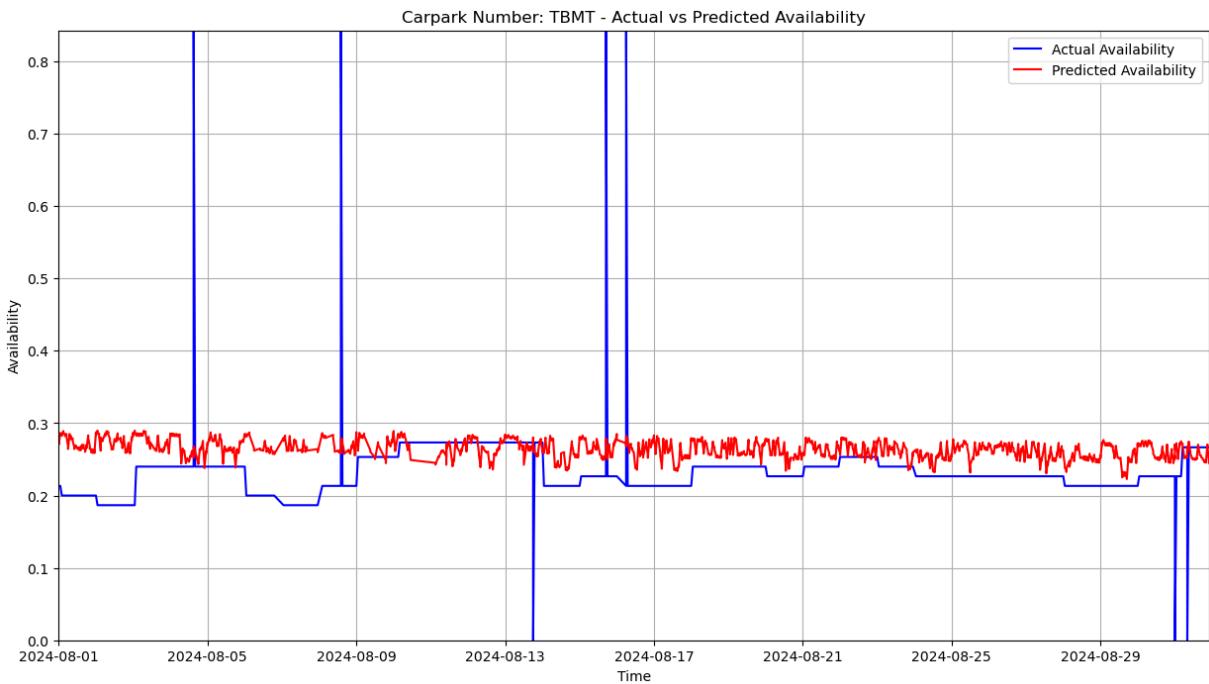
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/3519738701.py:30: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Summary of results:

	carpark_number	best_model	test_mse	r2
0	AR1L	Ridge(alpha=1000)	0.008372	-0.008455
1	AR1M	Ridge(alpha=0.01)	0.003378	-0.022399
2	AR2L	Ridge(alpha=1000)	0.035711	-0.048130
3	AR2M	Ridge(alpha=10)	0.011368	0.179556
4	AR5M	Ridge(alpha=10)	0.001192	-16.692490
..
168	TBM5	Ridge(alpha=1)	0.017469	-0.052133
169	TBM6	Ridge(alpha=1)	0.001881	-0.153966
170	TBM7	Ridge(alpha=0.01)	0.002139	0.396094
171	TBM8	Ridge(alpha=10)	0.013829	0.025716
172	TBMT	Ridge(alpha=100)	0.003916	-0.338273

[173 rows x 4 columns]

Method 2 Random Forest

In [93]:

```
import pandas as pd
import numpy as np
from sklearn.ensemble import RandomForestRegressor
from sklearn.metrics import mean_squared_error, r2_score
from sklearn.preprocessing import MinMaxScaler
import matplotlib.pyplot as plt

# Features and target column
features = ['day', 'hour', 'lag_1', 'lag_24', 'lag_168',
            'forecast_Cloudy', 'forecast_Fair',
            'forecast_HeavyRain', 'forecast_LightRain']
target = 'availability'

# Group the carpark_train data by 'carpark_number'
grouped = carpark_train.groupby('carpark_number')
```

```

results = []

# Loop through each group in carpark_train
for carpark_number, group in grouped:
    print(f"Training model for carpark_number: {carpark_number}")

    # Extract the corresponding test data from aug_carpark_2024
    test_data = aug_carpark_2024[aug_carpark_2024['carpark_number'] == carpark_number]
    if test_data.empty:
        print(f"No test data found for carpark_number {carpark_number}, skipping")
        continue

    # Validate and clip day/hour columns to avoid datetime issues
    group['day'] = group['day'].clip(lower=1, upper=31)
    group['hour'] = group['hour'].clip(lower=0, upper=23)
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)

    # Split features and target
    X_train = group[features]
    y_train = group[target]
    X_test = test_data[features]
    y_test = test_data[target]

    # Scale the features and target
    scaler_X = MinMaxScaler()
    scaler_y = MinMaxScaler()

    X_train_scaled = scaler_X.fit_transform(X_train)
    X_test_scaled = scaler_X.transform(X_test)
    y_train_scaled = scaler_y.fit_transform(y_train.values.reshape(-1, 1)).flatten()
    y_test_scaled = scaler_y.transform(y_test.values.reshape(-1, 1)).flatten()

    # Define and train the Random Forest model
    rf_model = RandomForestRegressor(
        n_estimators=100,      # Number of trees
        max_depth=10,         # Maximum depth of trees
        random_state=42       # For reproducibility
    )
    rf_model.fit(X_train_scaled, y_train_scaled)

    # Testing
    y_test_pred = rf_model.predict(X_test_scaled)
    y_test_actual = scaler_y.inverse_transform(y_test_pred.reshape(-1, 1))
    y_test_actual_true = scaler_y.inverse_transform(y_test_scaled.reshape(-1, 1))

    test_mse = mean_squared_error(y_test_actual_true, y_test_actual)
    r2 = r2_score(y_test_actual_true, y_test_actual)

    print(f"Testing MSE: {test_mse}")
    print(f"R-squared: {r2}\n")

    results.append({
        'carpark_number': carpark_number,
        'test_mse': test_mse,
        'r2': r2
    })

```

```

    })

    test_time = pd.to_datetime(
        "2024-08-" + test_data['day'].astype(str) + ' ' + test_data['hour'],
        errors='coerce'
    )

    min_time = test_time.min()
    max_time = test_time.max()
    min_avail = min(y_test_actual_true.min(), y_test_actual.min())
    max_avail = max(y_test_actual_true.max(), y_test_actual.max())

    # Plot the actual and predicted availability on the same graph
    plt.figure(figsize=(14, 7))
    plt.plot(test_time, y_test_actual_true, "-b", label="Actual Availability")
    plt.plot(test_time, y_test_actual, "-r", label="Predicted Availability")
    plt.xlabel("Time")
    plt.ylabel("Availability")
    plt.title(f"Carpark Number: {carpark_number} - Actual vs Predicted Availability")
    plt.xlim(min_time, max_time) # Set same x-axis limits for both plots
    plt.ylim(min_avail, max_avail) # Set same y-axis limits for both plots
    plt.legend()
    plt.grid()
    plt.show()

    model_folder = "data/RF_models"
    model_name = f"model_{carpark_number}.sav"
    model_path = os.path.join(model_folder, model_name)
    pickle.dump(best_ridge, open(model_path, 'wb'))
    print(f"Model saved as {model_name}")

    # Summarize results
    results_df = pd.DataFrame(results)
    print("Summary of results:")
    print(results_df)

```

Training model for carpark_number: AR1L
Testing MSE: 0.009983713384864241
R-squared: -0.20254295096012198

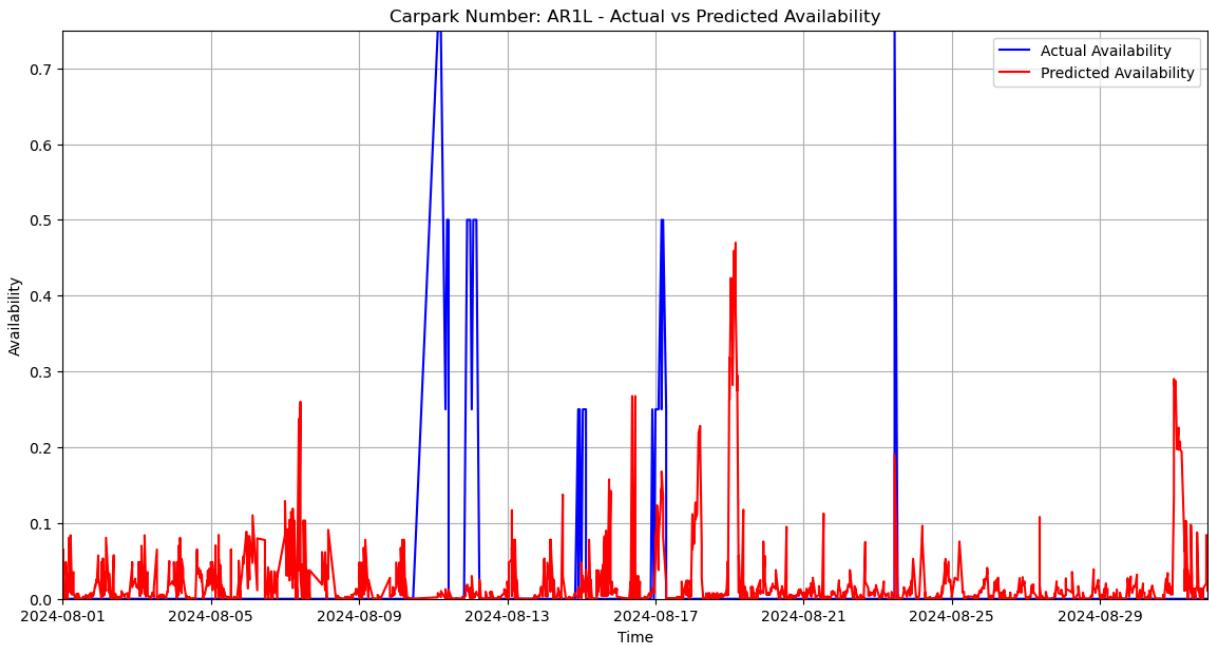
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:  

A value is trying to be set on a copy of a slice from a DataFrame.  

Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)

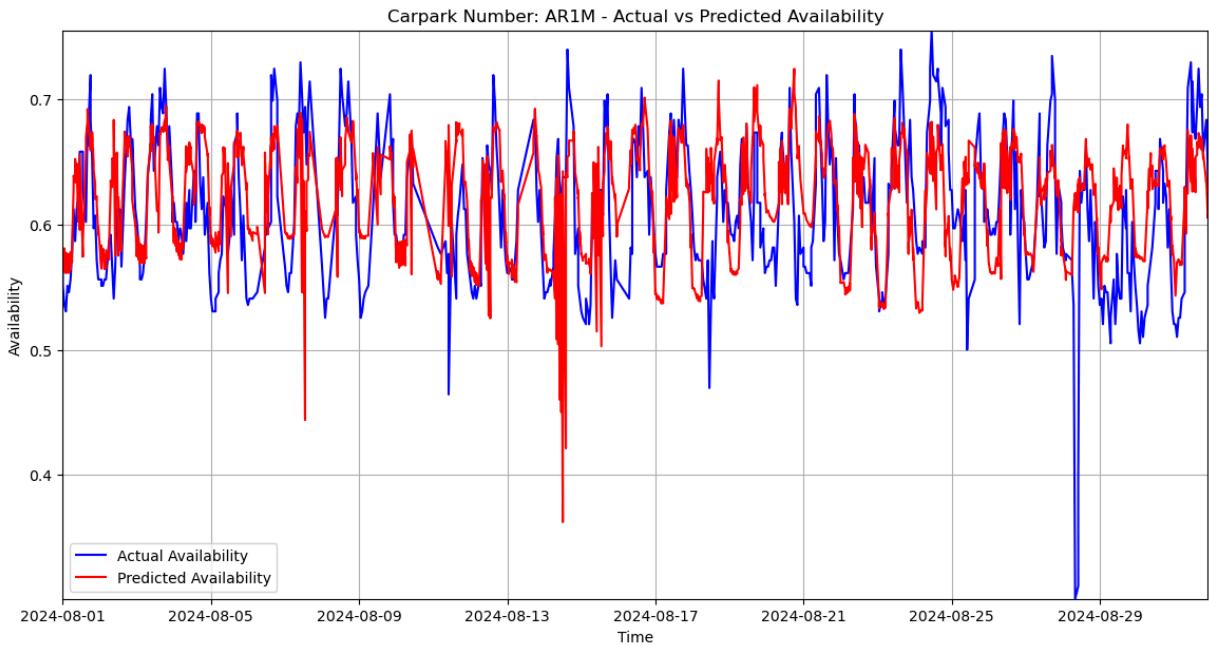


```
Model saved as model_AR1L.sav
Training model for carpark_number: AR1M
Testing MSE: 0.002778547089286188
R-squared: 0.1589553593101044
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

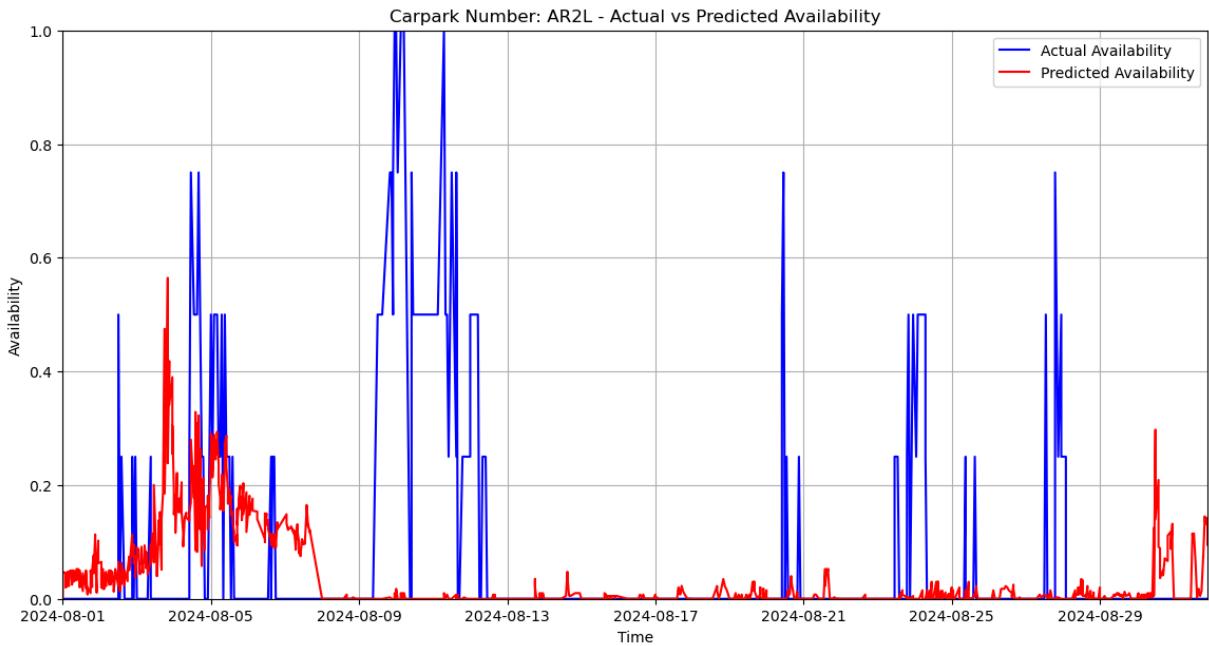


Model saved as model_AR1M.sav
 Training model for carpark_number: AR2L
 Testing MSE: 0.03724972328297673
 R-squared: -0.09327715599982045

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Model saved as `model_AR2L.sav`

Training model for carpark_number: AR2M

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
```

Try using `.loc[row_indexer,col_indexer] = value` instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
```

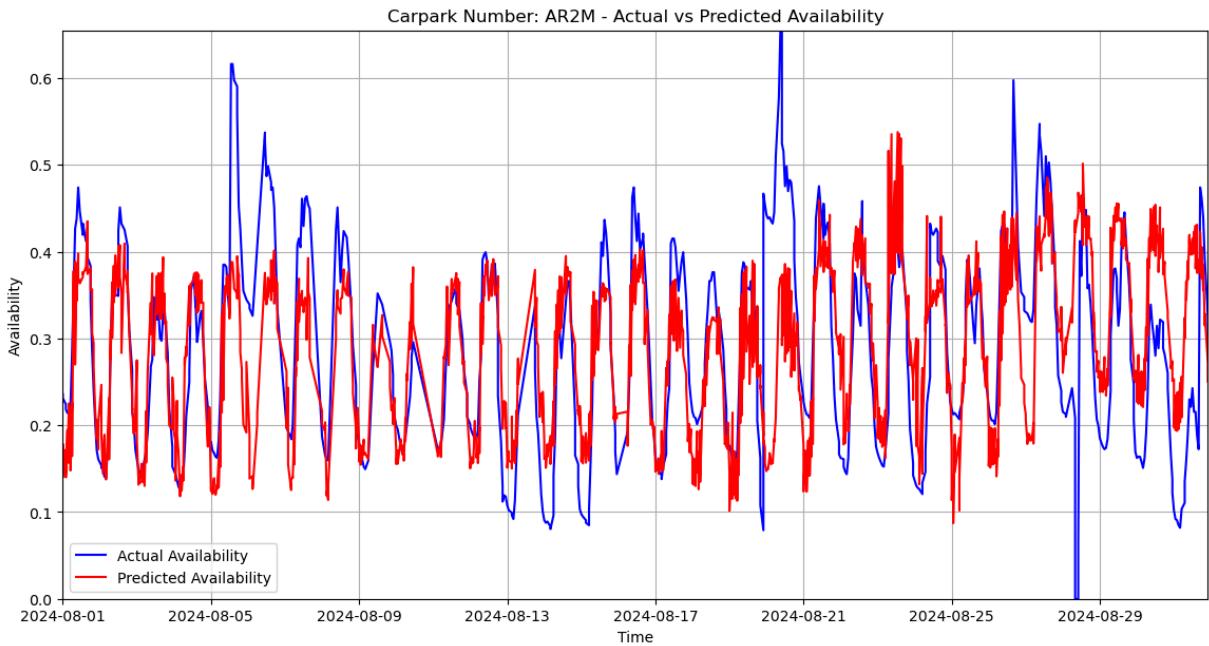
Try using `.loc[row_indexer,col_indexer] = value` instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.008477093591852228

R-squared: 0.3881811751398825

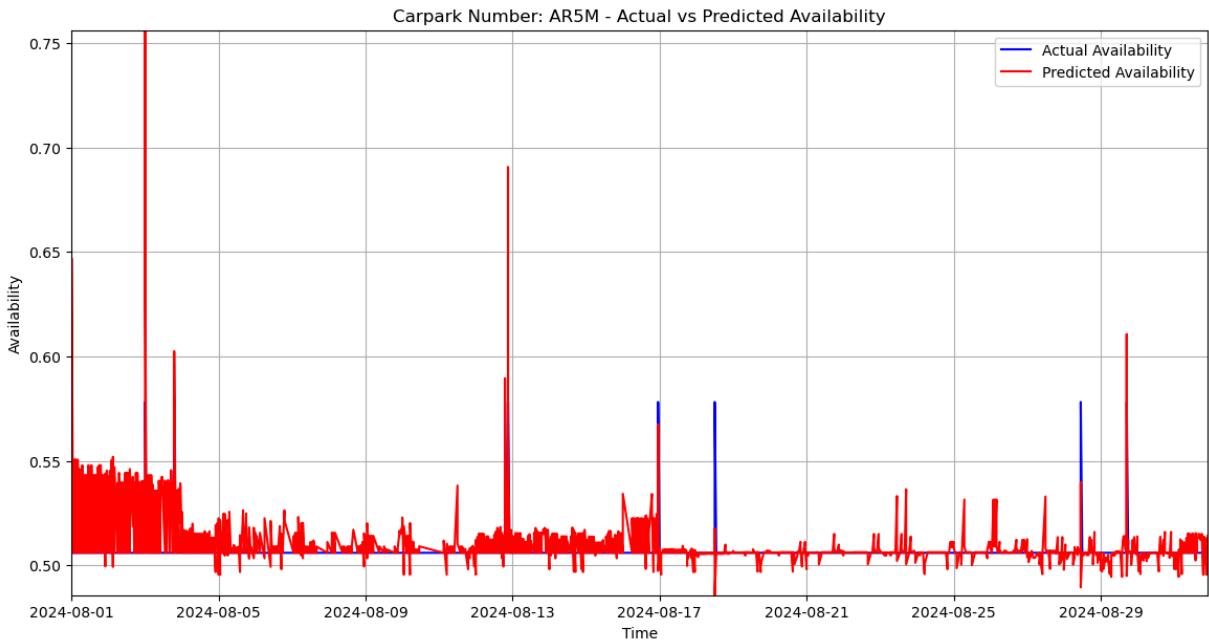


Model saved as model_AR2M.sav
 Training model for carpark_number: AR5M
 Testing MSE: 0.00017568412682535714
 R-squared: -1.6078815018483943

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



```
Model saved as model_AR5M.sav
Training model for carpark_number: AR7L
Testing MSE: 0.09655613193873375
R-squared: 0.17791831096015354
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

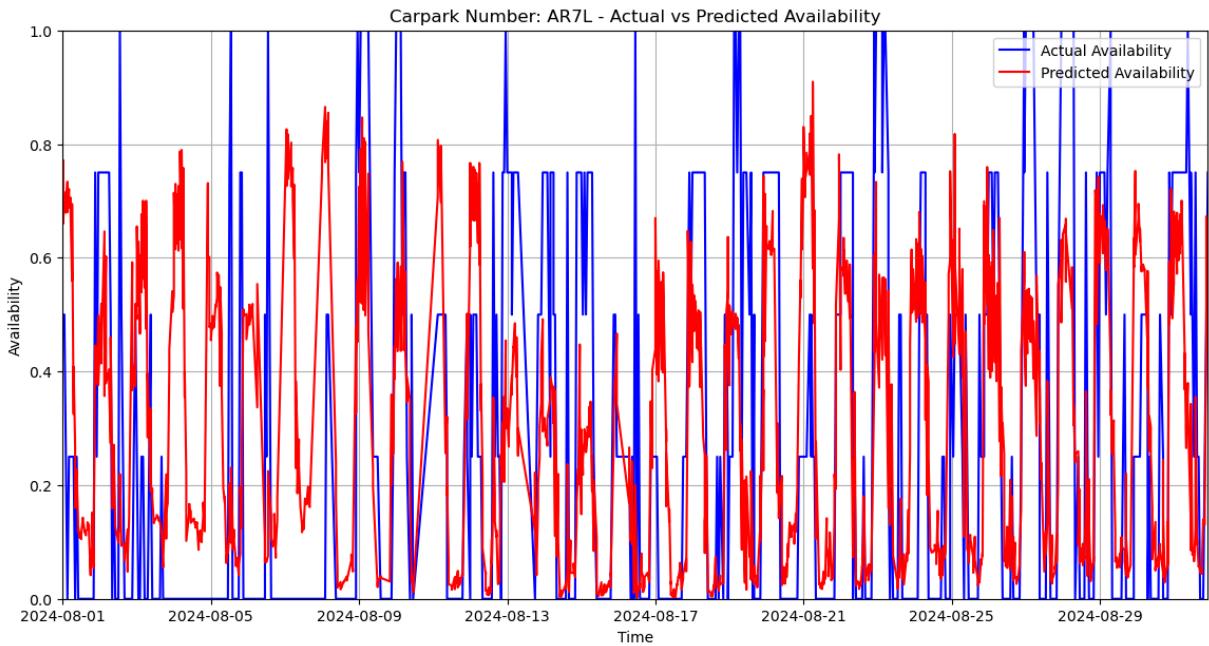
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

```
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Model saved as model_AR7L.sav

Training model for carpark_number: AR7M

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

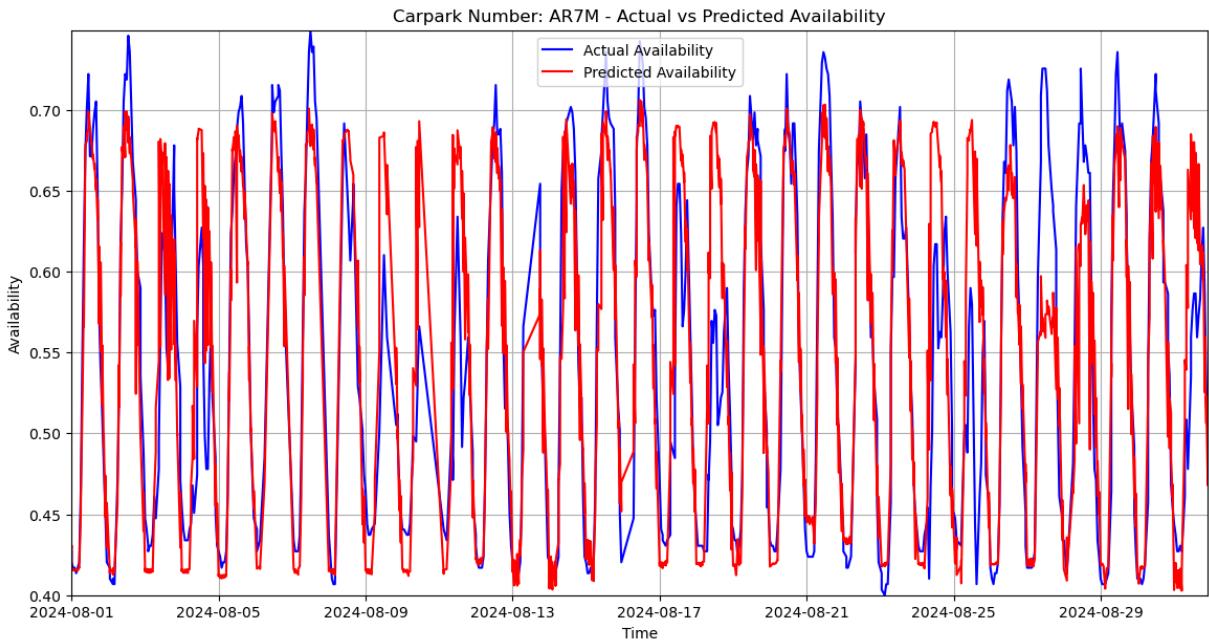
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.002830615483446492

R-squared: 0.7466997793038486



```
Model saved as model_AR7M.sav
Training model for carpark_number: AR9
Testing MSE: 0.0031902989670514223
R-squared: 0.2328100270909883
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
```

```
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

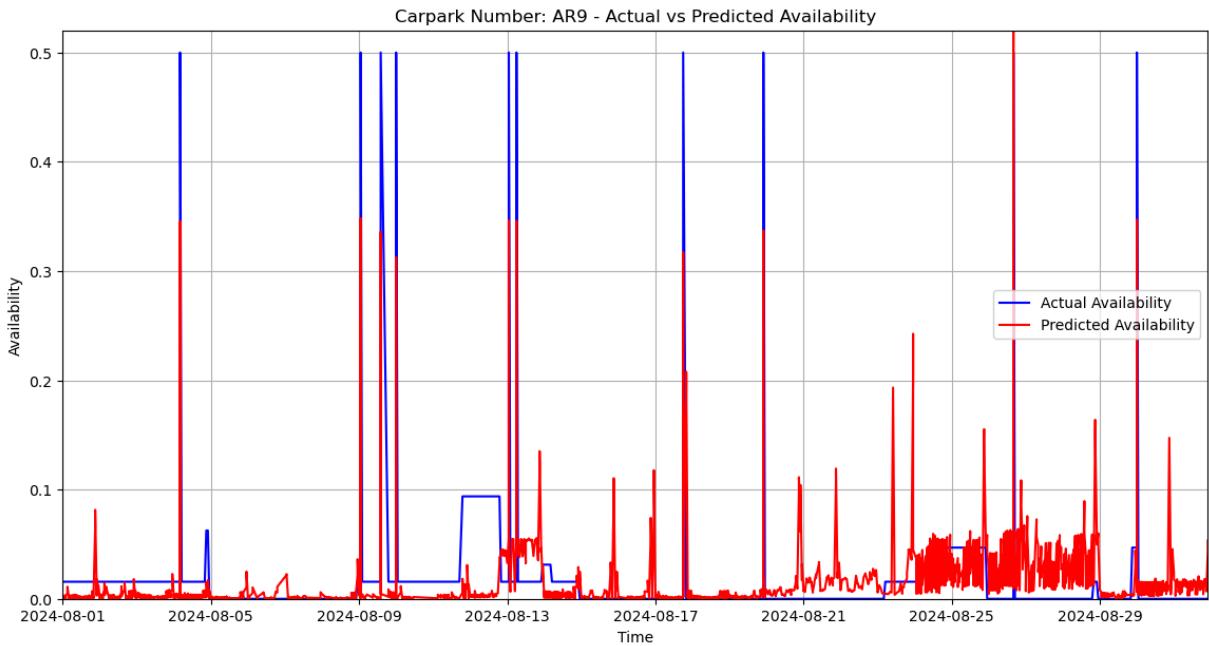
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
```

```
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

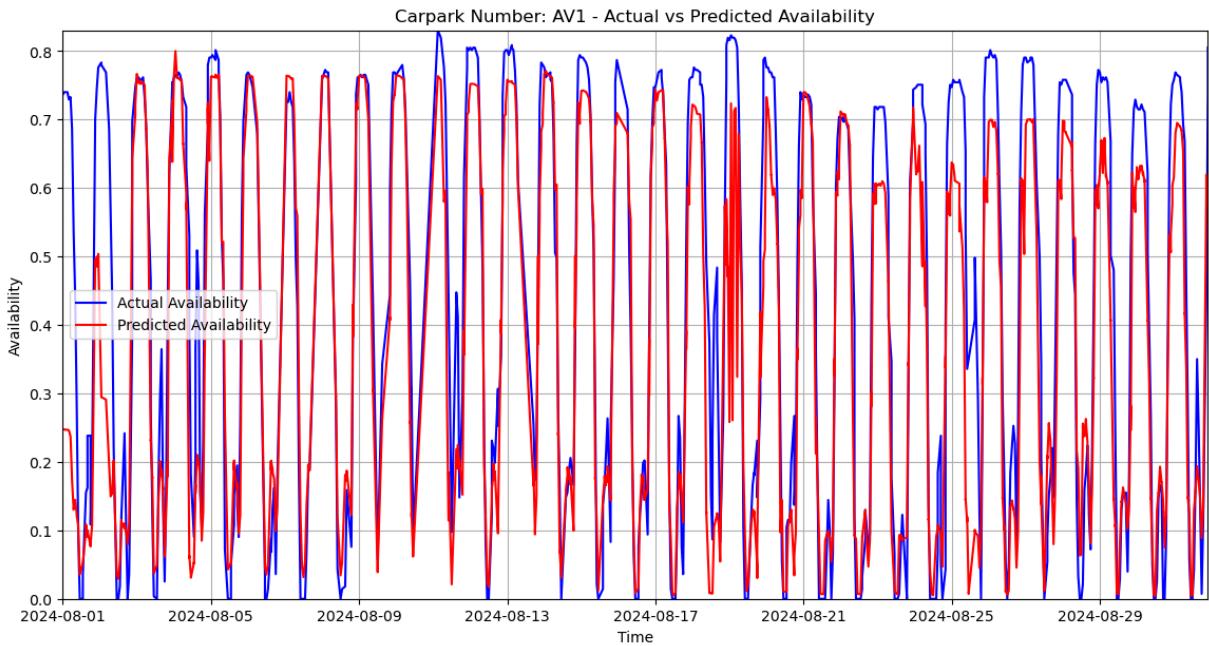


```
Model saved as model_AR9.sav
Training model for carpark_number: AV1
Testing MSE: 0.020158078987368995
R-squared: 0.7754890623504471
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Model saved as model_AV1.sav

Training model for carpark_number: BM1

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

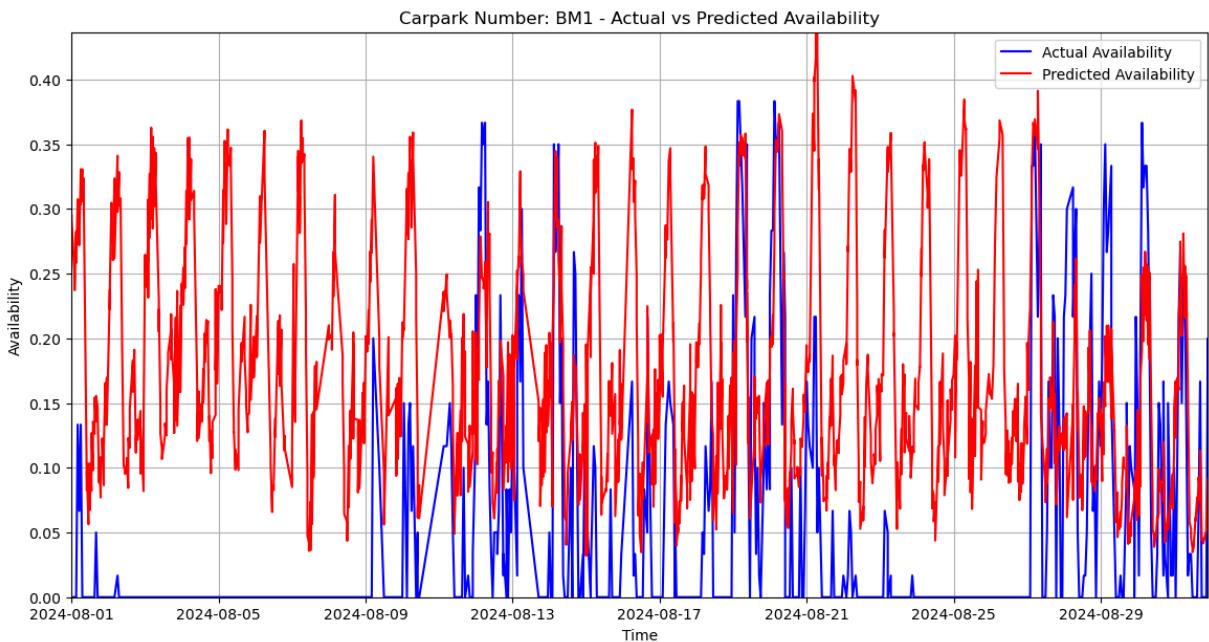
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.026646992317185716

R-squared: -1.9854723725934393



```
Model saved as model_BM1.sav
```

```
Training model for carpark_number: BM10
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

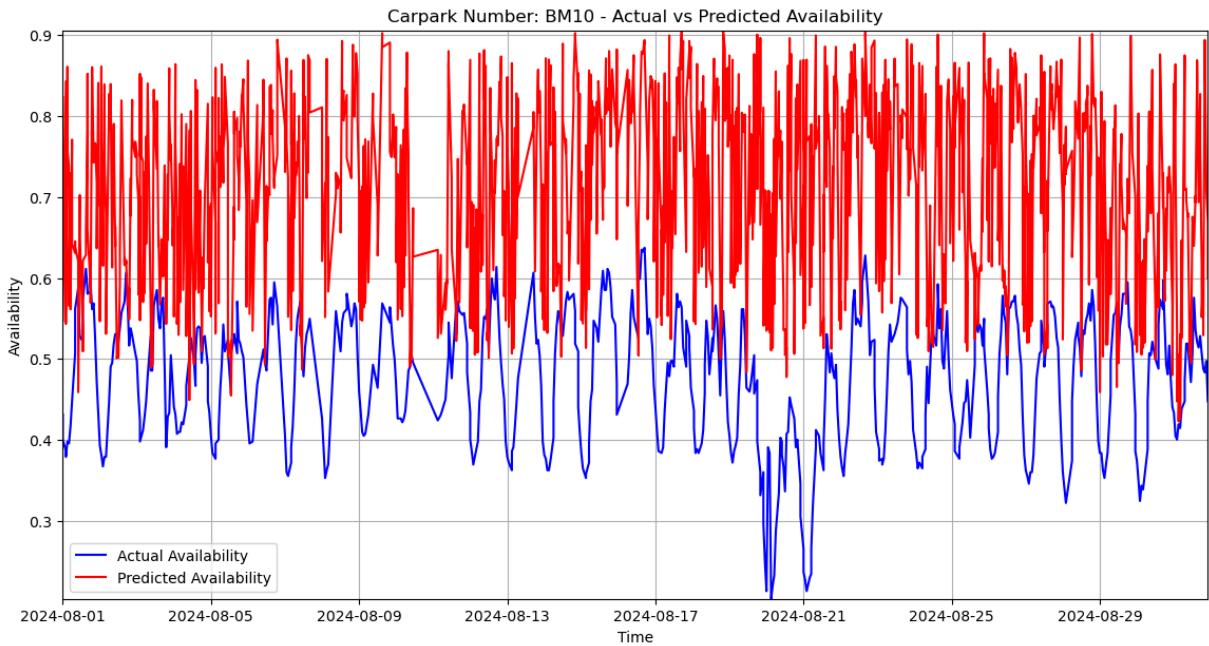
```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

```
Testing MSE: 0.07472922258276367
```

```
R-squared: -10.571065839040767
```



Model saved as `model_BM10.sav`

Training model for carpark_number: BM13

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using `.loc[row_indexer,col_indexer] = value` instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

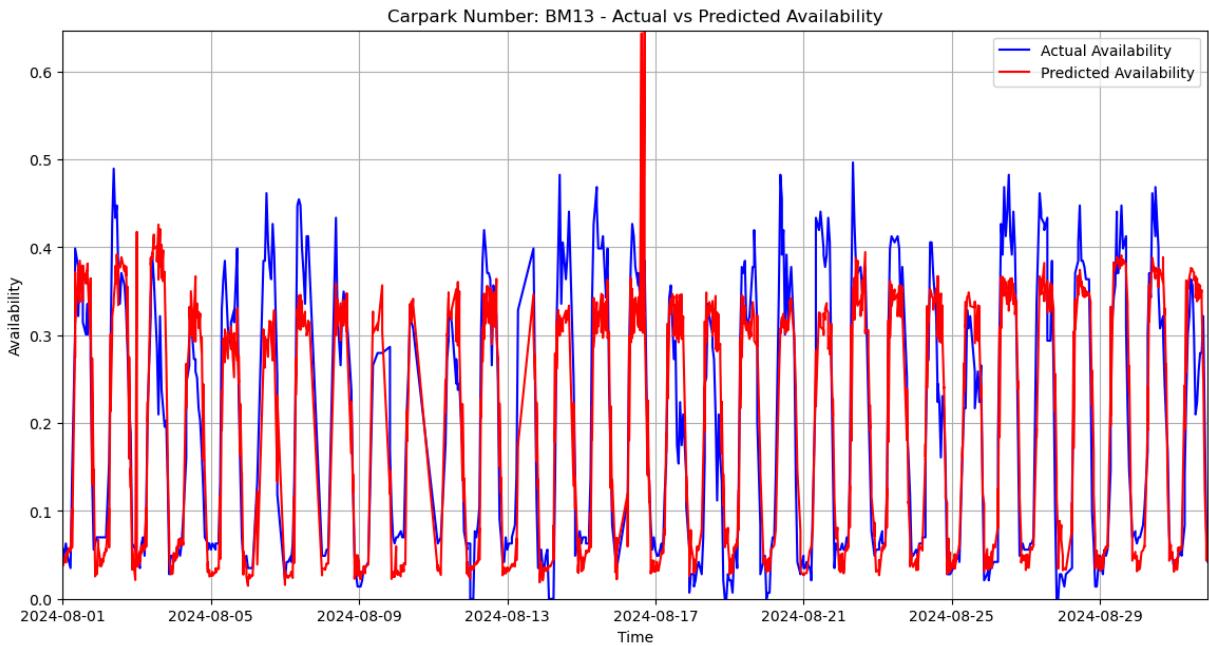
Try using `.loc[row_indexer,col_indexer] = value` instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.004051726046726894

R-squared: 0.8148432254044947



Model saved as model_BM13.sav

Training model for carpark_number: BM14

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

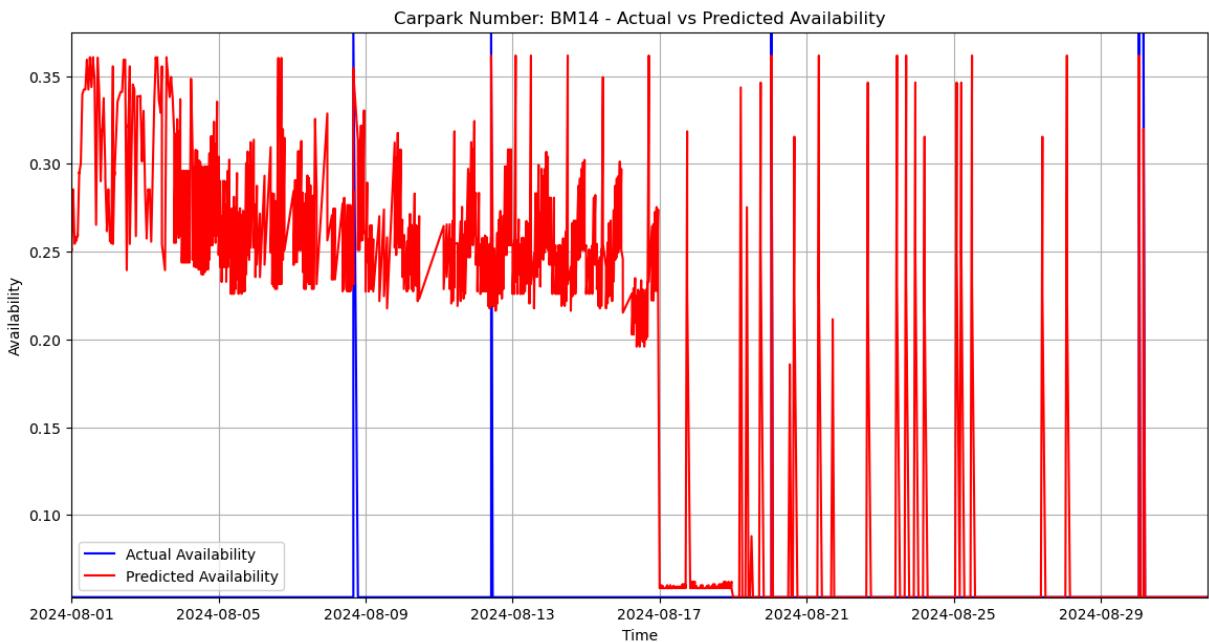
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.024849154836095715

R-squared: -31.994578064070865



```
Model saved as model_BM14.sav
Training model for carpark_number: BM19
Testing MSE: 0.0008678073364398371
R-squared: -3.628489297386844
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
```

```
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

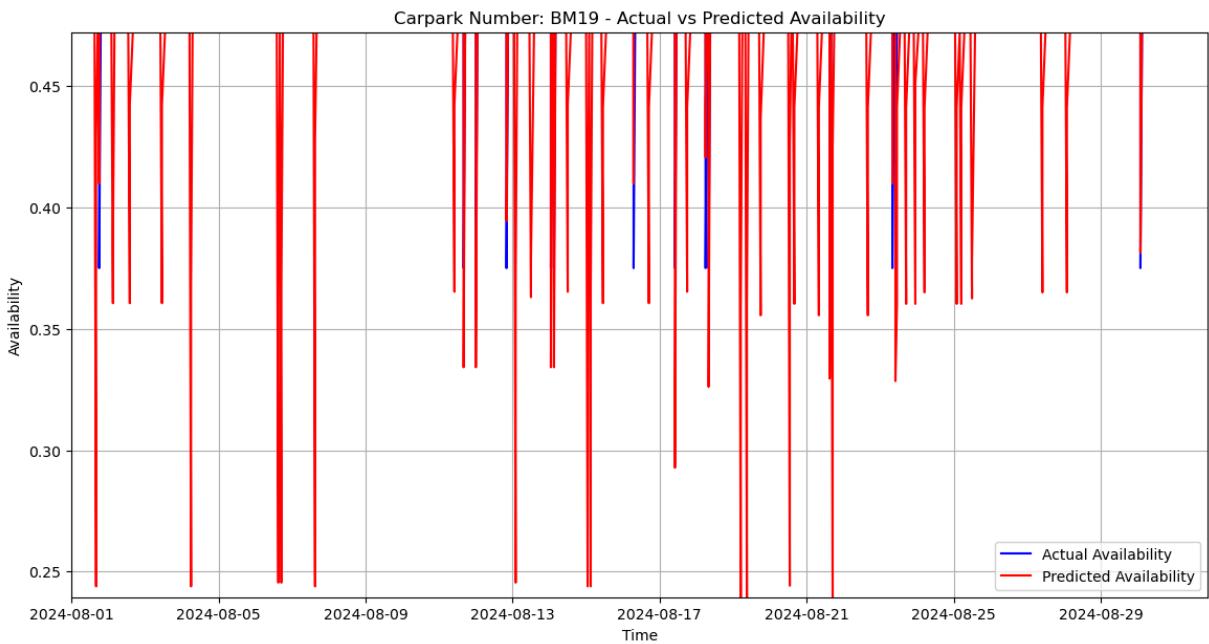
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
```

```
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



```
Model saved as model_BM19.sav
```

```
Training model for carpark_number: BM2
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

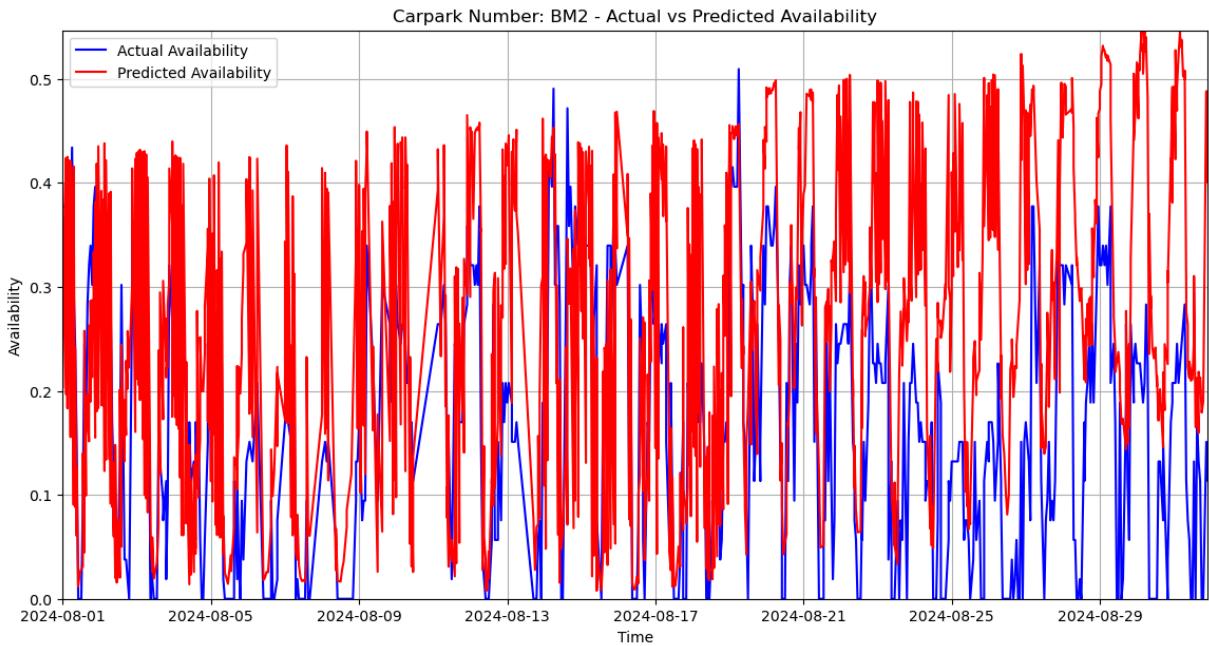
```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

```
Testing MSE: 0.025865961184083852
```

```
R-squared: -0.7198685019721813
```

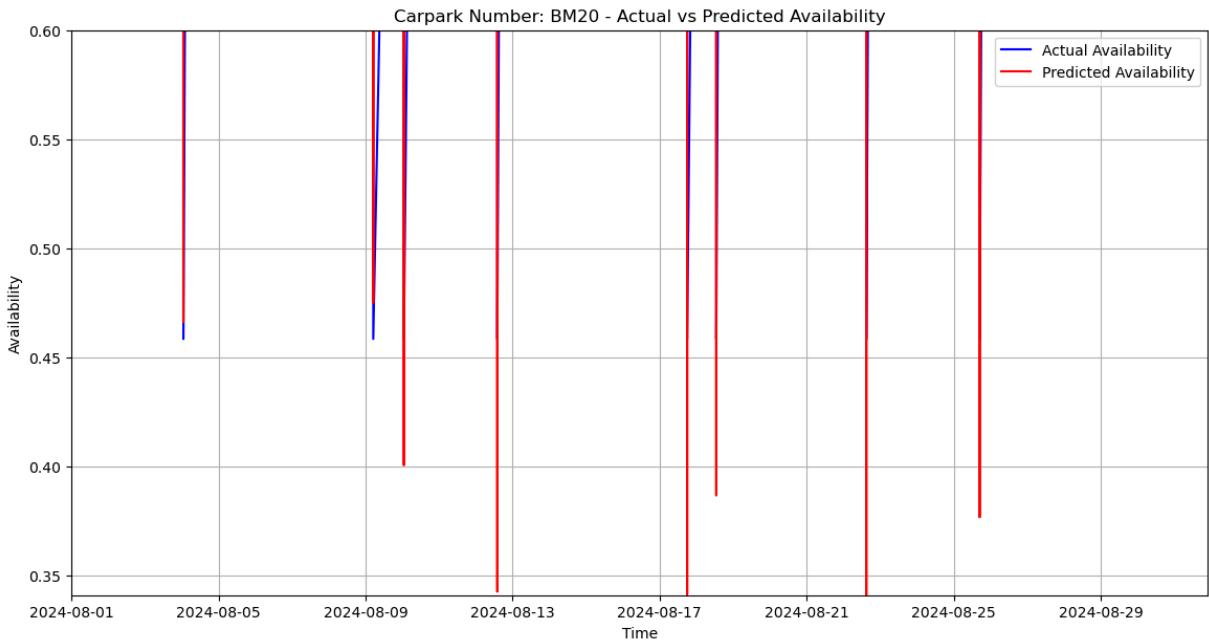


```
Model saved as model_BM2.sav
Training model for carpark_number: BM20
Testing MSE: 0.0001872608187666909
R-squared: 0.27882470405223103
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



```
Model saved as model_BM20.sav
```

```
Training model for carpark_number: BM26
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

```
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

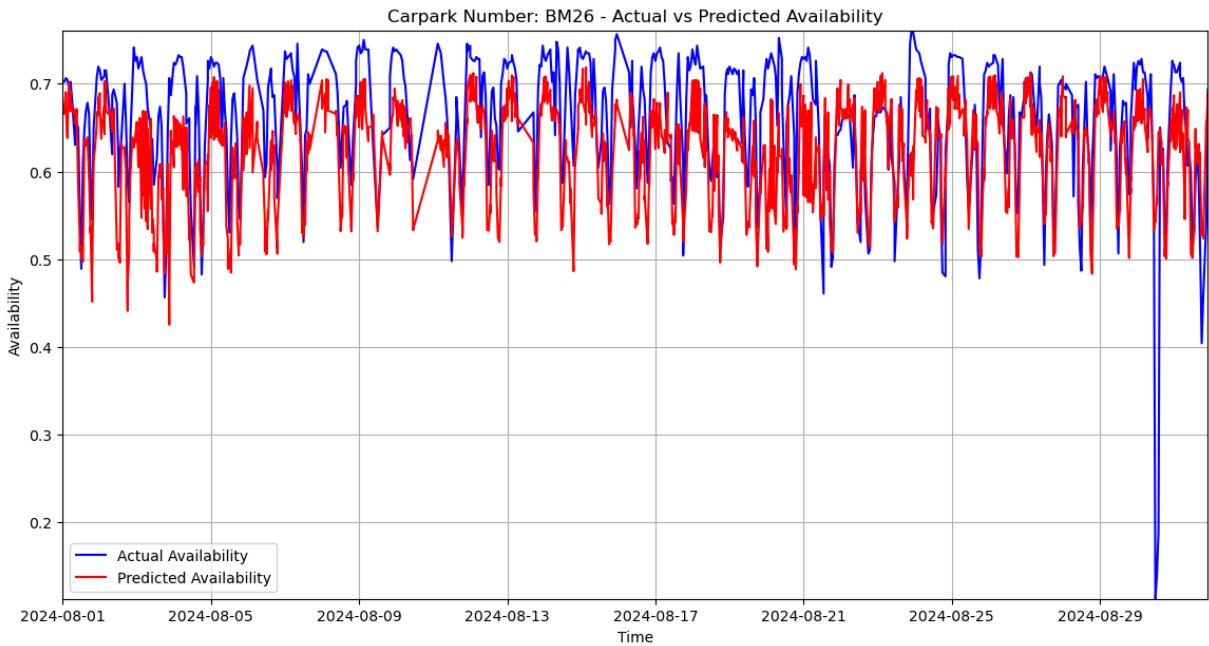
```
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

```
Testing MSE: 0.005110615131202279
```

```
R-squared: 0.07622290405496124
```

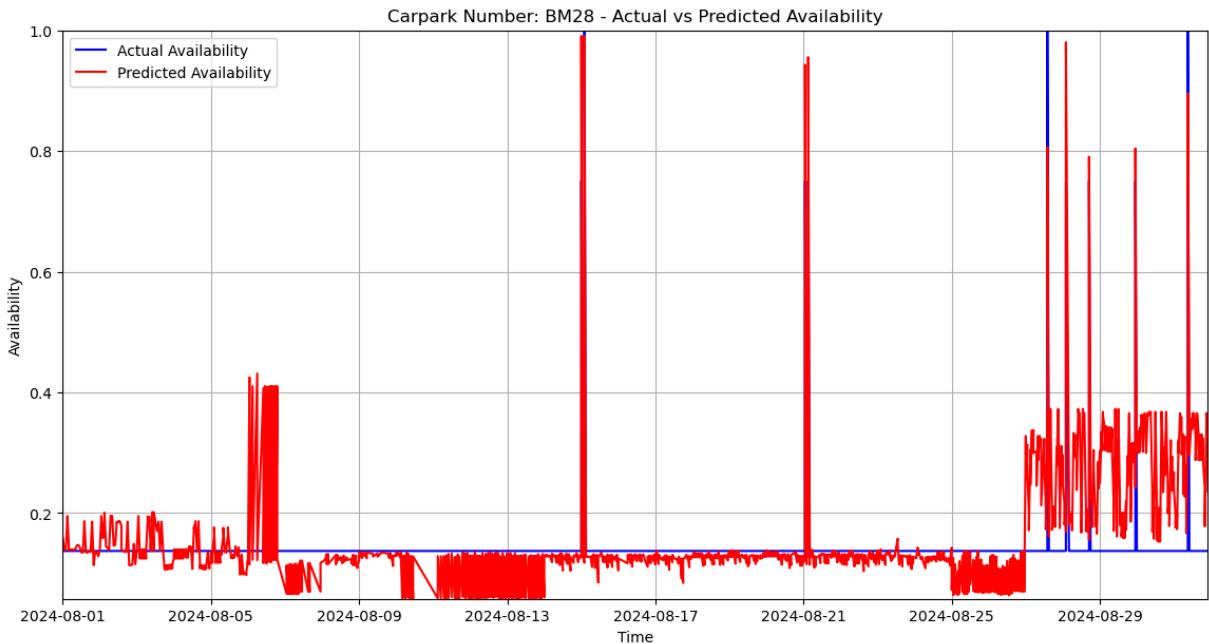


Model saved as `model_BM26.sav`
 Training model for `carpark_number: BM28`
 Testing MSE: 0.006136716287201283
 R-squared: 0.1234328342130645

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Model saved as model_BM28.sav

Training model for carpark_number: BM29

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

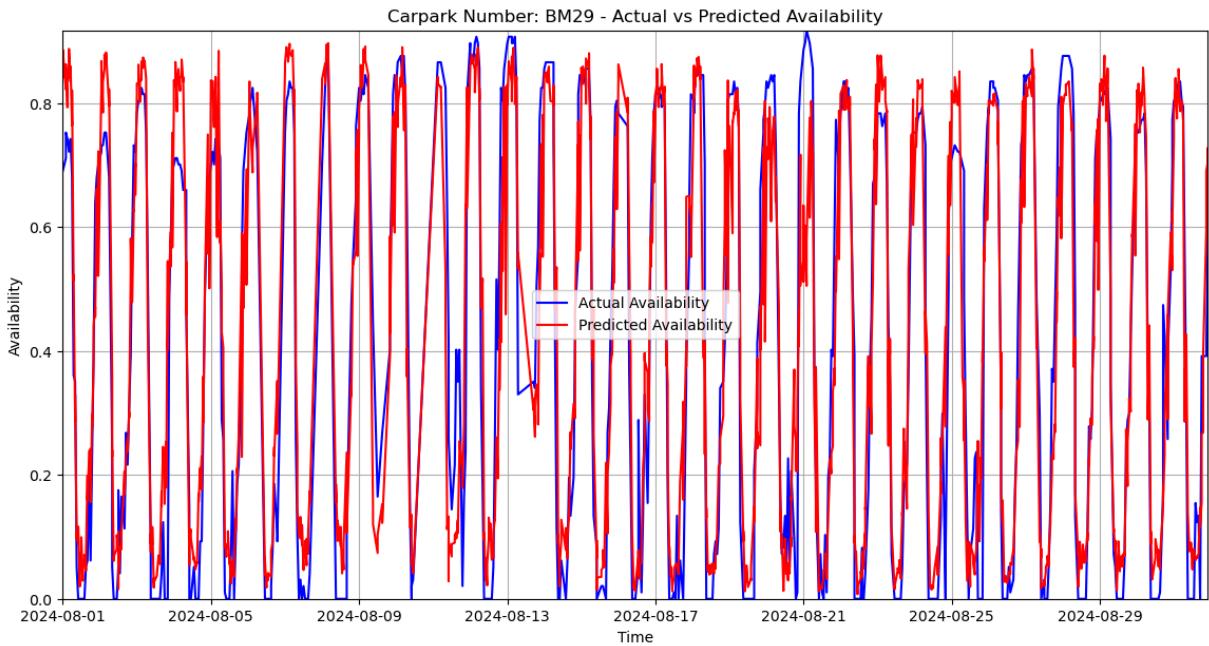
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.01622526696624614

R-squared: 0.8603965987783041



Model saved as model_BM29.sav

Training model for carpark_number: BM3

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

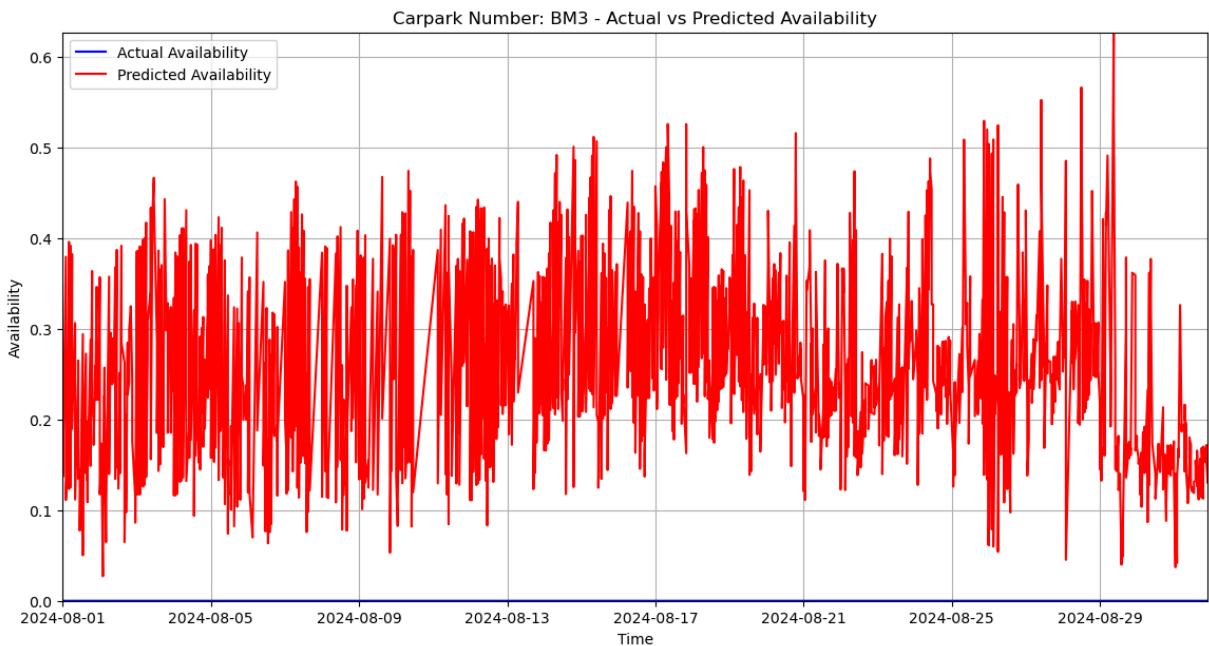
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.07925960058767065

R-squared: 0.0

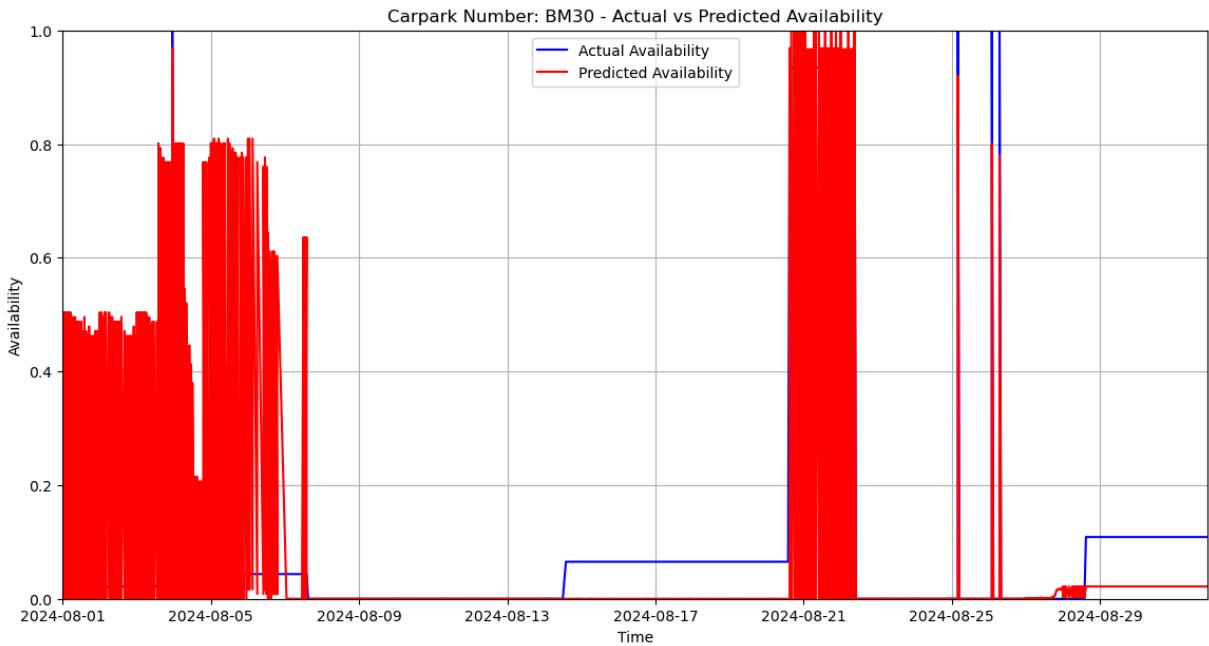


Model saved as model_BM3.sav
 Training model for carpark_number: BM30
 Testing MSE: 0.06358309799771718
 R-squared: -0.1801292958918428

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Model saved as `model_BM30.sav`

Training model for `carpark_number: BM31`

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using `.loc[row_indexer,col_indexer] = value` instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

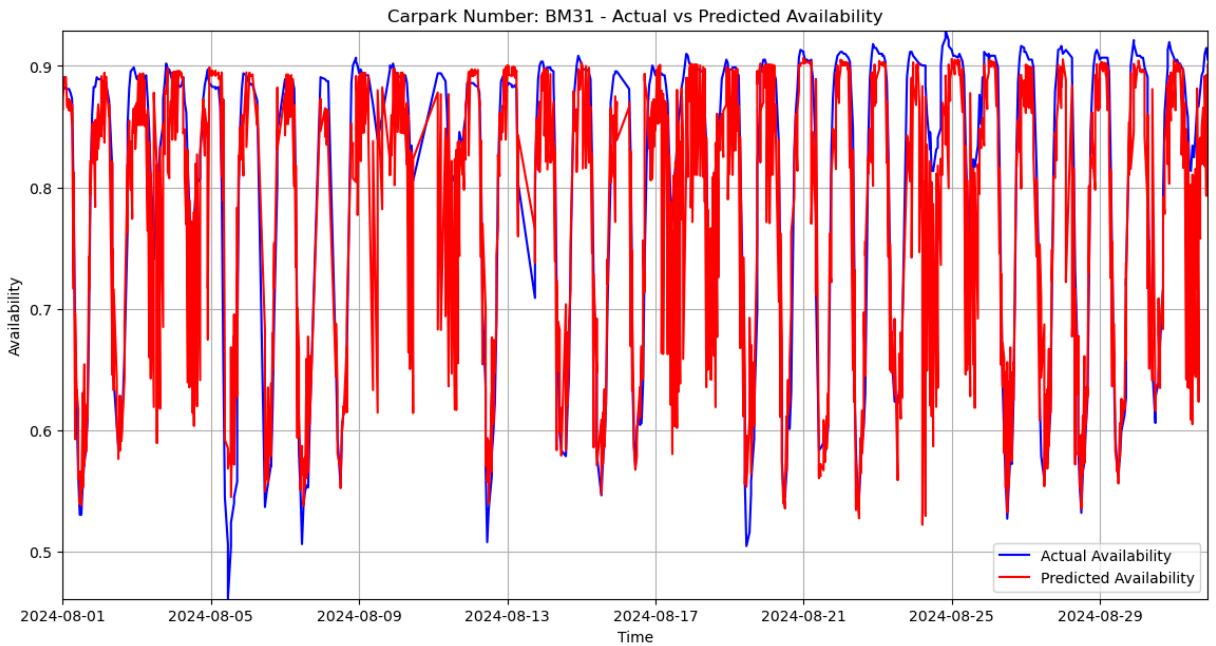
Try using `.loc[row_indexer,col_indexer] = value` instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.005464360871179436

R-squared: 0.6610649929355192



Model saved as model_BM31.sav

Training model for carpark_number: BM4

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

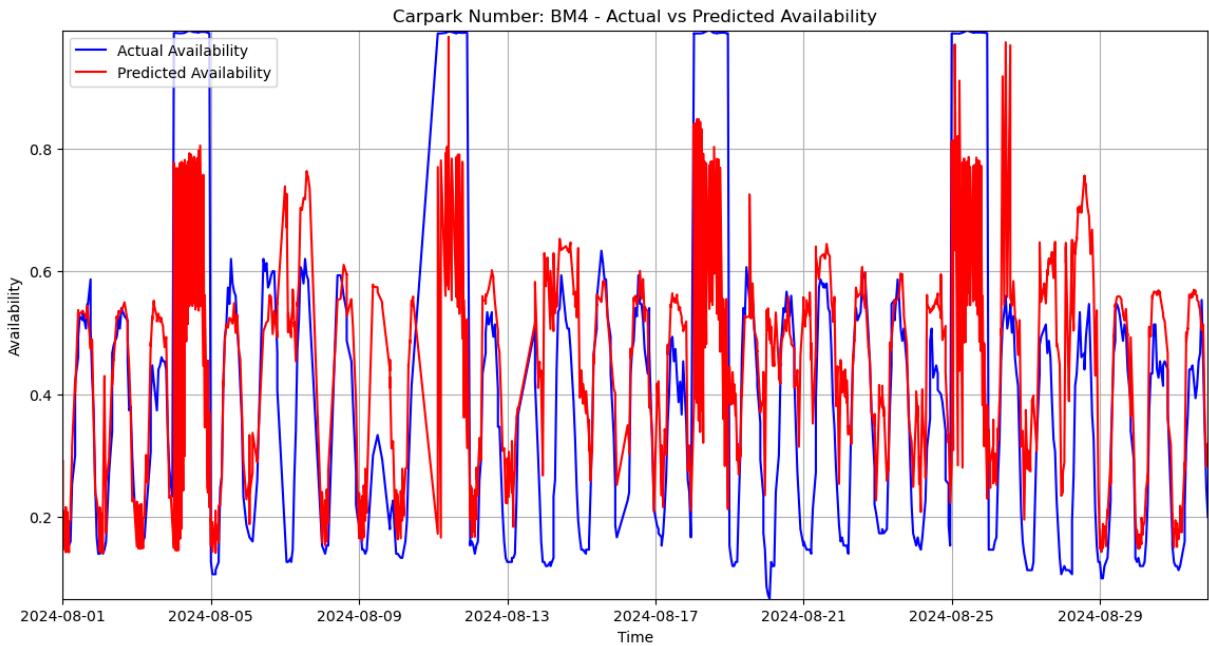
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.04788082131260012

R-squared: 0.33274028312866444

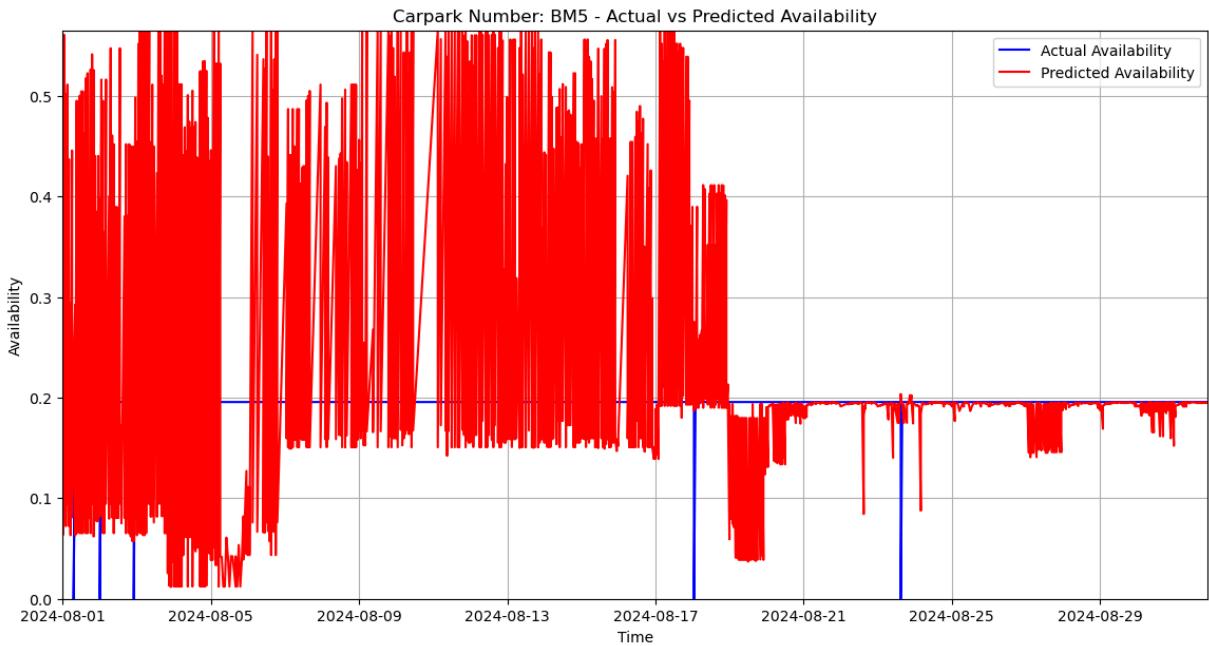


Model saved as `model_BM4.sav`
 Training model for `carpark_number: BM5`
 Testing MSE: 0.025403710890716292
 R-squared: -90.51983860798472

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Model saved as model_BM5.sav

Training model for carpark_number: BM6

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

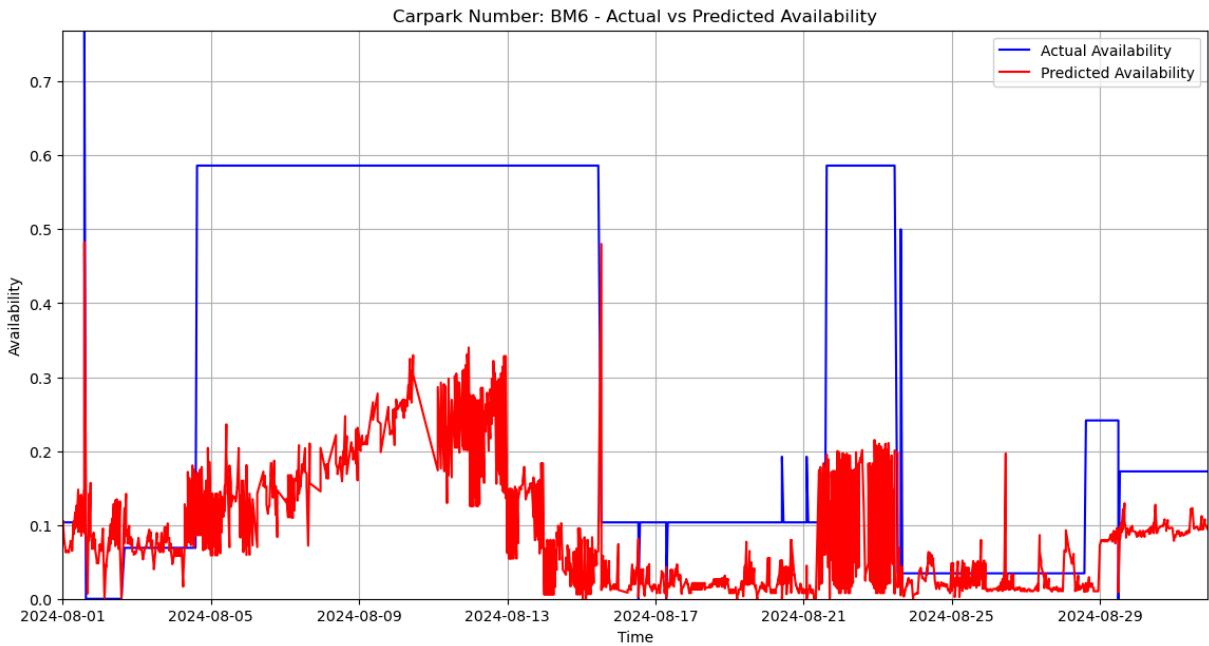
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.0771316778011768

R-squared: -0.29369971074923495



Model saved as model_BM6.sav

Training model for carpark_number: BWM

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

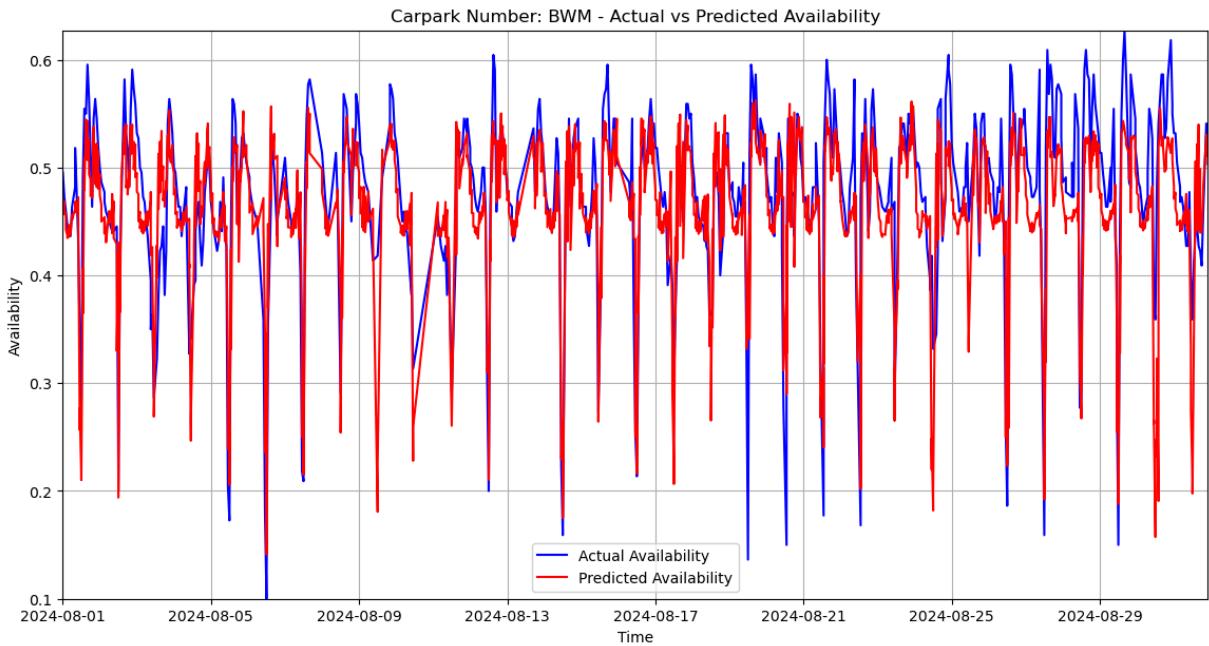
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.0027225781918564164

R-squared: 0.589395996744586



Model saved as model_BWM.sav

Training model for carpark_number: C10

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

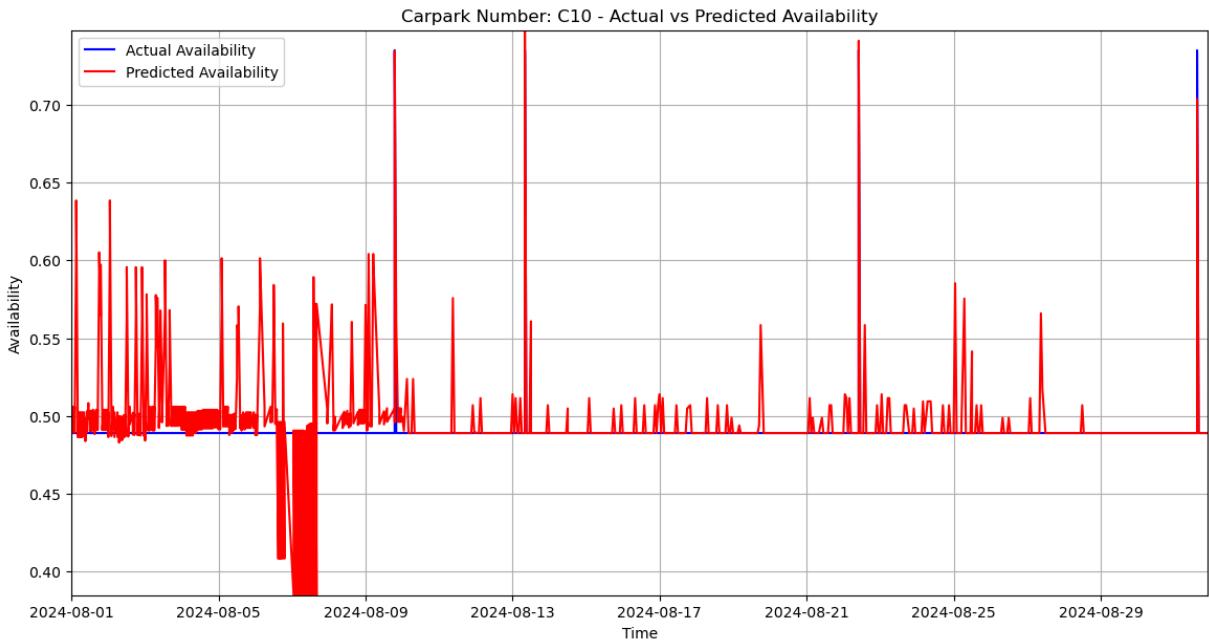
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.0006459144415072045

R-squared: -0.8253647539152216



```
Model saved as model_C10.sav
```

```
Training model for carpark_number: C11
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

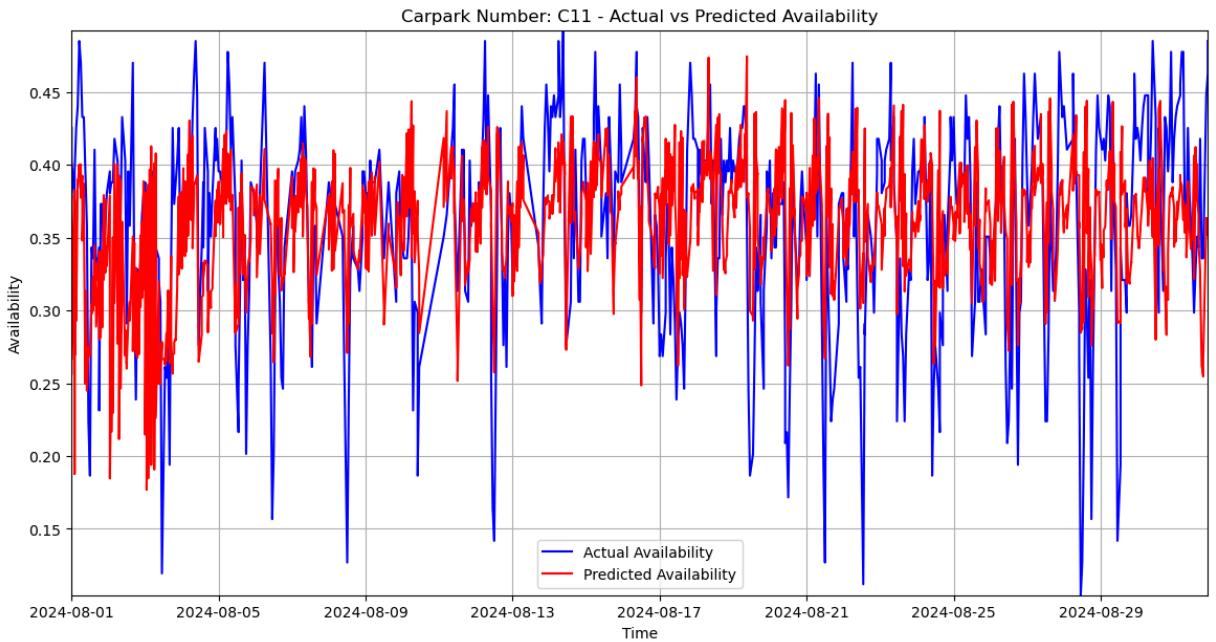
```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

```
Testing MSE: 0.004181806340000013
```

```
R-squared: 0.15195541593608186
```

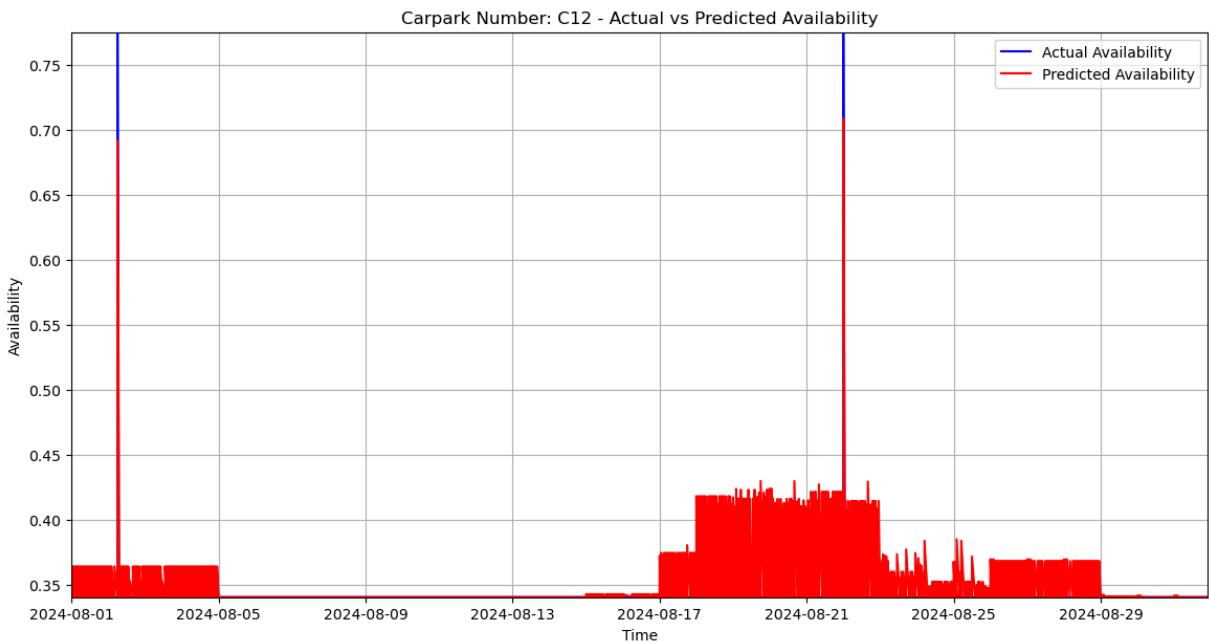


```
Model saved as model_C11.sav
Training model for carpark_number: C12
Testing MSE: 0.0007649105305828961
R-squared: -0.3809730704400853
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



```
Model saved as model_C12.sav
Training model for carpark_number: C13M
Testing MSE: 0.00019172747372344227
R-squared: 0.8269359407717054
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
```

```
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

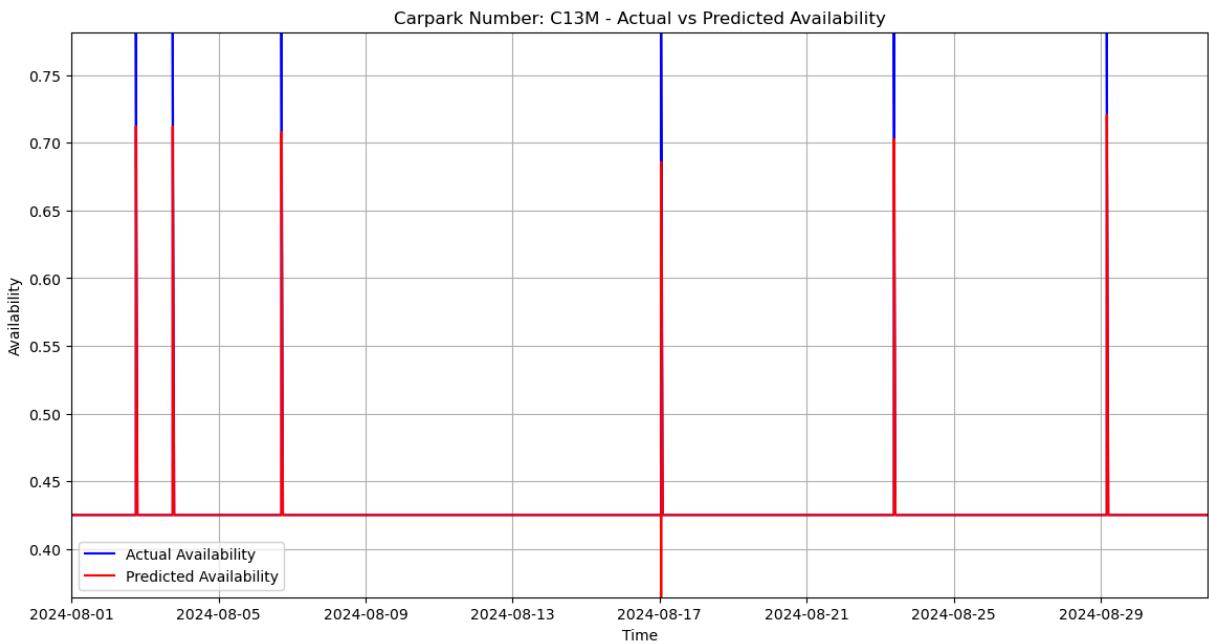
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
```

```
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

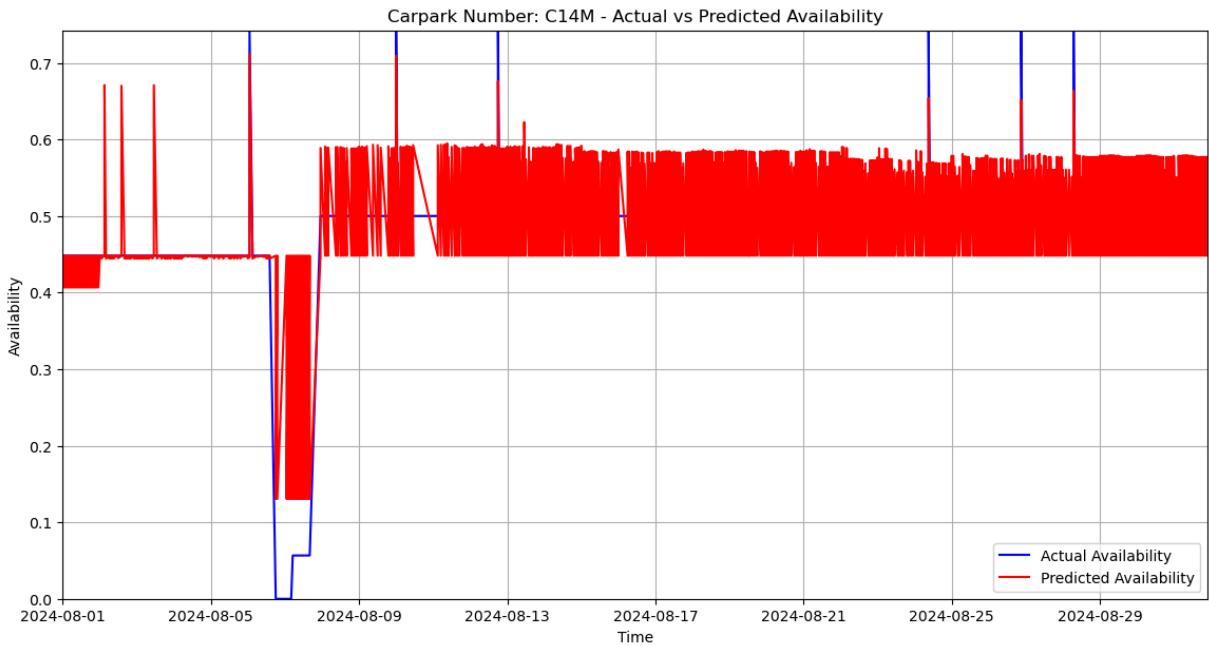


```
Model saved as model_C13M.sav
Training model for carpark_number: C14M
Testing MSE: 0.006294065546679708
R-squared: 0.0012103949078632326
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Model saved as `model_C14M.sav`

Training model for carpark_number: C15M

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
```

Try using `.loc[row_indexer,col_indexer] = value` instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
```

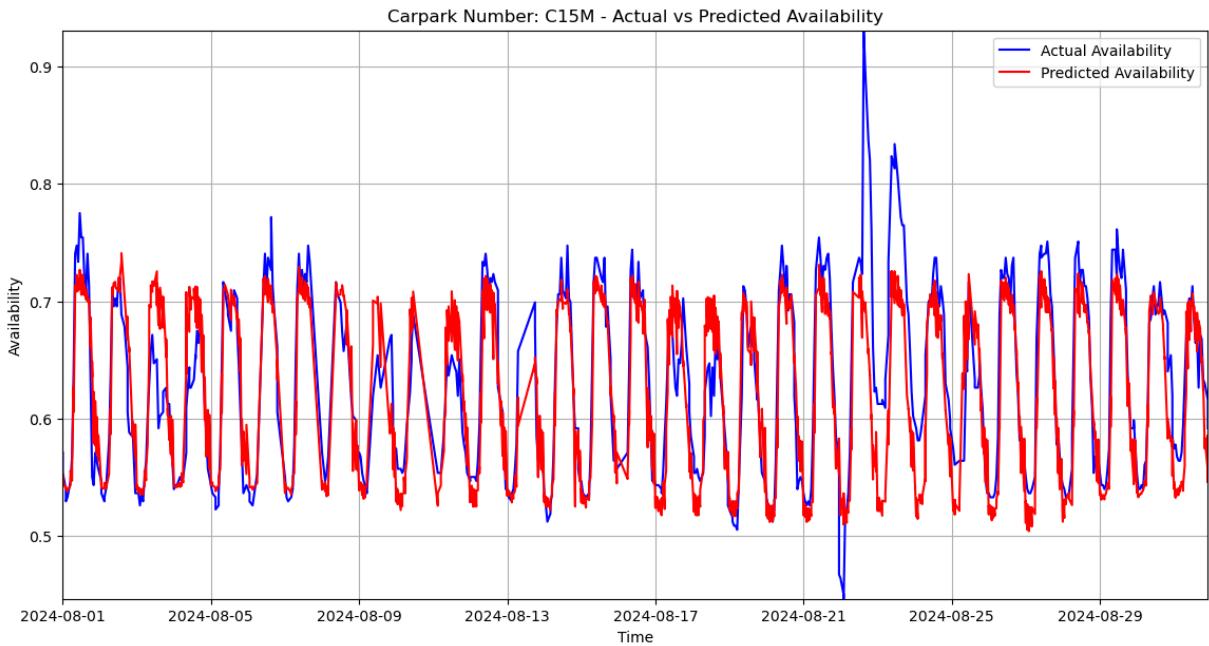
Try using `.loc[row_indexer,col_indexer] = value` instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.001713184274227614

R-squared: 0.7228375601890801



Model saved as model_C15M.sav

Training model for carpark_number: C16

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

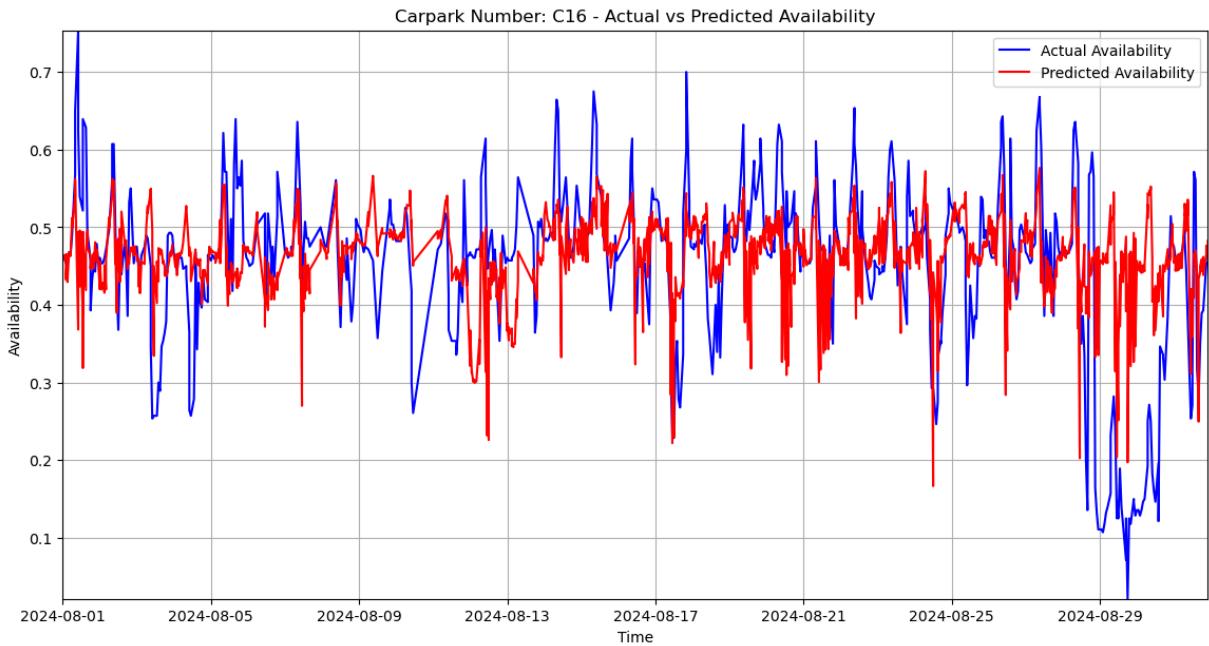
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.010692965336009122

R-squared: 0.12447696501994132



Model saved as model_C16.sav

Training model for carpark_number: C17

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

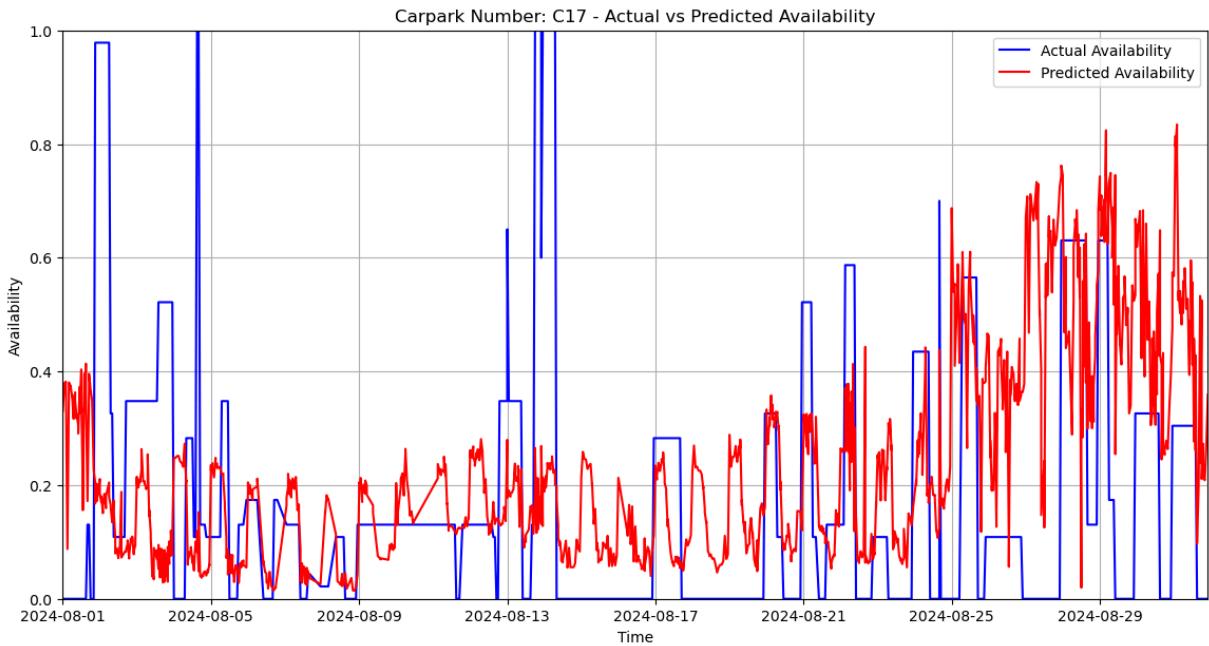
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.07664727335866912

R-squared: -0.29417544464765055



Model saved as model_C17.sav

Training model for carpark_number: C18

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

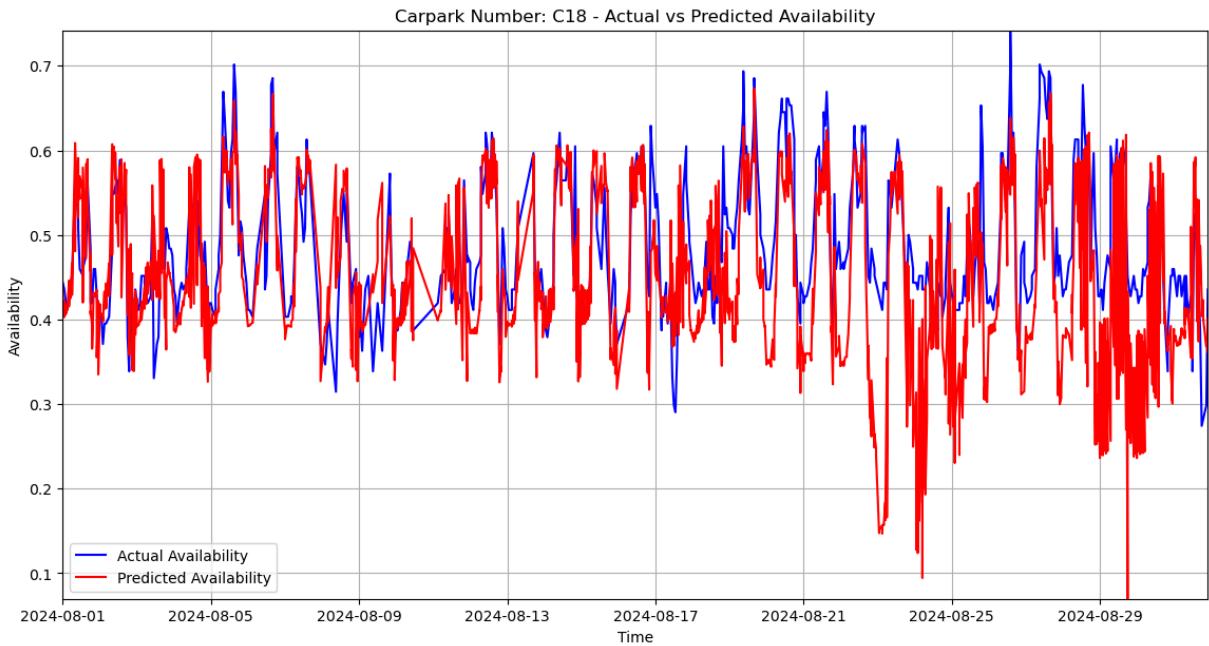
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.008141125781696497

R-squared: -0.22829763199952247



Model saved as model_C18.sav

Training model for carpark_number: C18A

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

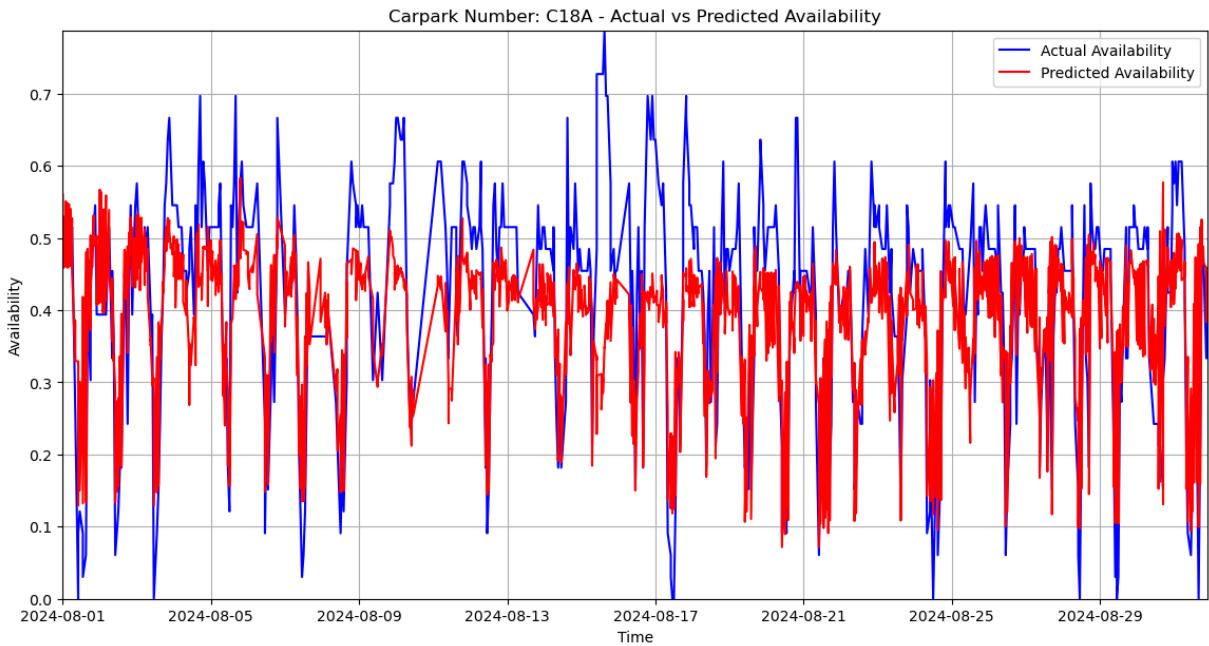
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.012888239971629986

R-squared: 0.45215390175904635

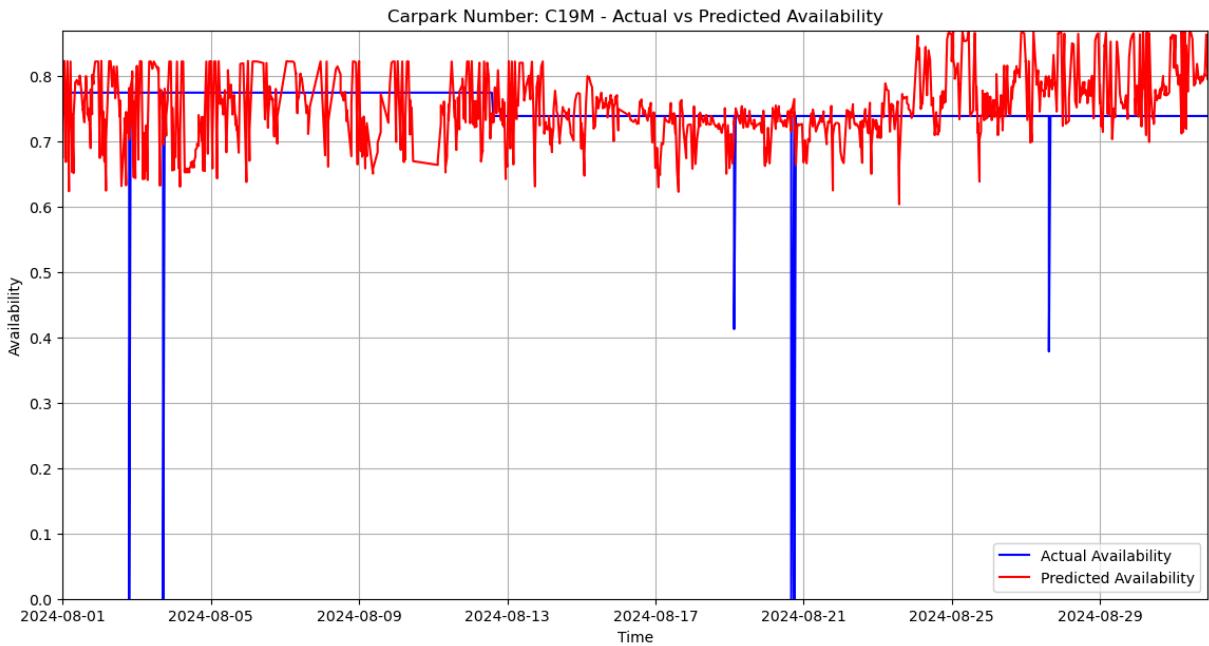


```
Model saved as model_C18A.sav
Training model for carpark_number: C19M
Testing MSE: 0.007452660273044448
R-squared: -0.5821236282360622
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Model saved as model_C19M.sav

Training model for carpark_number: C20

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

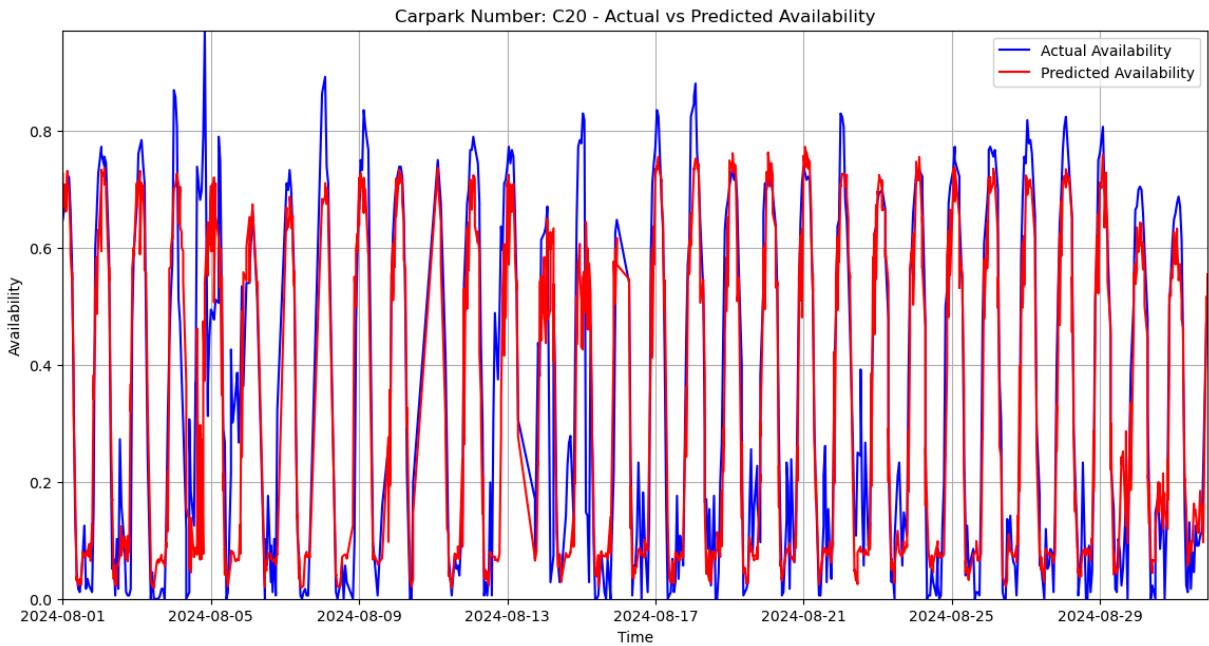
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.015999010994526247

R-squared: 0.8114806705142029



Model saved as model_C20.sav

Training model for carpark_number: C20M

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

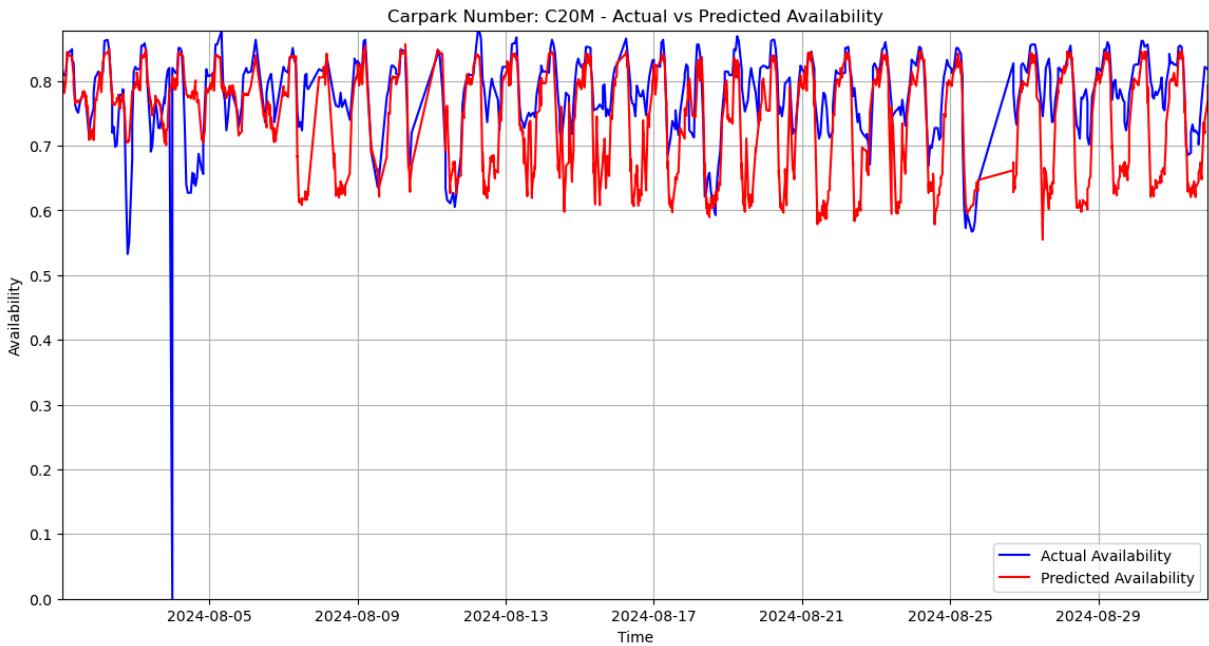
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.006270781171879779

R-squared: -0.33899488272062395

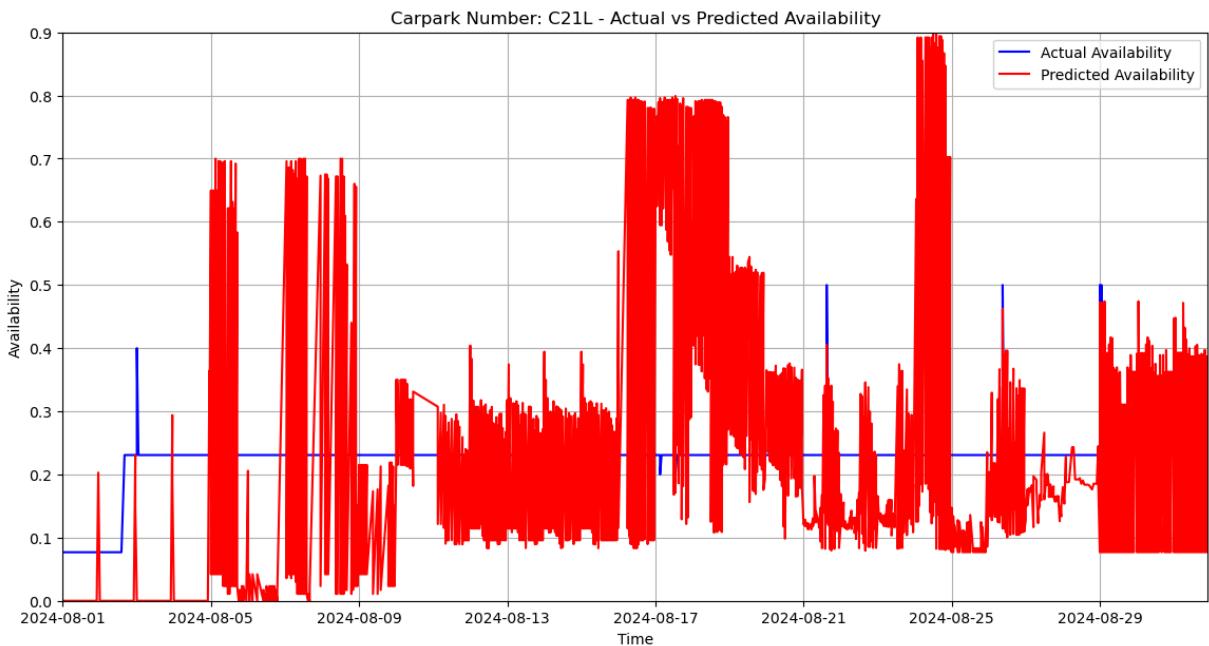


```
Model saved as model_C20M.sav
Training model for carpark_number: C21L
Testing MSE: 0.04650946852828885
R-squared: -24.858656463295155
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



```
Model saved as model_C21L.sav
Training model for carpark_number: C21M
Testing MSE: 0.0006169280674601211
R-squared: 0.7263513971696418
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

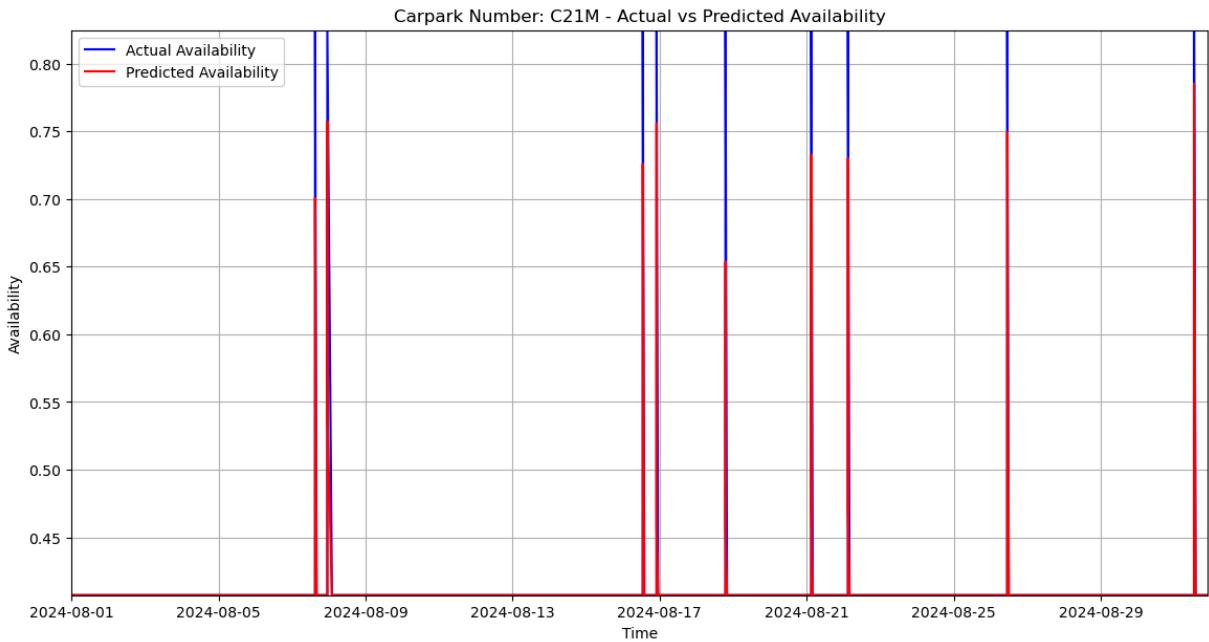
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



```
Model saved as model_C21M.sav
```

```
Training model for carpark_number: C22M
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

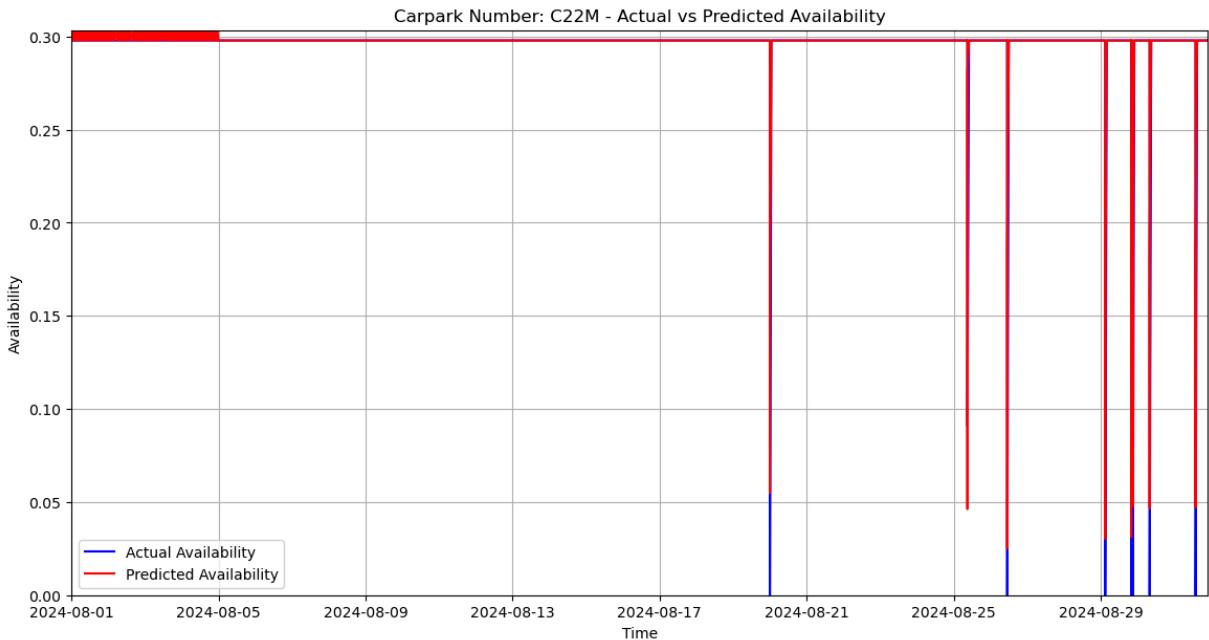
```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

```
Testing MSE: 0.00020997940892695502
```

```
R-squared: 0.7806666674077041
```



```
Model saved as model_C22M.sav
```

```
Training model for carpark_number: C24
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

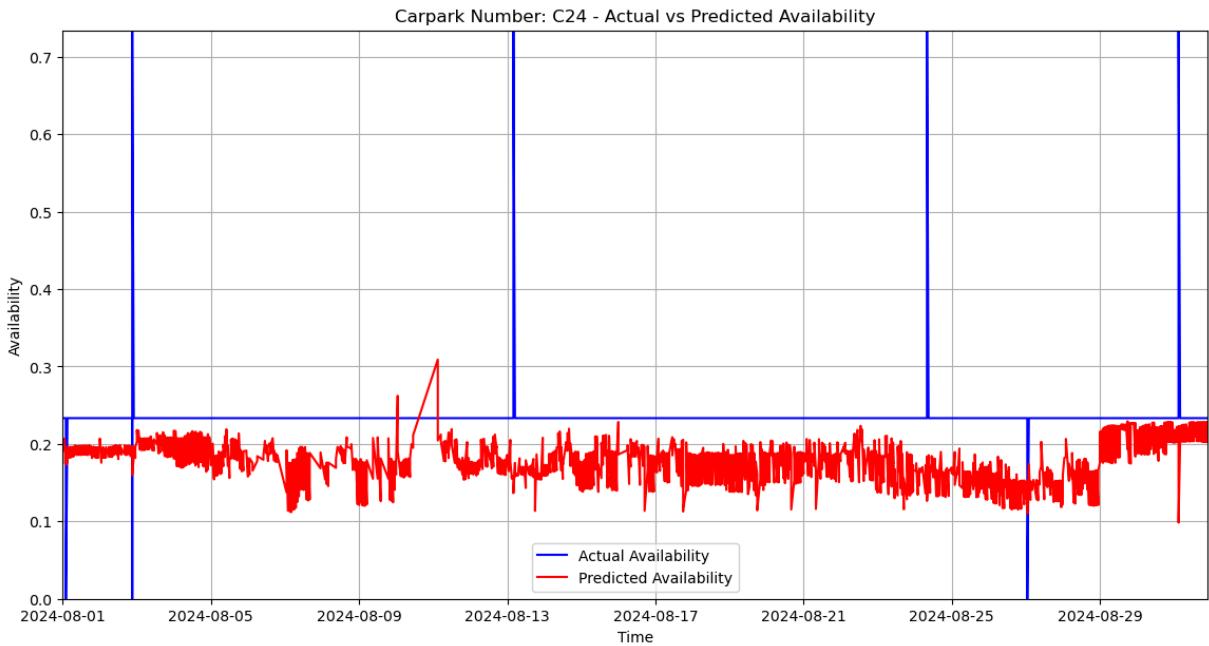
```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

```
Testing MSE: 0.006029117518673994
```

```
R-squared: -2.544773146694161
```

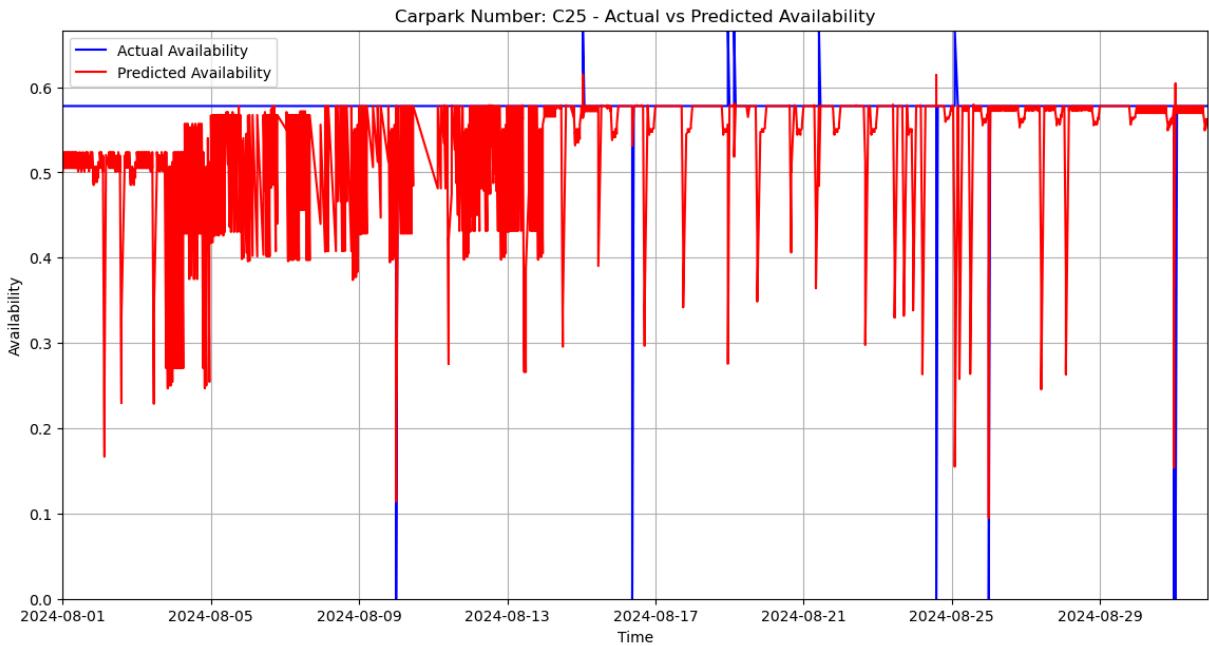


```
Model saved as model_C24.sav
Training model for carpark_number: C25
Testing MSE: 0.011191012457438664
R-squared: -2.784821364425748
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Model saved as model_C25.sav
 Training model for carpark_number: C26
 Testing MSE: 0.04578924157855638
 R-squared: 0.1364371408899817

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:  

A value is trying to be set on a copy of a slice from a DataFrame.  

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy  

    test_data['day'] = test_data['day'].clip(lower=1, upper=31)  

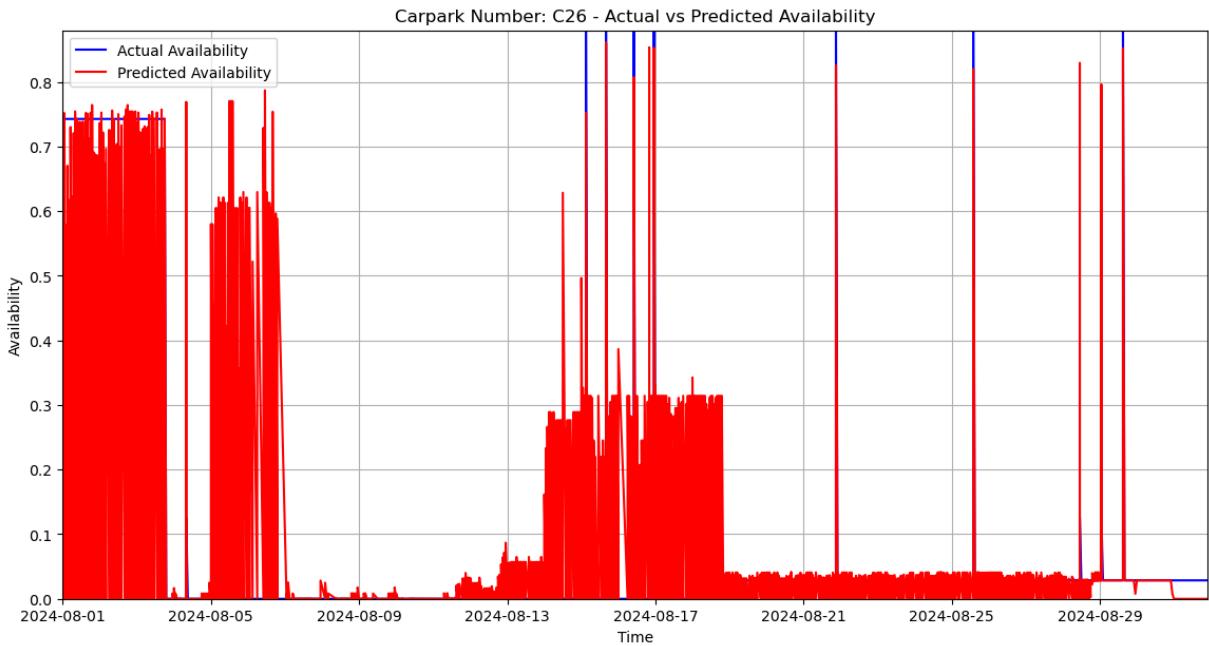
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:  

A value is trying to be set on a copy of a slice from a DataFrame.  

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy  

    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

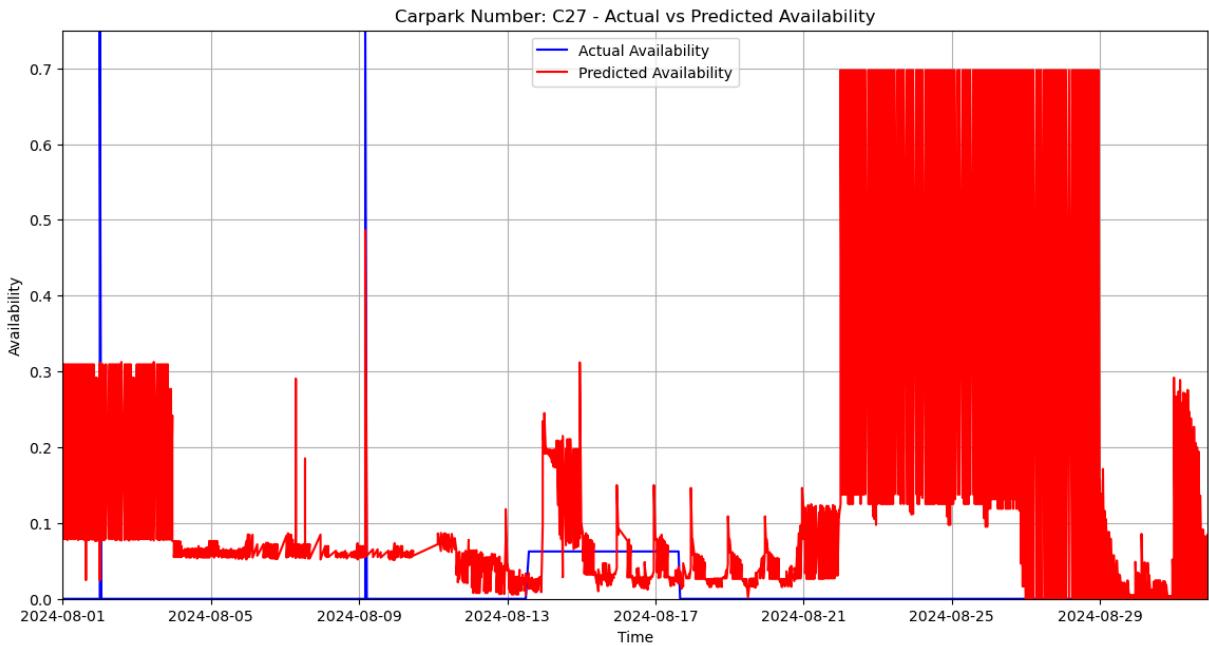


```
Model saved as model_C26.sav
Training model for carpark_number: C27
Testing MSE: 0.07318467839115031
R-squared: -34.5892532959009
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Model saved as model_C27.sav

Training model for carpark_number: C28M

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
```

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
```

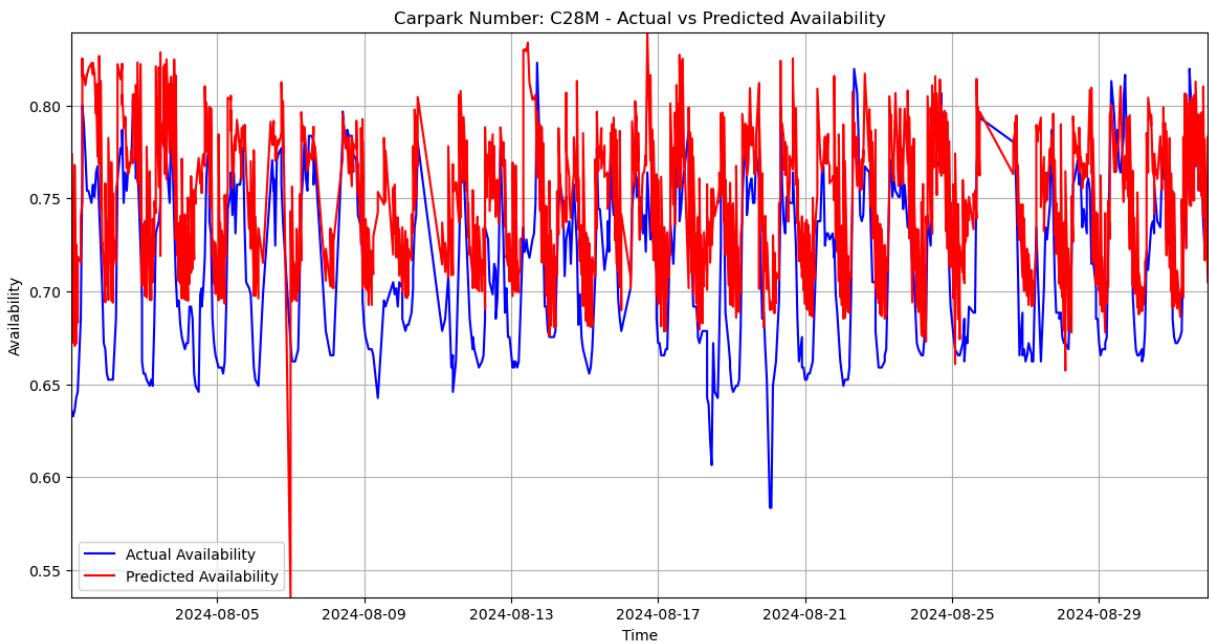
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.0025096588143466835

R-squared: -0.1738561502664422



```
Model saved as model_C28M.sav
```

```
Training model for carpark_number: C29
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

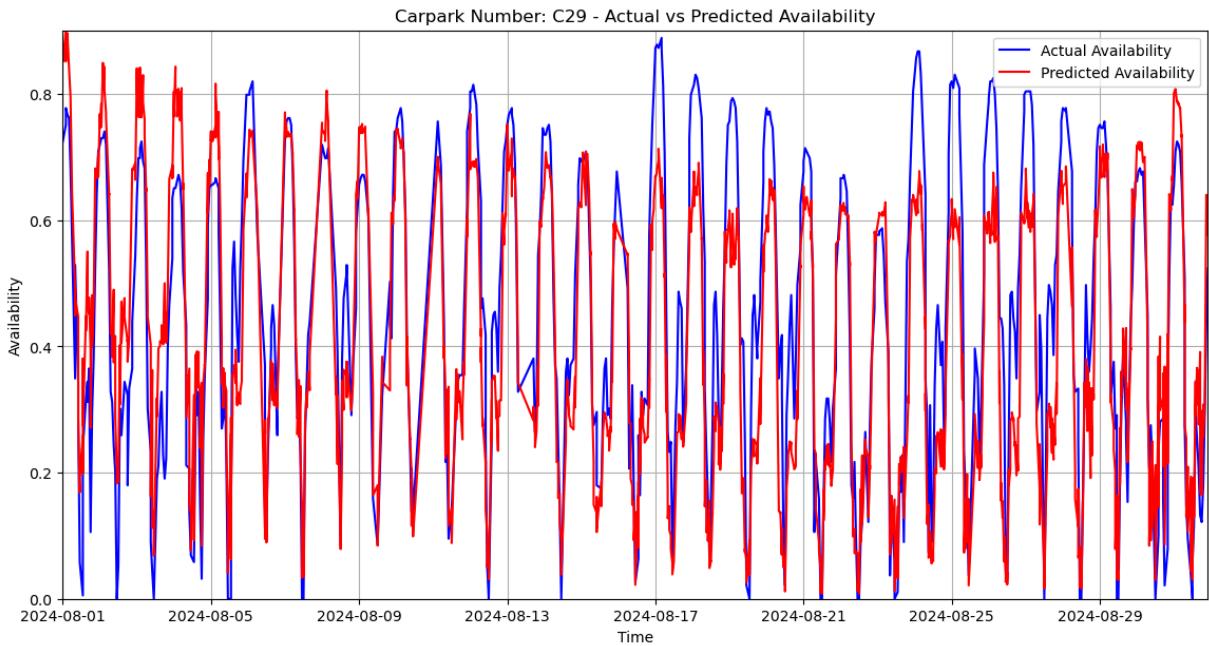
```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

```
Testing MSE: 0.01589586820965183
```

```
R-squared: 0.725054121262858
```



Model saved as model_C29.sav

Training model for carpark_number: C29A

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

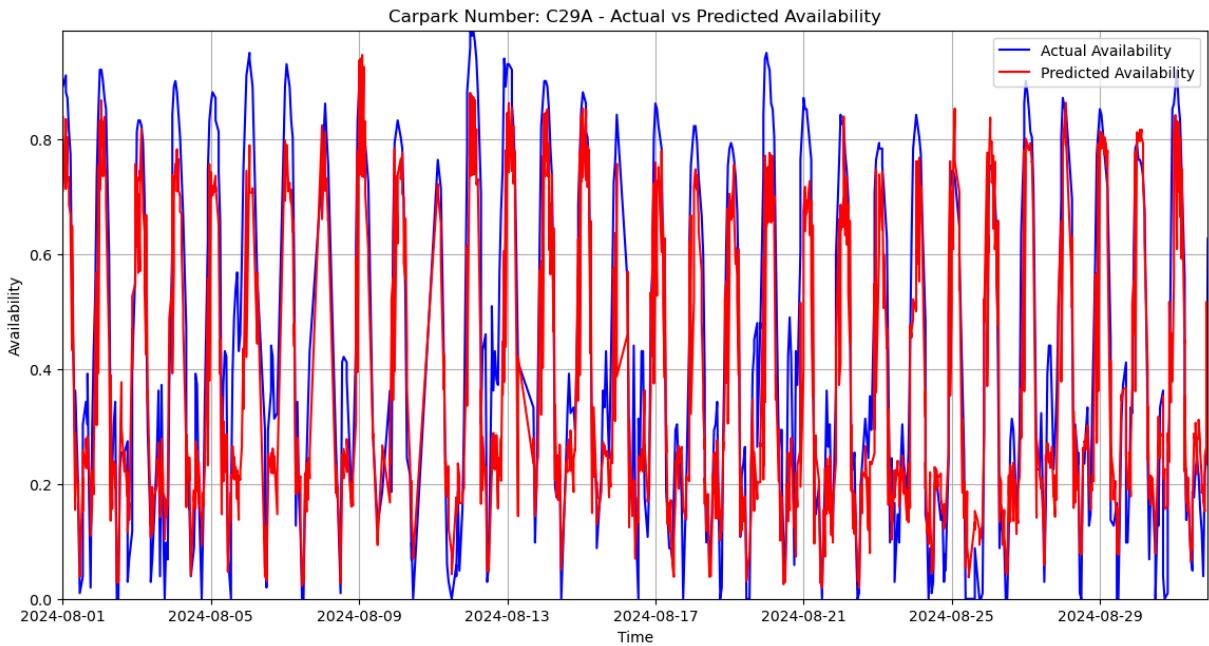
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.02305930253596464

R-squared: 0.7416530454713561



Model saved as model_C29A.sav

Training model for carpark_number: C2M

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

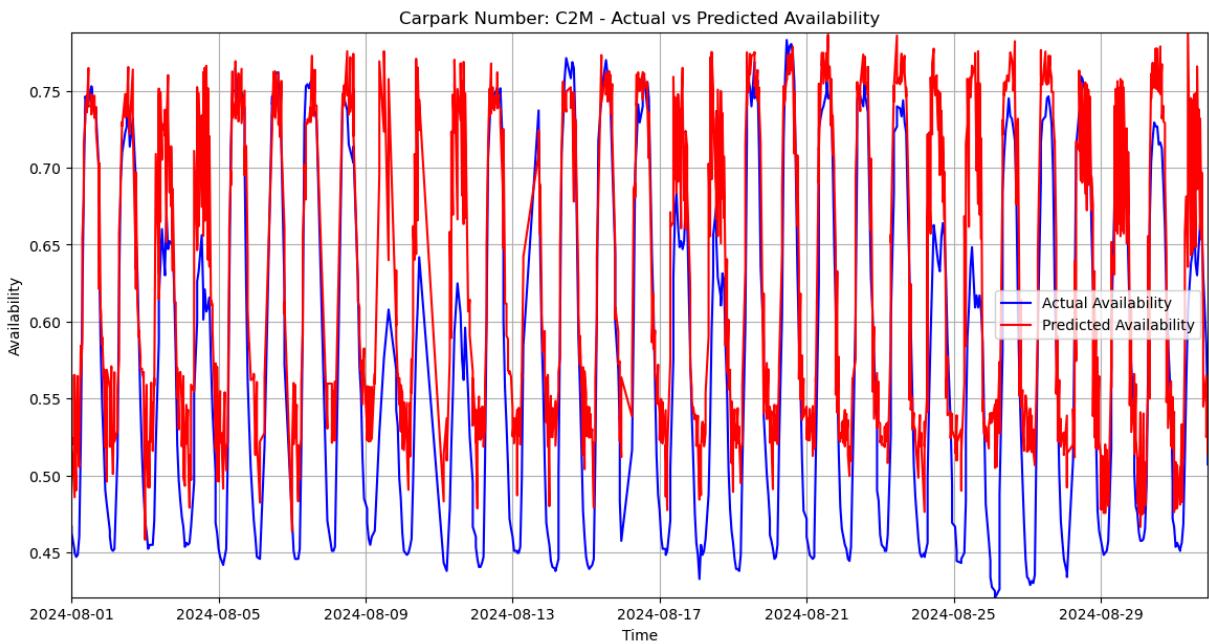
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.004770711903240998

R-squared: 0.643984188681011



```
Model saved as model_C2M.sav
```

```
Training model for carpark_number: C30
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

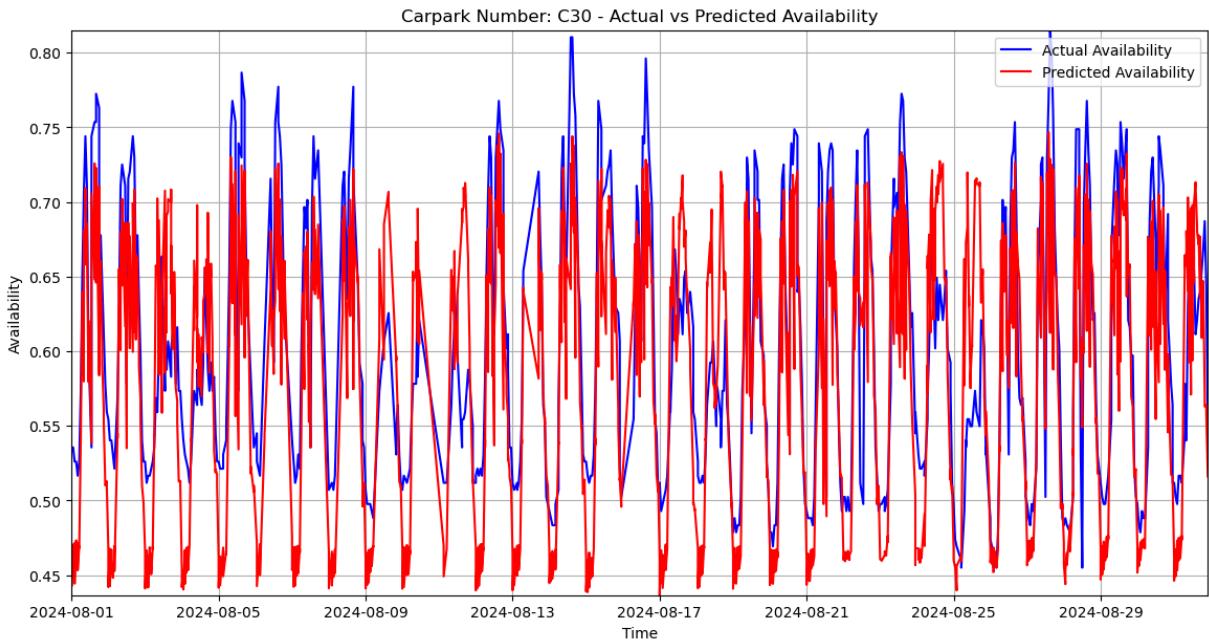
```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

```
Testing MSE: 0.003845127961173549
```

```
R-squared: 0.5113321597103117
```



```
Model saved as model_C30.sav
```

```
Training model for carpark_number: C31
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

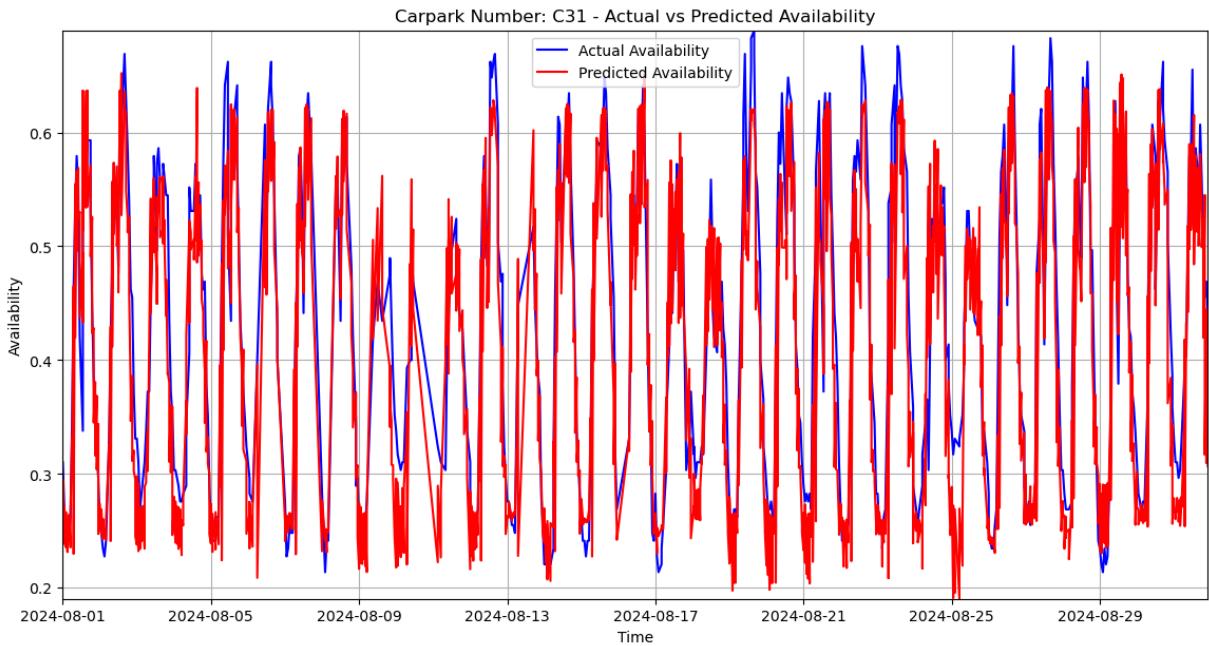
```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

```
Testing MSE: 0.004163521970962867
```

```
R-squared: 0.765643428090502
```



Model saved as model_C31.sav

Training model for carpark_number: C32

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

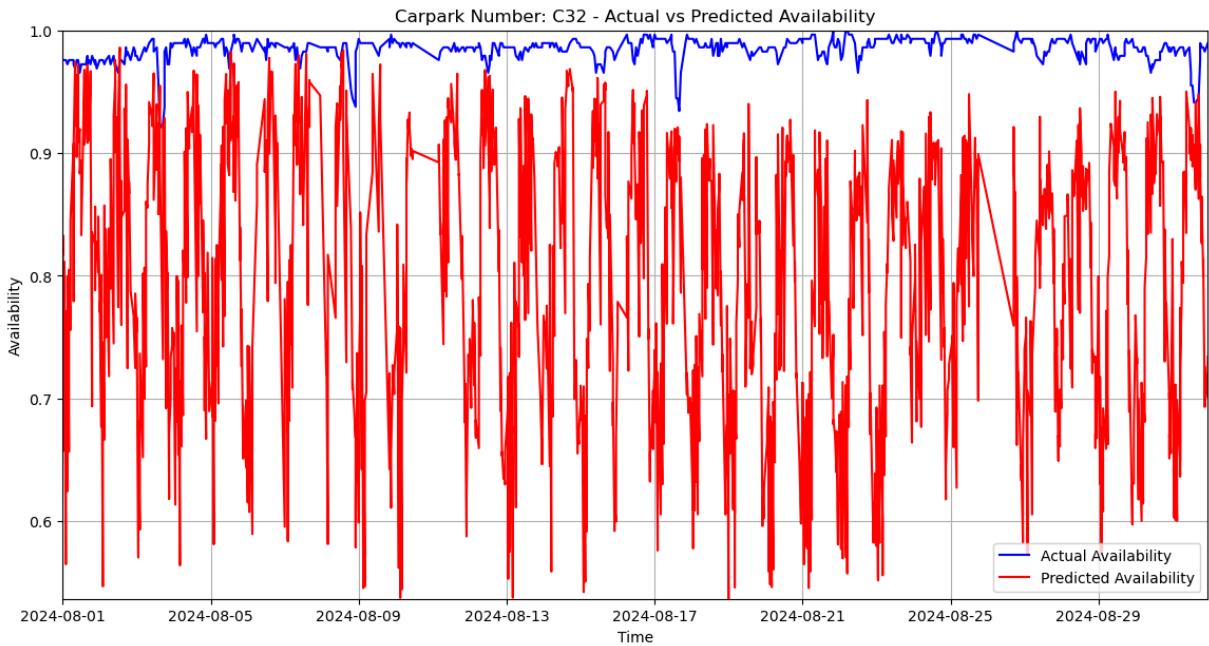
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.04614324916861923

R-squared: -494.71493773884566



Model saved as model_C32.sav

Training model for carpark_number: C33

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

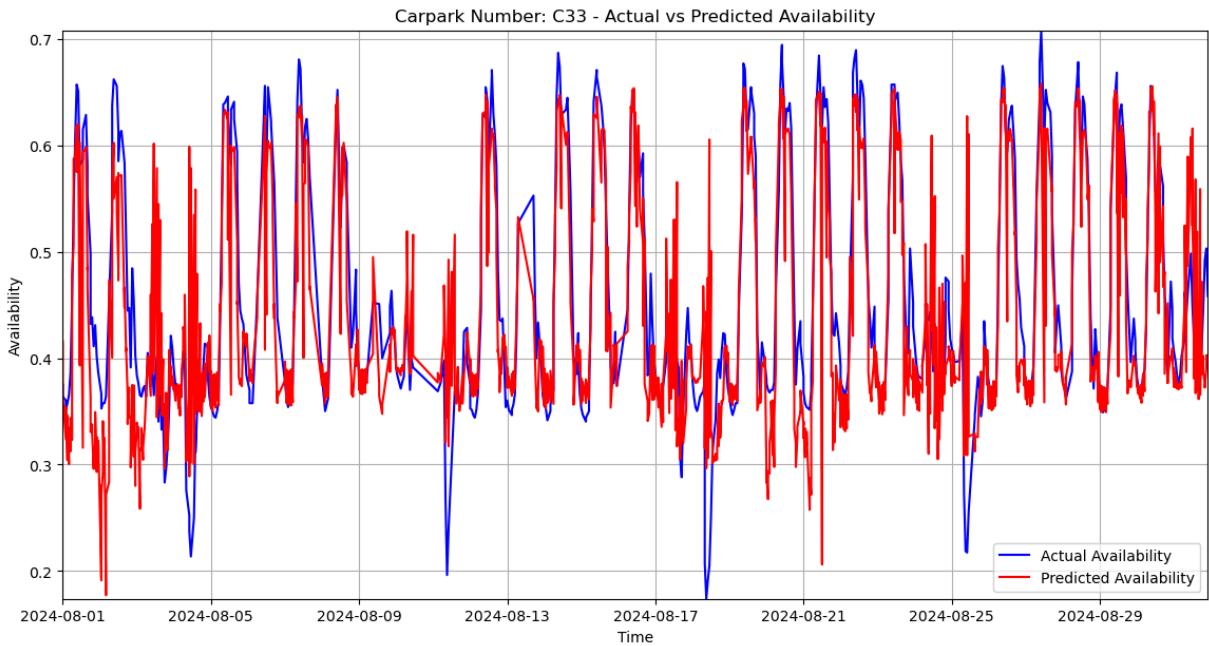
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.004199391104560441

R-squared: 0.6804009283137107



Model saved as model_C33.sav

Training model for carpark_number: C34

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

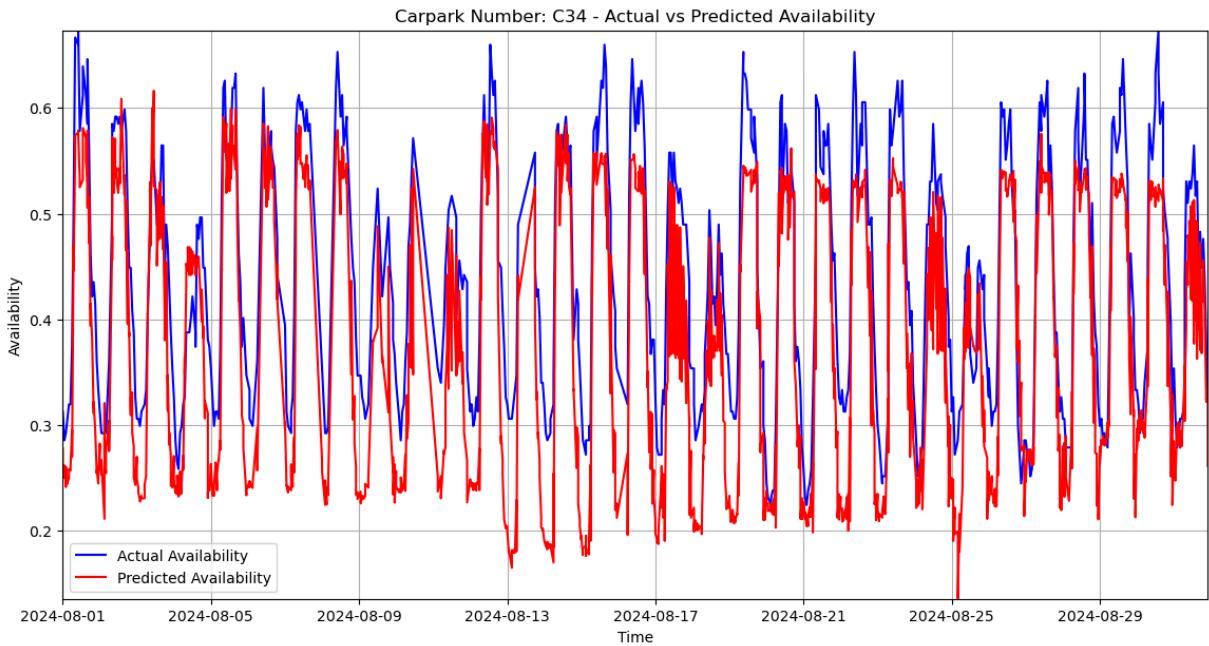
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.0066248417837242125

R-squared: 0.5302246858846871



Model saved as model_C34.sav

Training model for carpark_number: C35

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

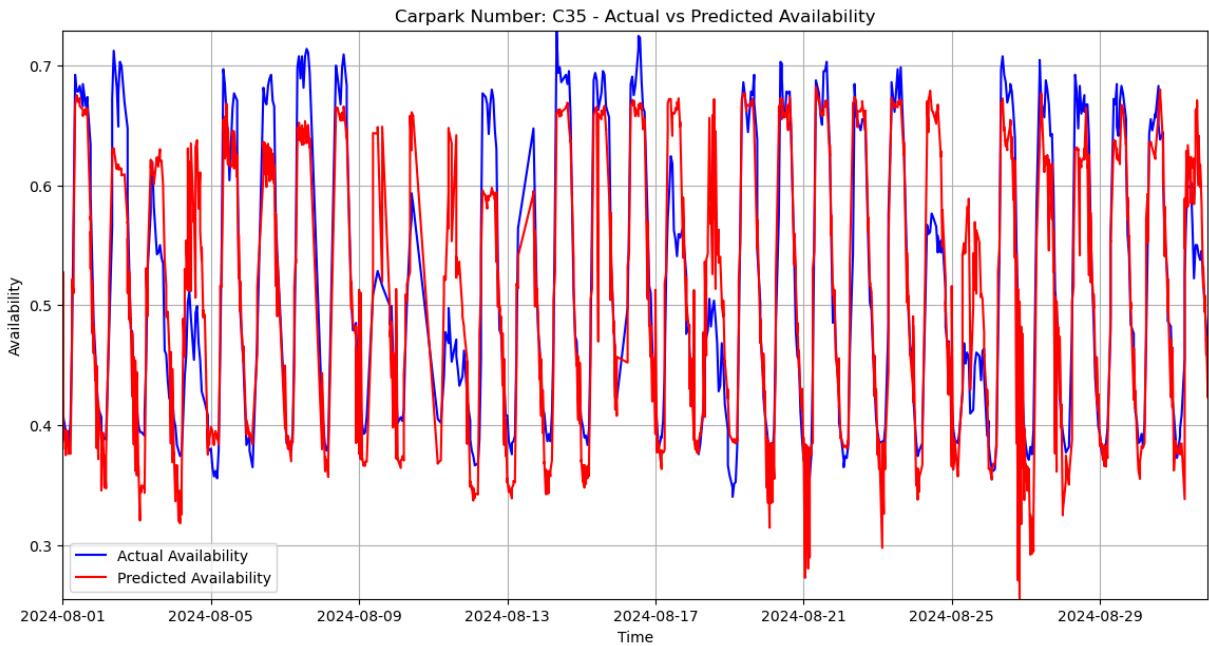
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.00258622679965273

R-squared: 0.8055454589291836



Model saved as model_C35.sav

Training model for carpark_number: C36

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

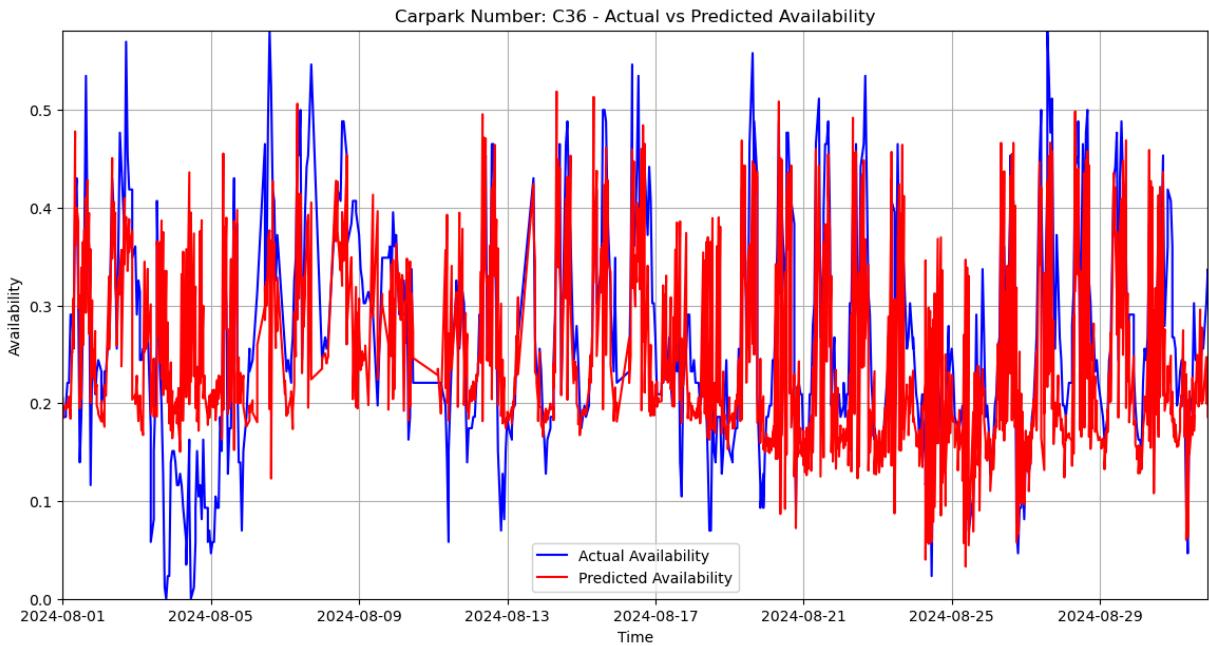
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.010989569526875954

R-squared: 0.21262796373784787



Model saved as model_C36.sav

Training model for carpark_number: C37

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

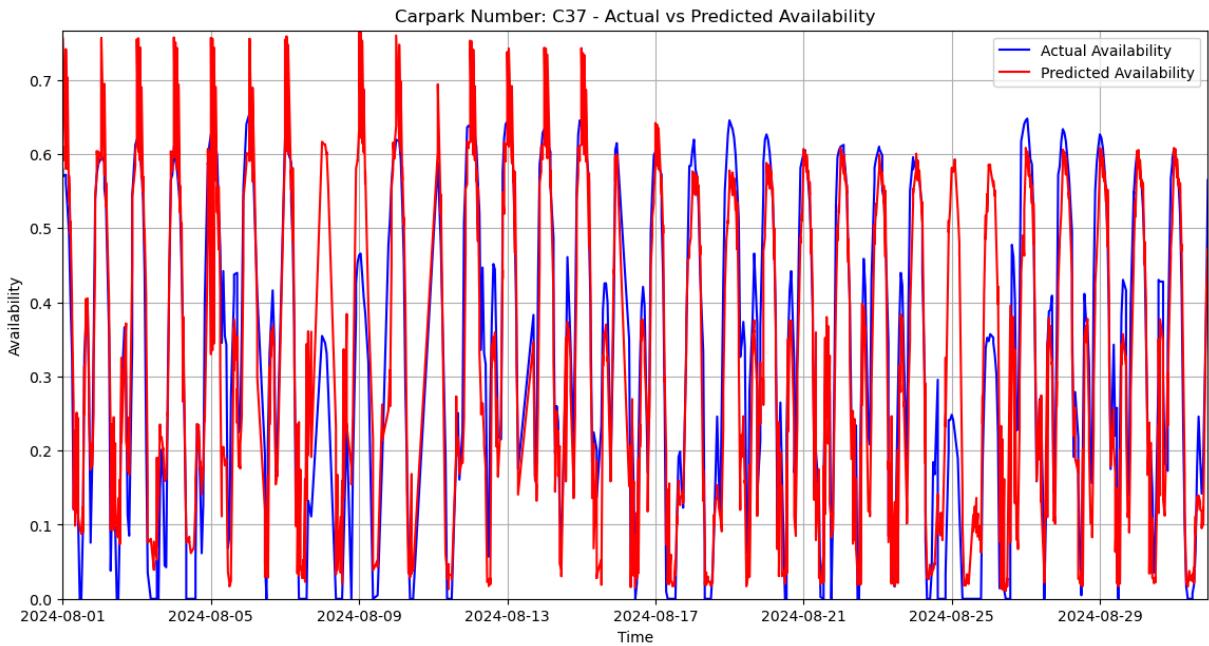
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.010997073751928819

R-squared: 0.7658224735733923



Model saved as model_C37.sav

Training model for carpark_number: C38

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

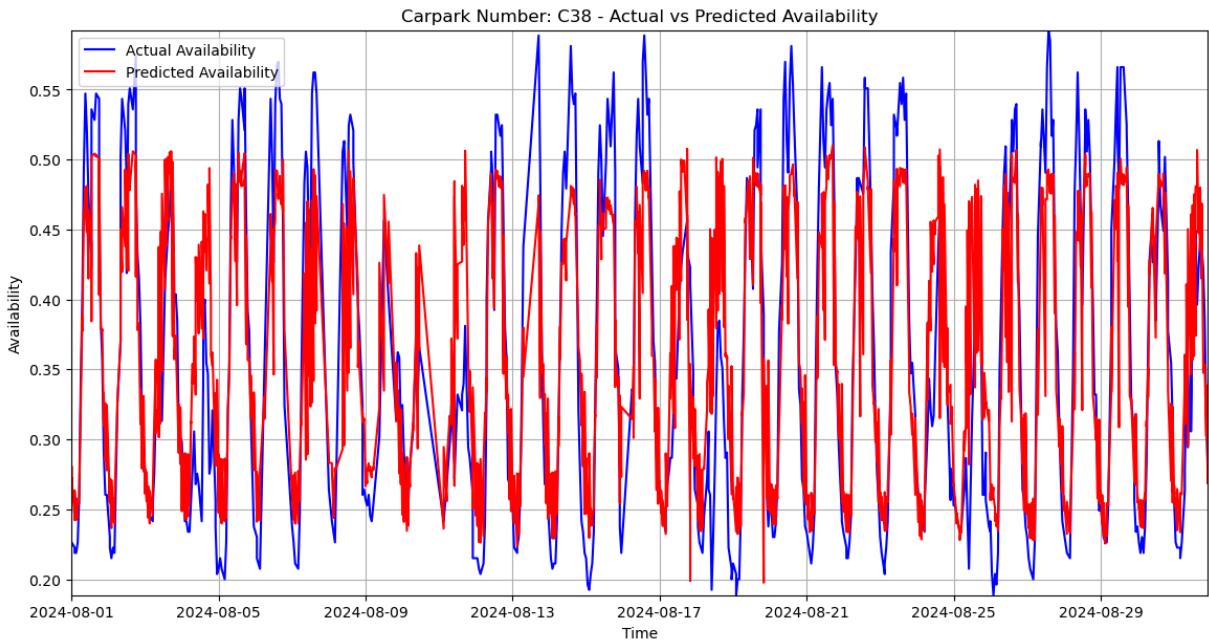
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.0041108288196088335

R-squared: 0.7091285999206525

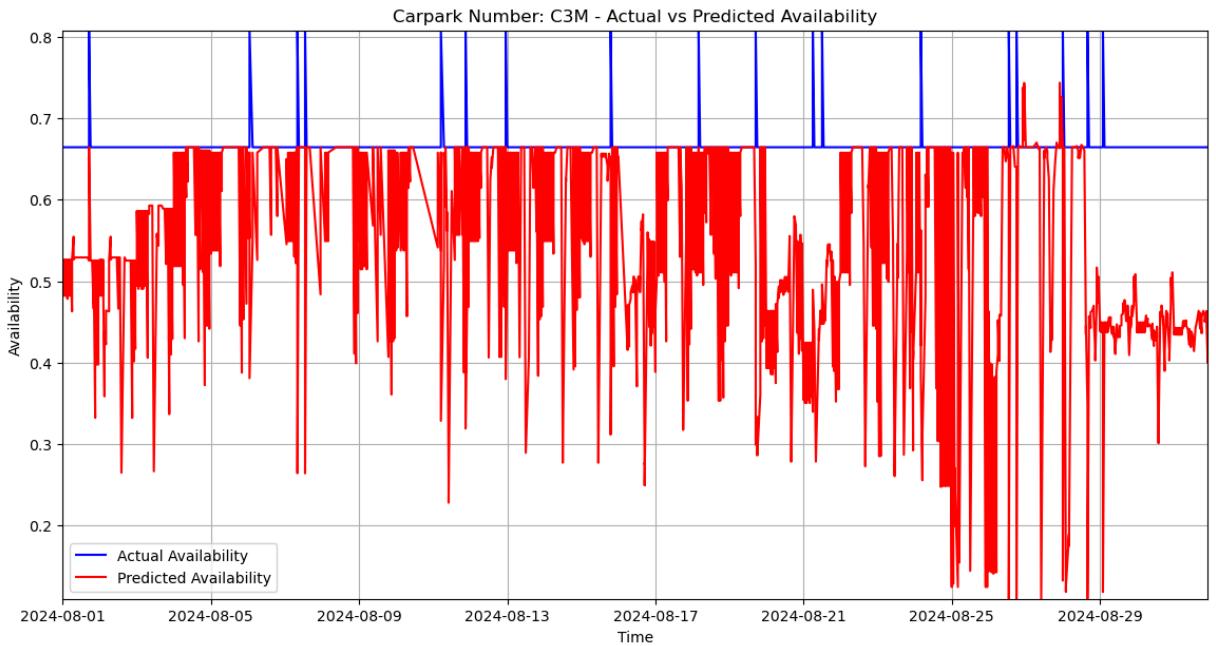


```
Model saved as model_C38.sav
Training model for carpark_number: C3M
Testing MSE: 0.03720222746823627
R-squared: -70.64963508657077
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

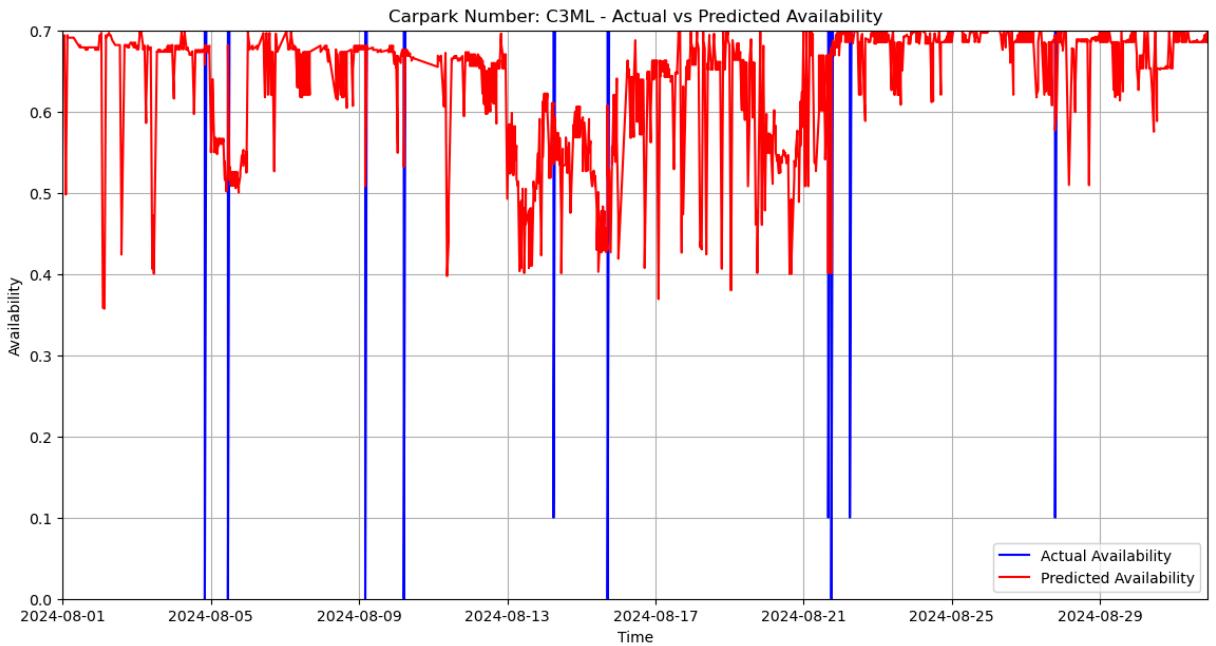


```
Model saved as model_C3M.sav
Training model for carpark_number: C3ML
Testing MSE: 0.014786685733763684
R-squared: -1.3550368902578236
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

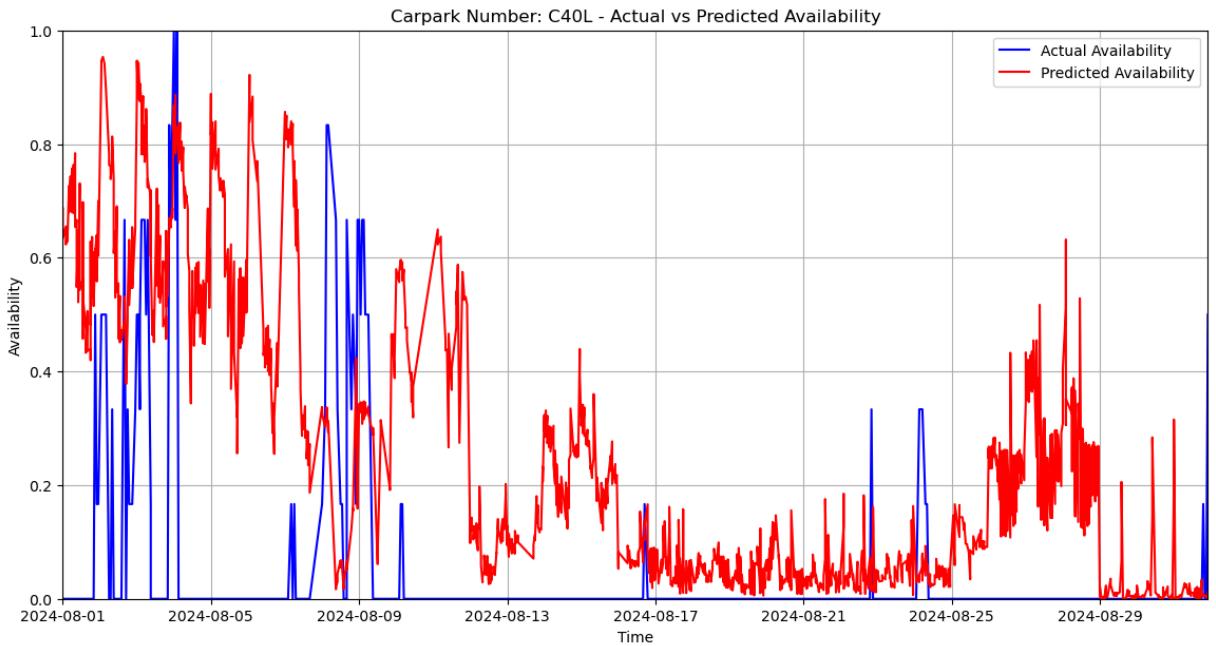


```
Model saved as model_C3ML.sav
Training model for carpark_number: C40L
Testing MSE: 0.09927944029825293
R-squared: -3.363123200131003
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



```

Model saved as model_C40L.sav
Training model for carpark_number: C40M
Testing MSE: 0.002696187492675589
R-squared: 0.59254085558377896

```

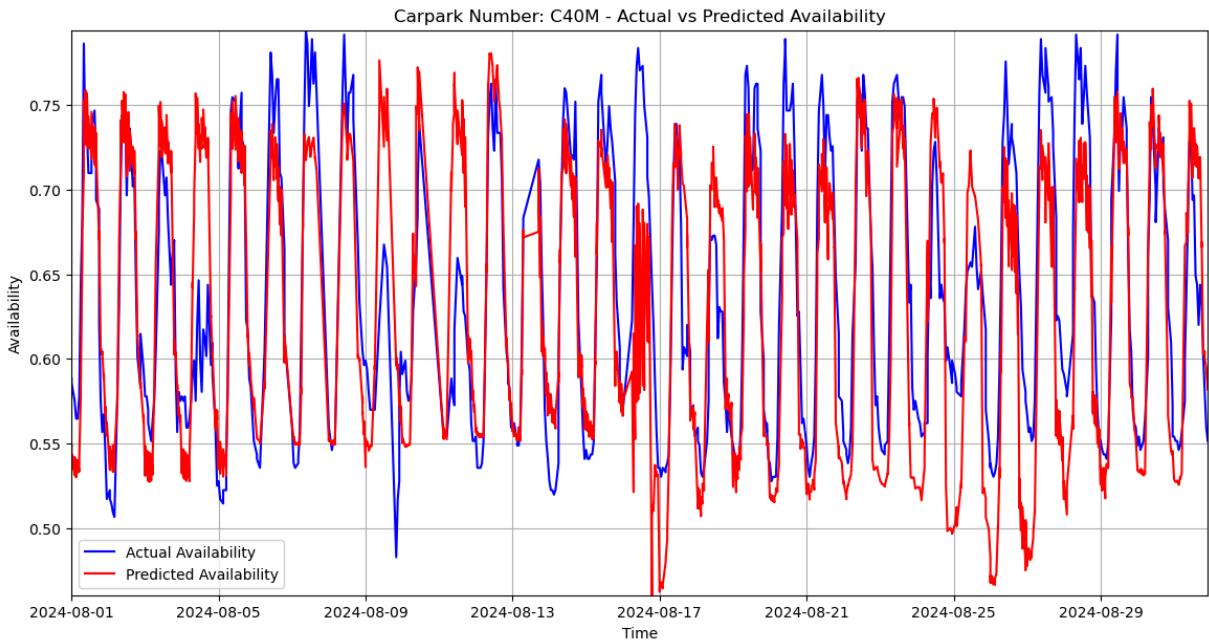
```

/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)

```



```
Model saved as model_C40M.sav
Training model for carpark_number: C4M
Testing MSE: 0.007054272196535932
R-squared: 0.04048108732636757
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
```

```
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

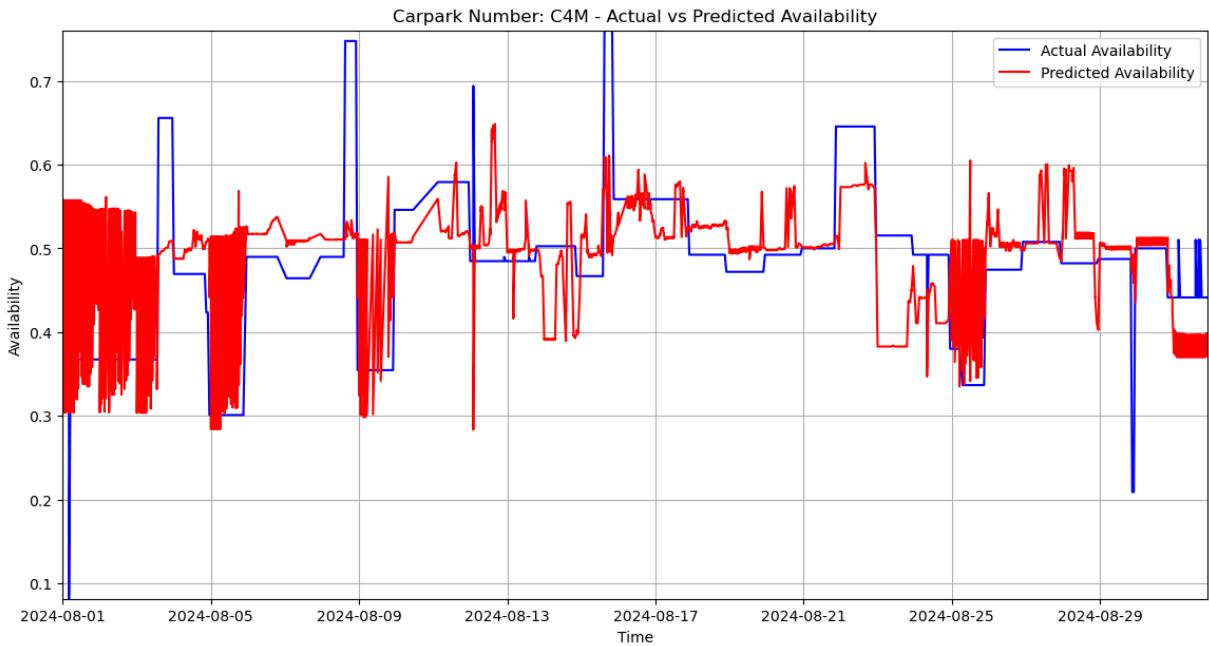
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
```

```
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

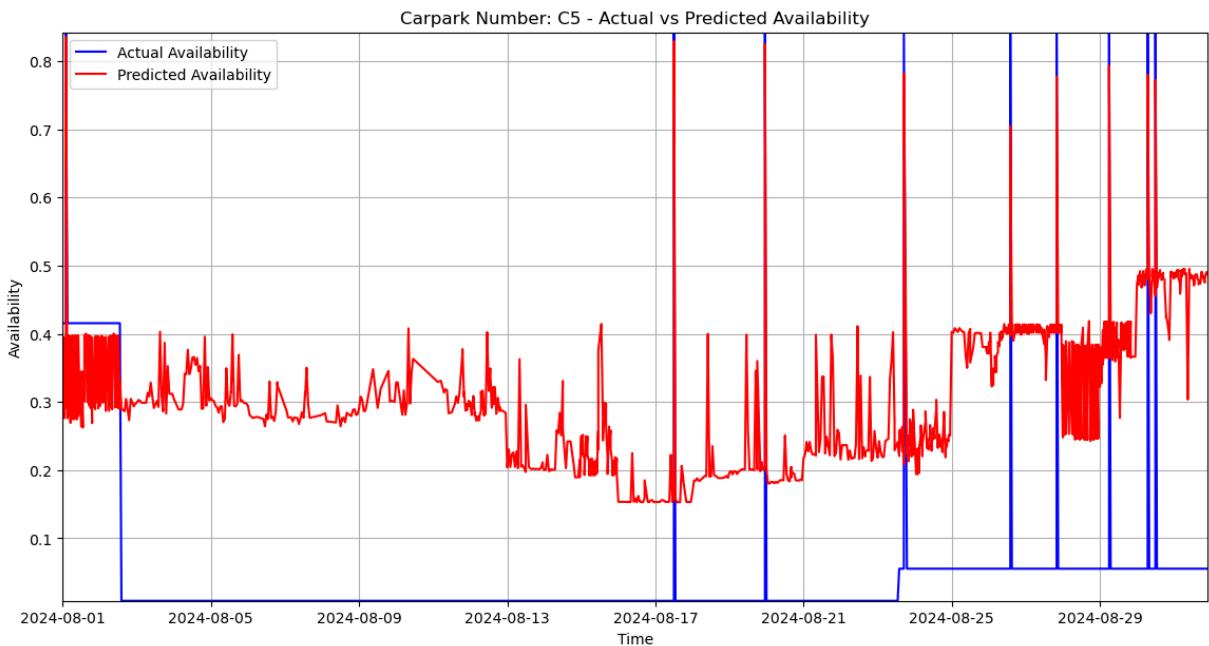


```
Model saved as model_C4M.sav
Training model for carpark_number: C5
Testing MSE: 0.07406619832348722
R-squared: -3.2108253821325947
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Model saved as model_C5.sav

Training model for carpark_number: C6

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

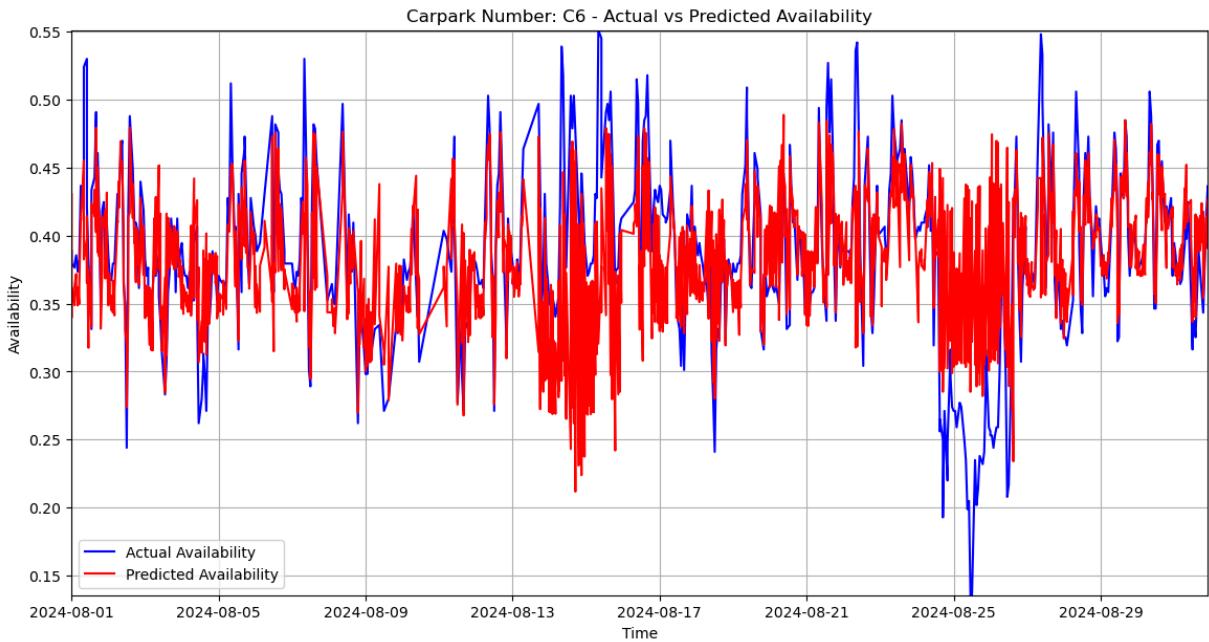
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.003544910842610952

R-squared: 0.17475830290241212



```
Model saved as model_C6.sav
```

```
Training model for carpark_number: C7
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

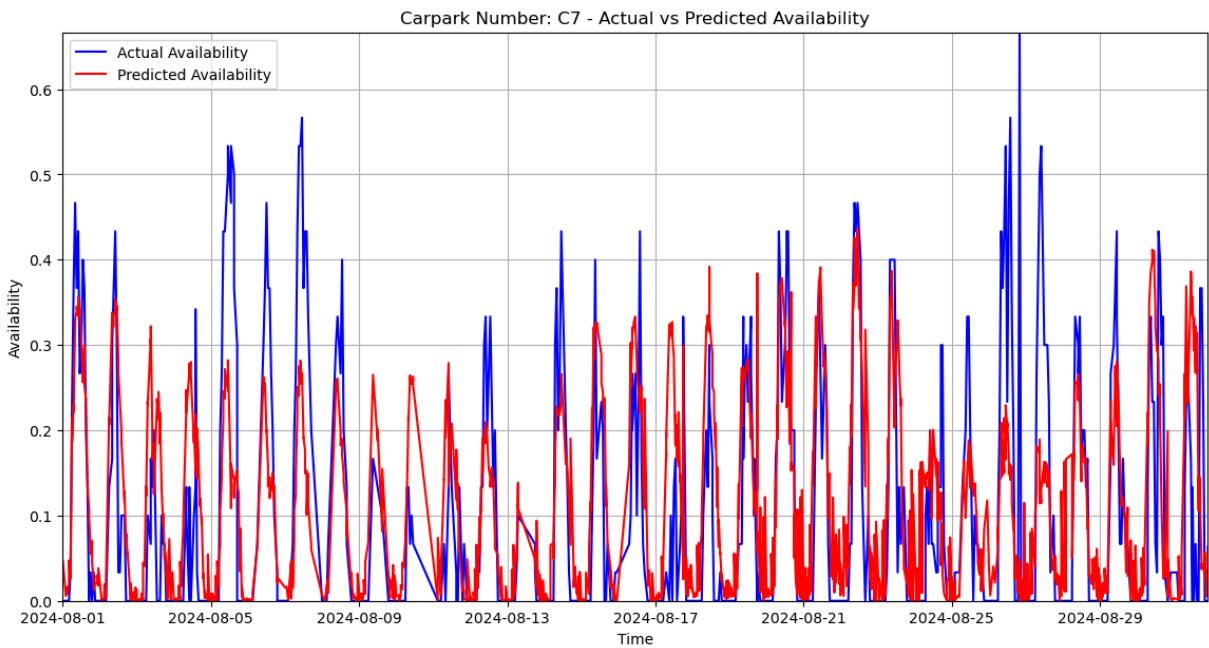
```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

```
Testing MSE: 0.013261716056039522
```

```
R-squared: 0.37658194266755207
```



Model saved as model_C7.sav

Training model for carpark_number: C8

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

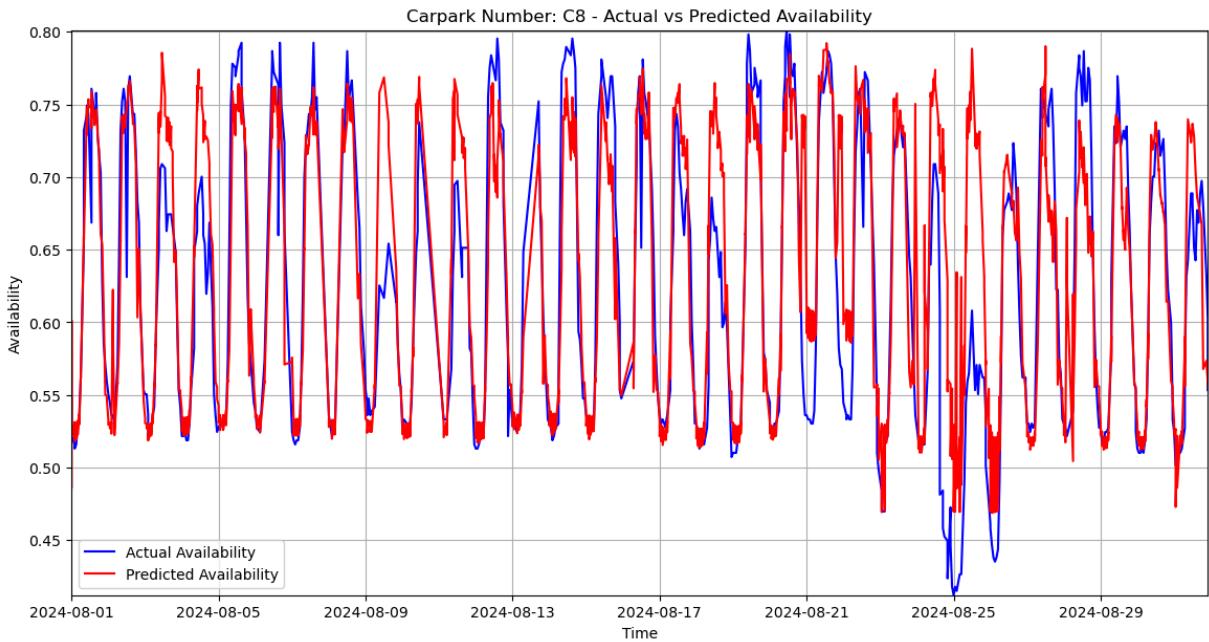
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.0031678522247029

R-squared: 0.6785491793915102



```
Model saved as model_C8.sav
Training model for carpark_number: C9
Testing MSE: 0.017121534839639626
R-squared: -19.638416629403288
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
```

```
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

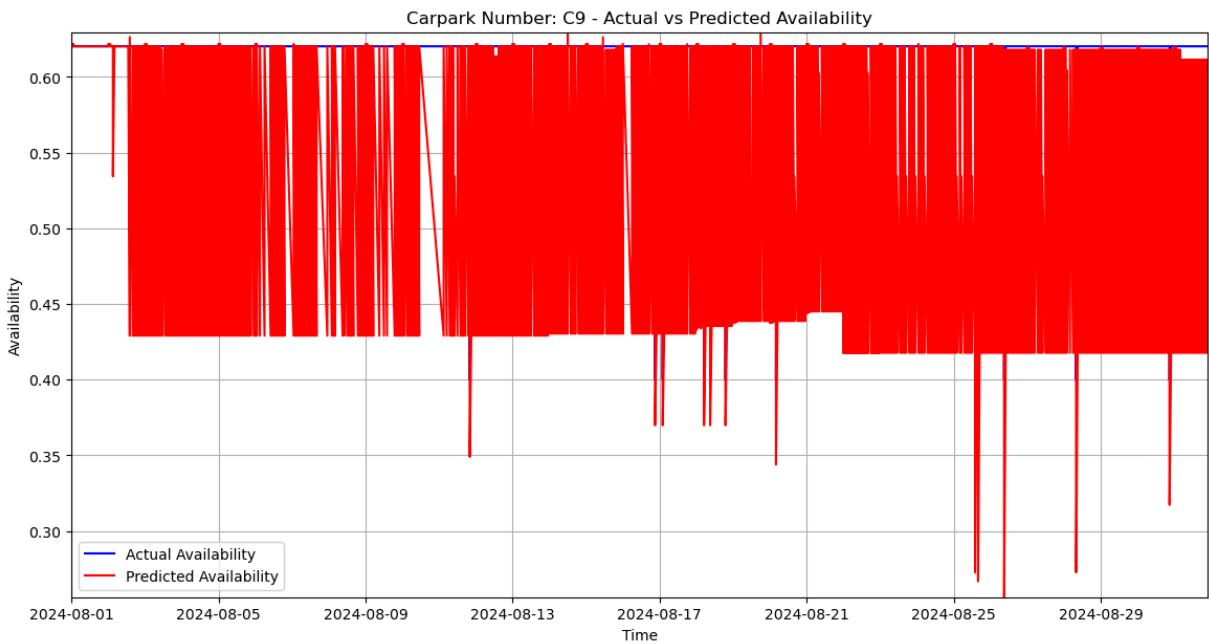
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
```

```
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



```
Model saved as model_C9.sav
```

```
Training model for carpark_number: CAM
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

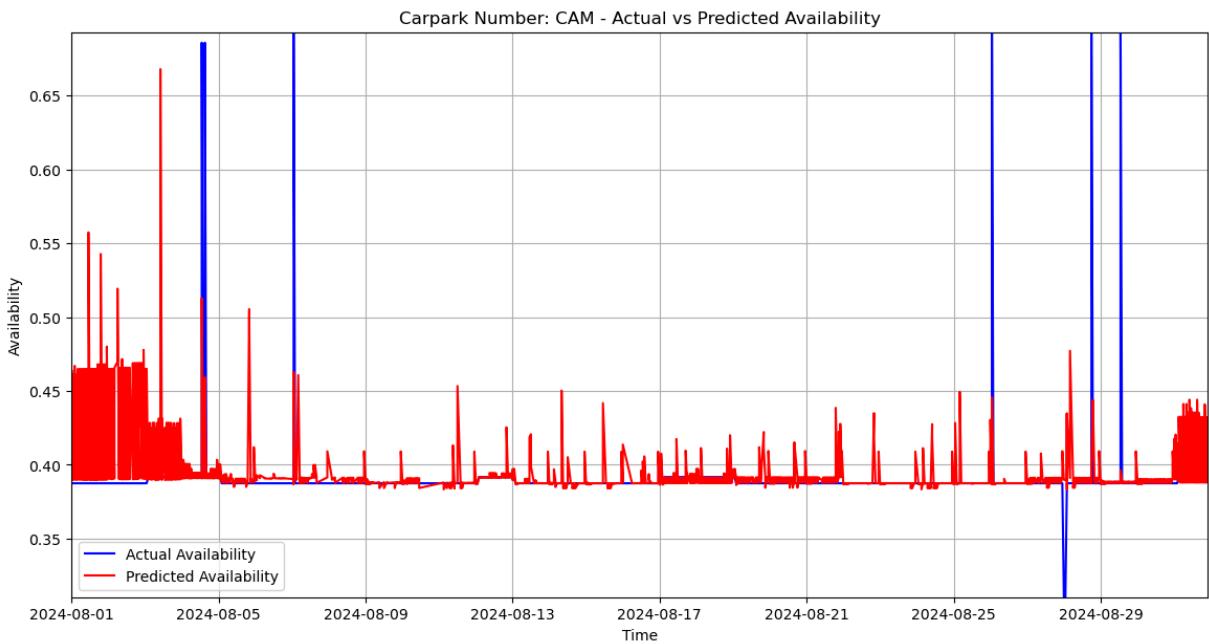
```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

```
Testing MSE: 0.0010489976928416513
```

```
R-squared: -0.28545213442447603
```



```
Model saved as model_CAM.sav
```

```
Training model for carpark_number: CDM
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

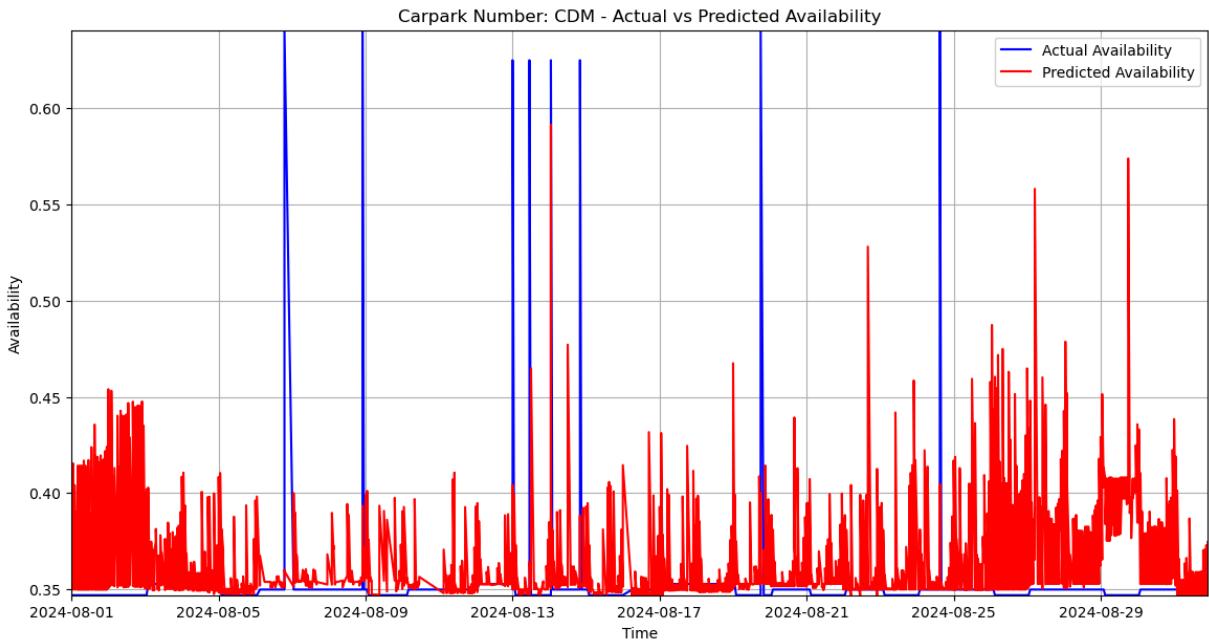
```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

```
Testing MSE: 0.0020283416072791366
```

```
R-squared: -0.9295990452495473
```

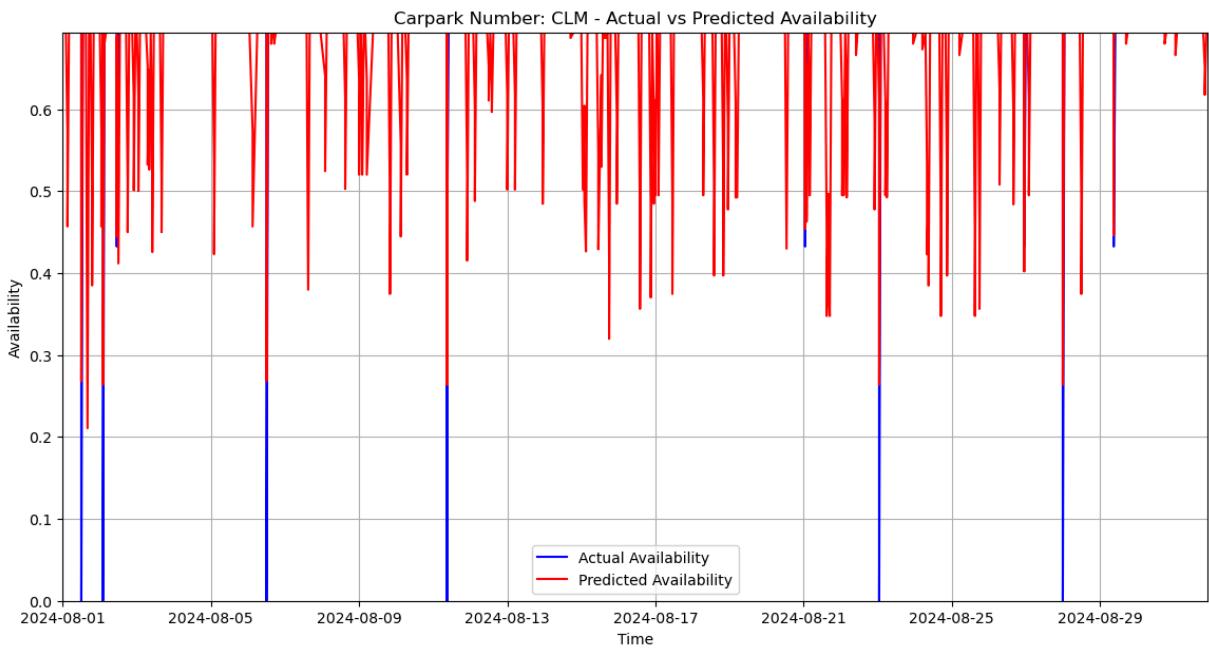


```
Model saved as model_CDM.sav
Training model for carpark_number: CLM
Testing MSE: 0.006186402511459173
R-squared: -0.3364314115859728
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

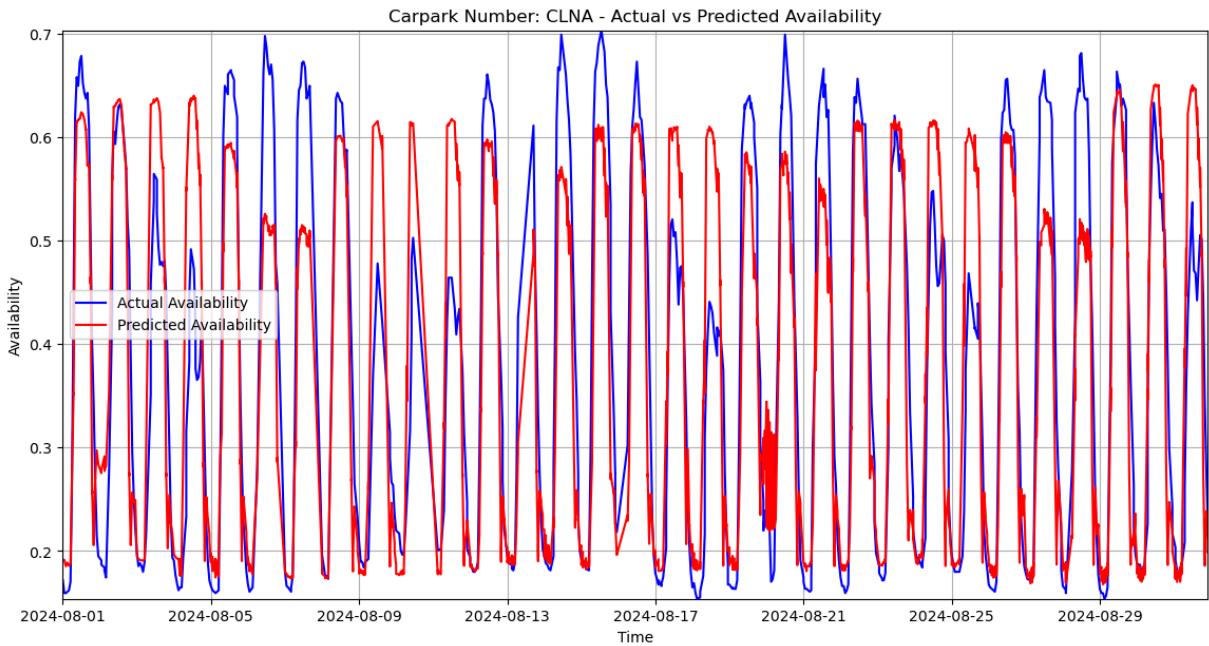


```
Model saved as model_CLM.sav
Training model for carpark_number: CLNA
Testing MSE: 0.008817182416191047
R-squared: 0.7399423156343576
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Model saved as model_CLNA.sav

Training model for carpark_number: CLRG

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

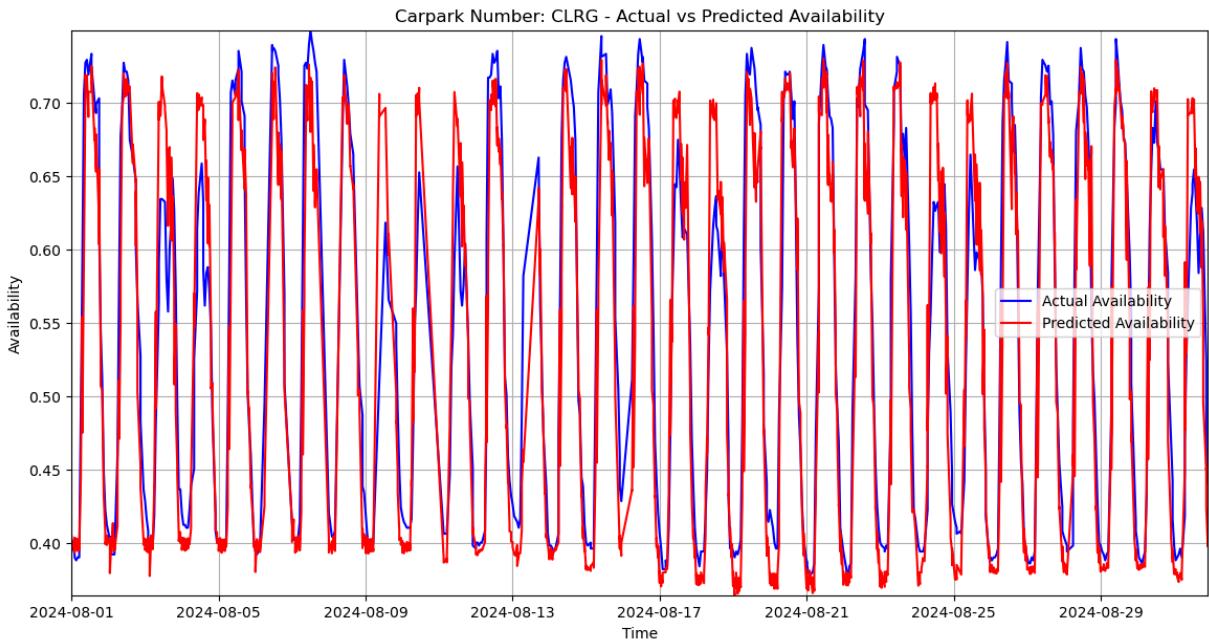
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.0020963282995465123

R-squared: 0.8696230939783041



```
Model saved as model_CLRG.sav
```

```
Training model for carpark_number: CLTR
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

```
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

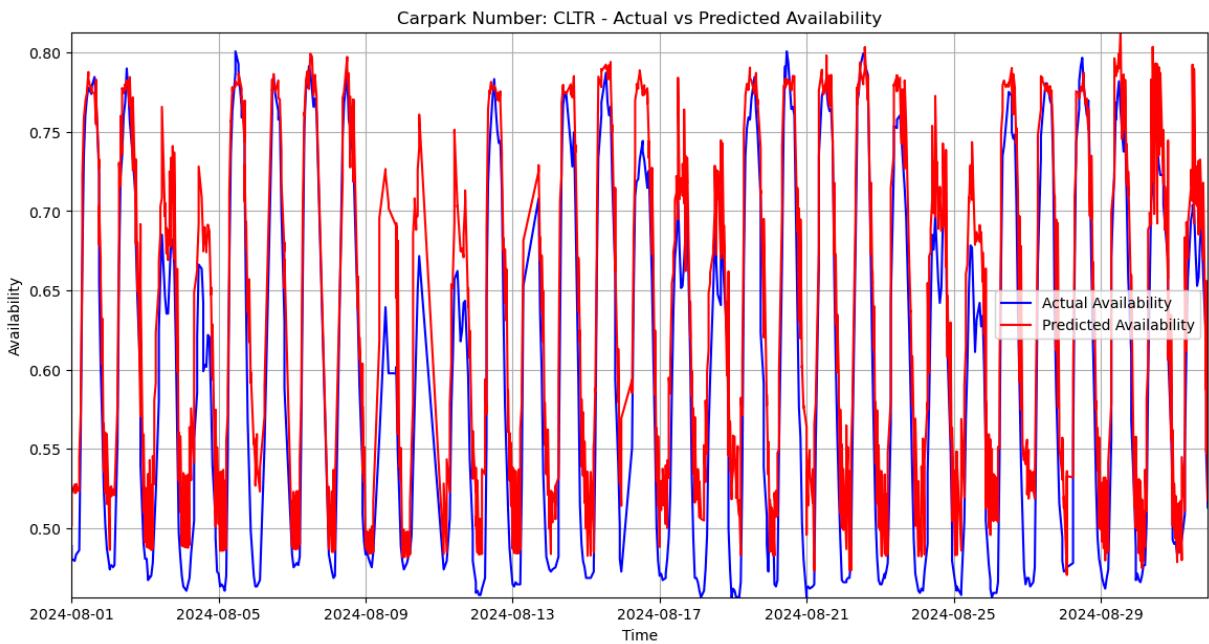
```
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

```
Testing MSE: 0.0026797354321106926
```

```
R-squared: 0.8073240445313723
```



```
Model saved as model_CLTR.sav
```

```
Training model for carpark_number: CTM1
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

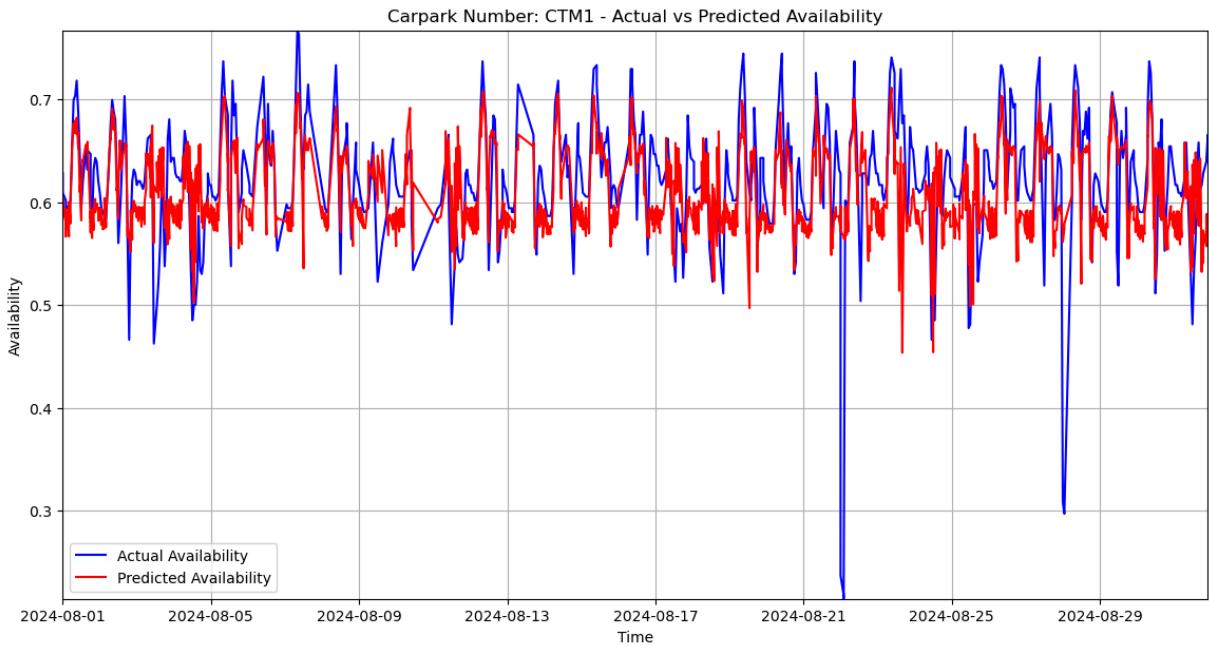
```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

```
Testing MSE: 0.002794435102915843
```

```
R-squared: 0.24924894401148578
```



Model saved as model_CTM1.sav

Training model for carpark_number: DRM1

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

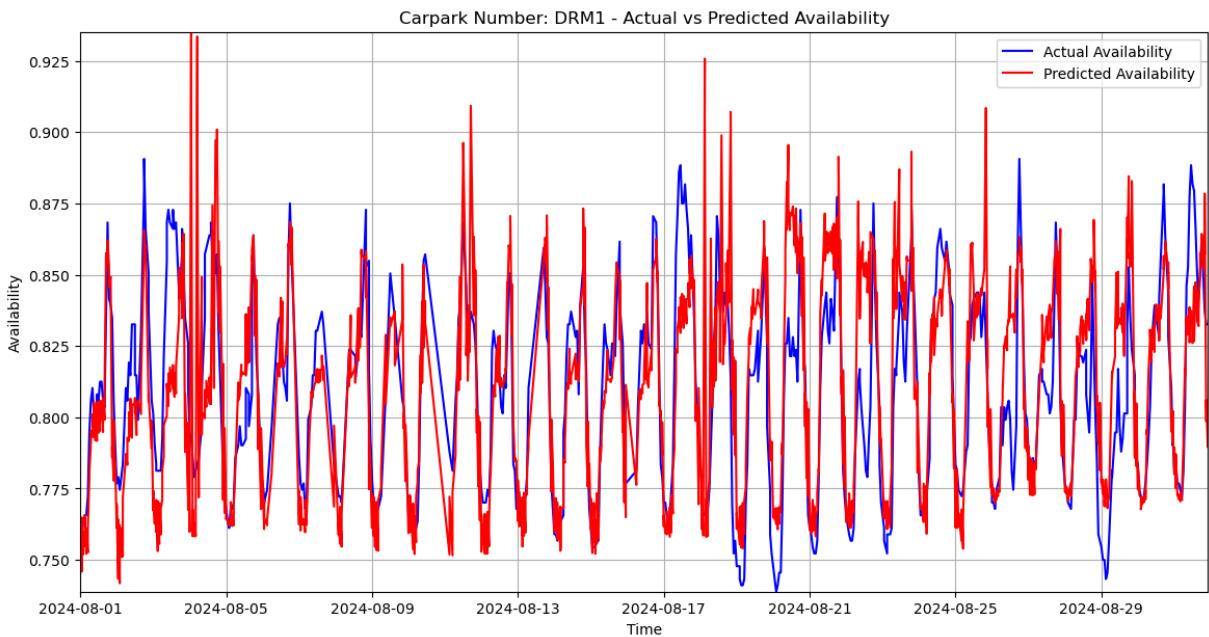
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.0006576988717167167

R-squared: 0.45472880000651095



```
Model saved as model_DRM1.sav
```

```
Training model for carpark_number: DRM2
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.
```

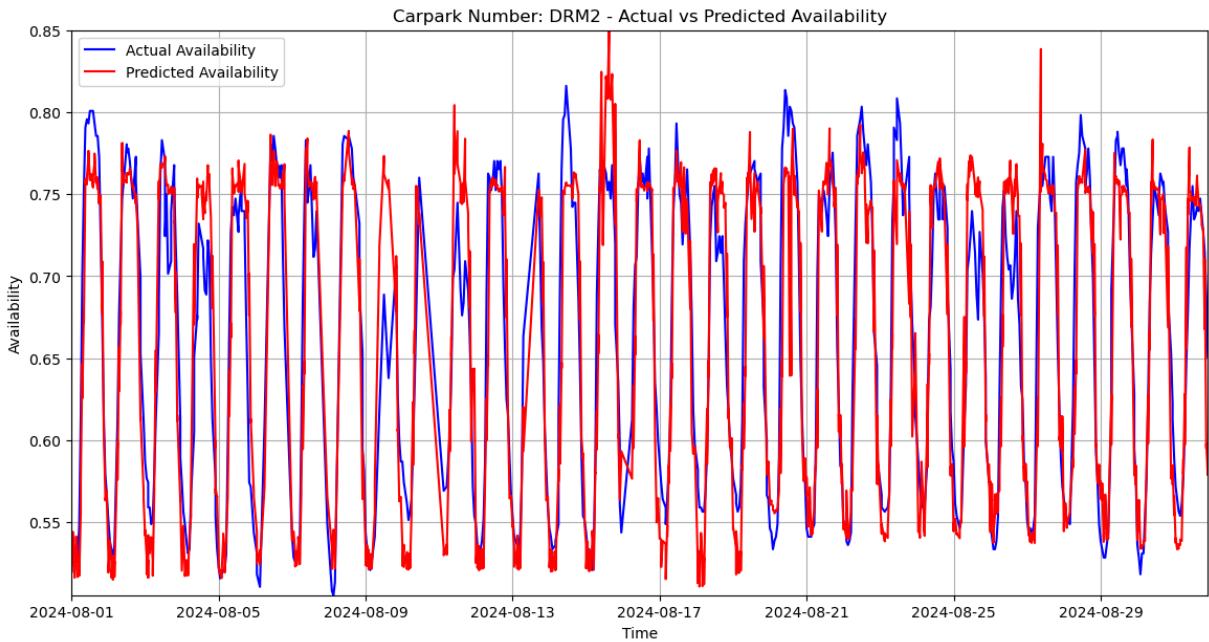
```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

```
Testing MSE: 0.001455557704521787
```

```
R-squared: 0.8275955323074504
```



```
Model saved as model_DRM2.sav
```

```
Training model for carpark_number: DRM3
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

```
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

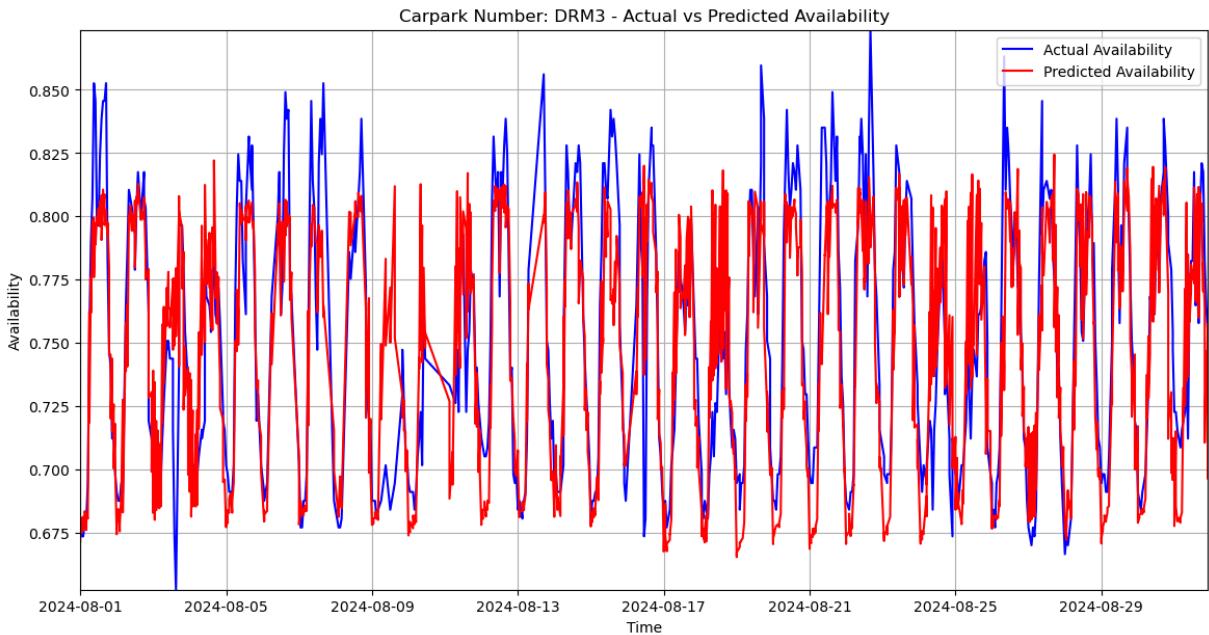
```
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

```
Testing MSE: 0.000869493274829059
```

```
R-squared: 0.6725074646816445
```



```
Model saved as model_DRM3.sav
```

```
Training model for carpark_number: DRM4
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.
```

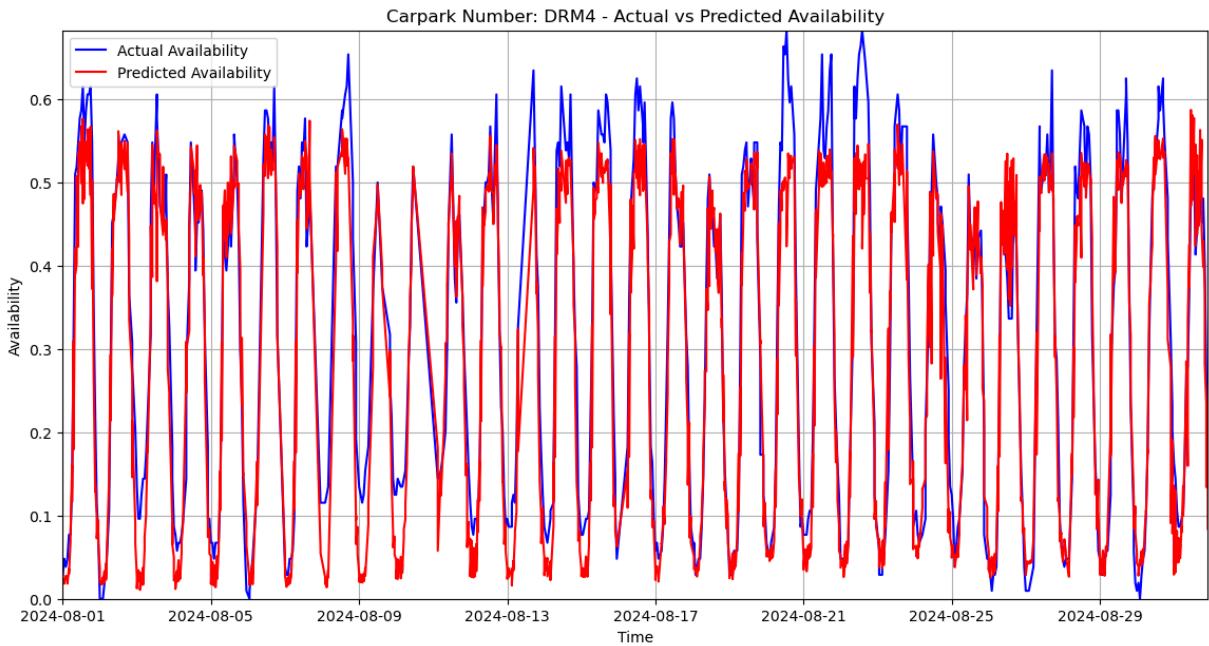
```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

```
Testing MSE: 0.004083371086811282
```

```
R-squared: 0.9025421303762422
```



Model saved as model_DRM4.sav

Training model for carpark_number: DRM5

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

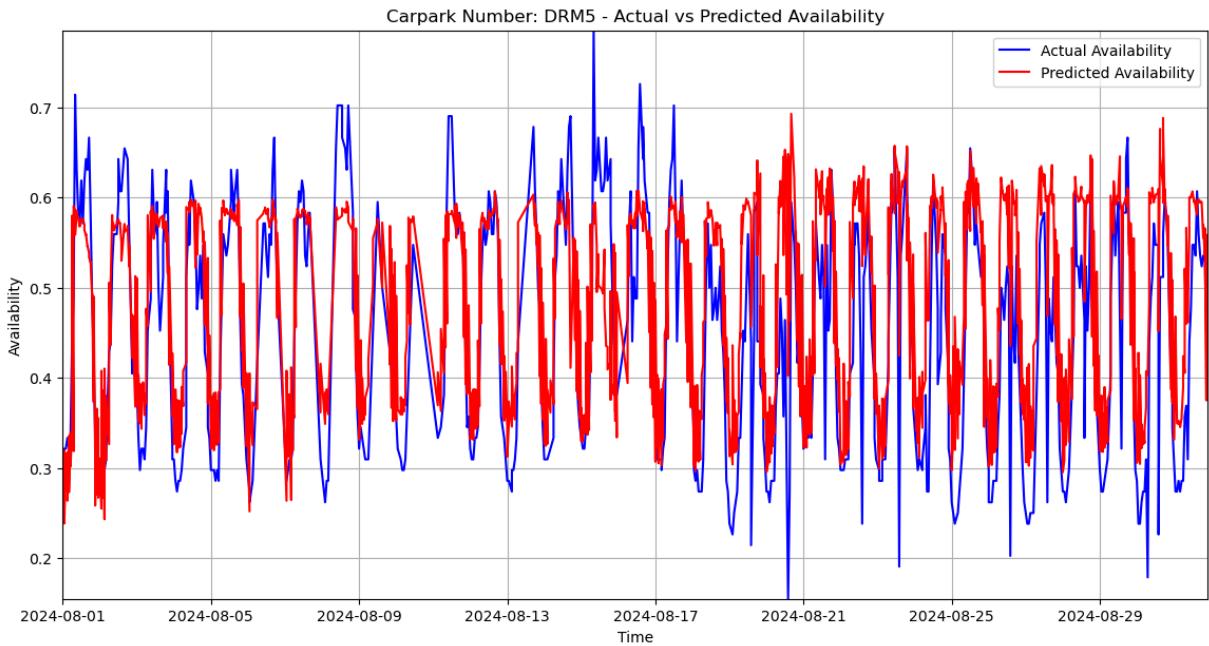
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.008720071127292077

R-squared: 0.48056234221110306



Model saved as model_DRM5.sav

Training model for carpark_number: DRS

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

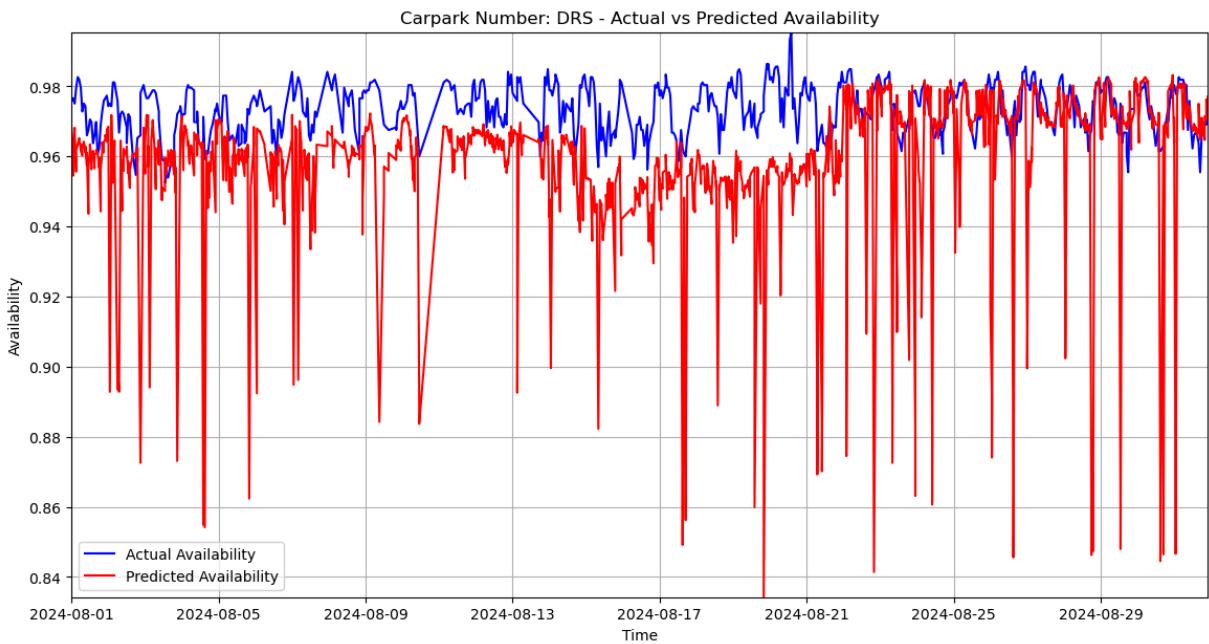
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.0008235414457413551

R-squared: -16.12088315095459



```
Model saved as model_DRS.sav
```

```
Training model for carpark_number: DSR1
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

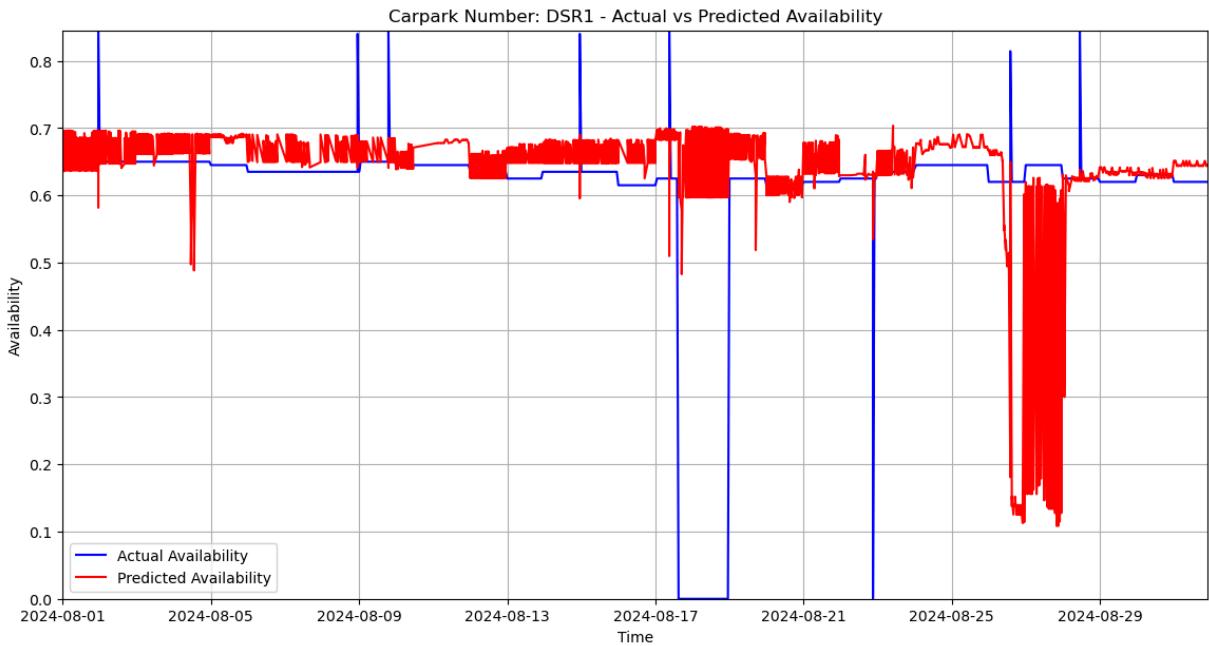
```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

```
Testing MSE: 0.029938264436891664
```

```
R-squared: -0.5249361034706024
```



Model saved as model_DSR1.sav

Training model for carpark_number: DSR2

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

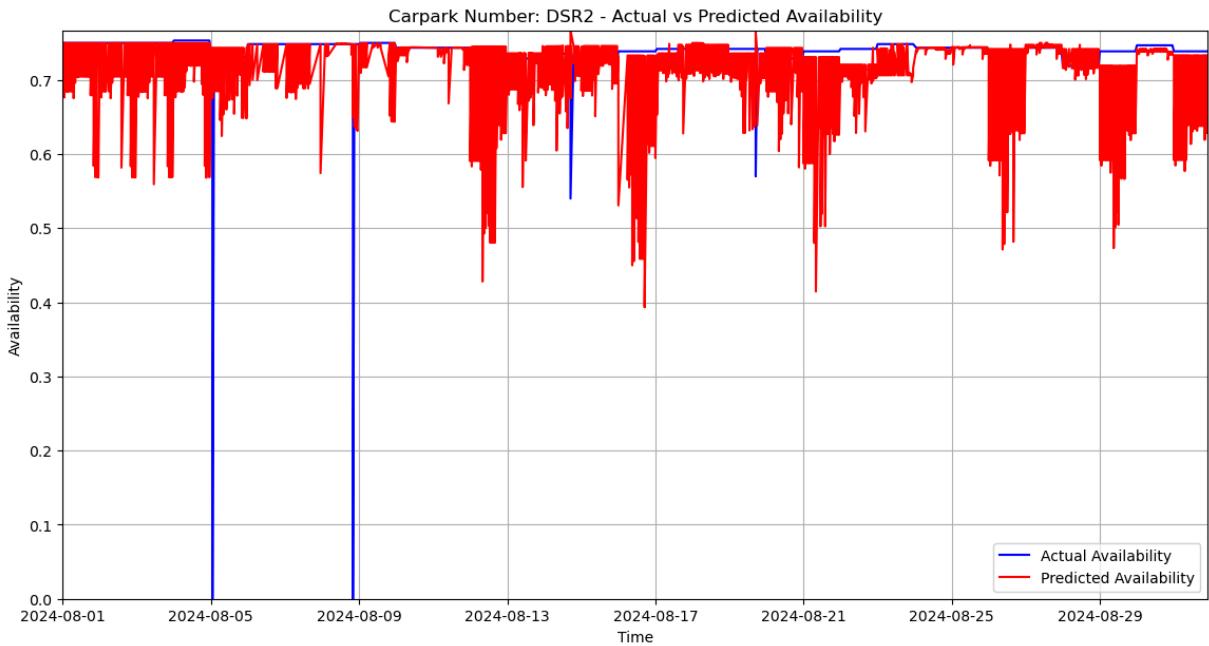
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.0063625999486333455

R-squared: -2.5959988350589747



Model saved as `model_DSR2.sav`

Training model for carpark_number: DSRL

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using `.loc[row_indexer,col_indexer] = value` instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

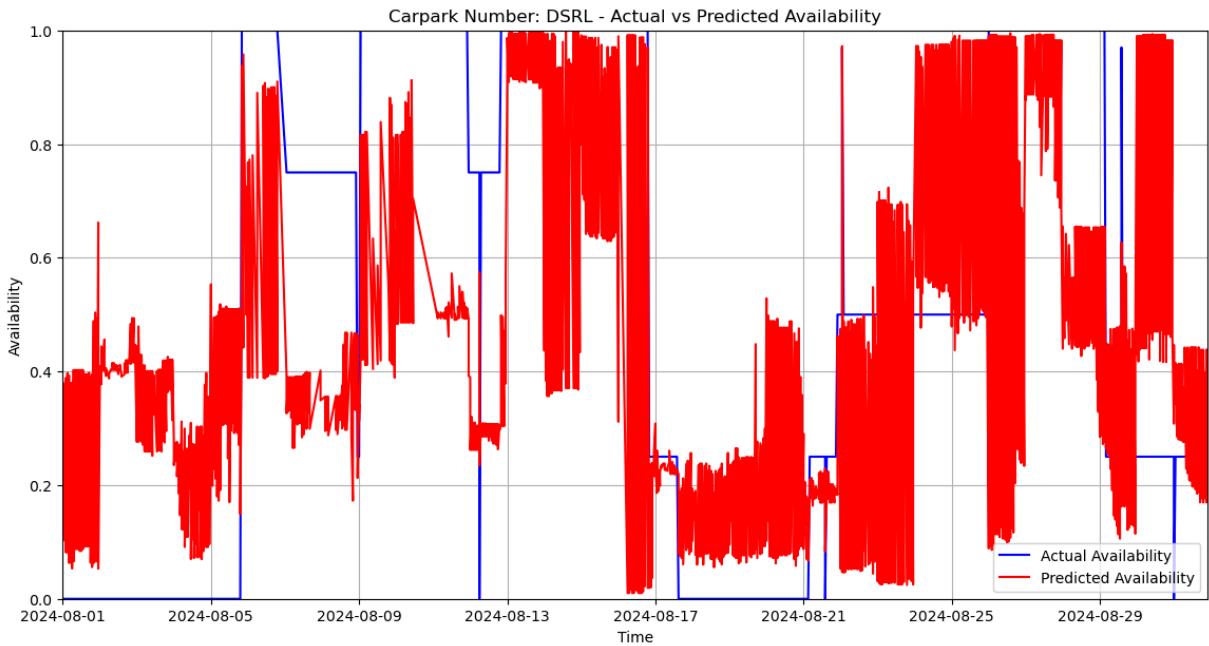
Try using `.loc[row_indexer,col_indexer] = value` instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.12828585175068807

R-squared: 0.24794112278951042



Model saved as `model_DSRL.sav`

Training model for carpark_number: DWSO

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
```

Try using `.loc[row_indexer,col_indexer] = value` instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
```

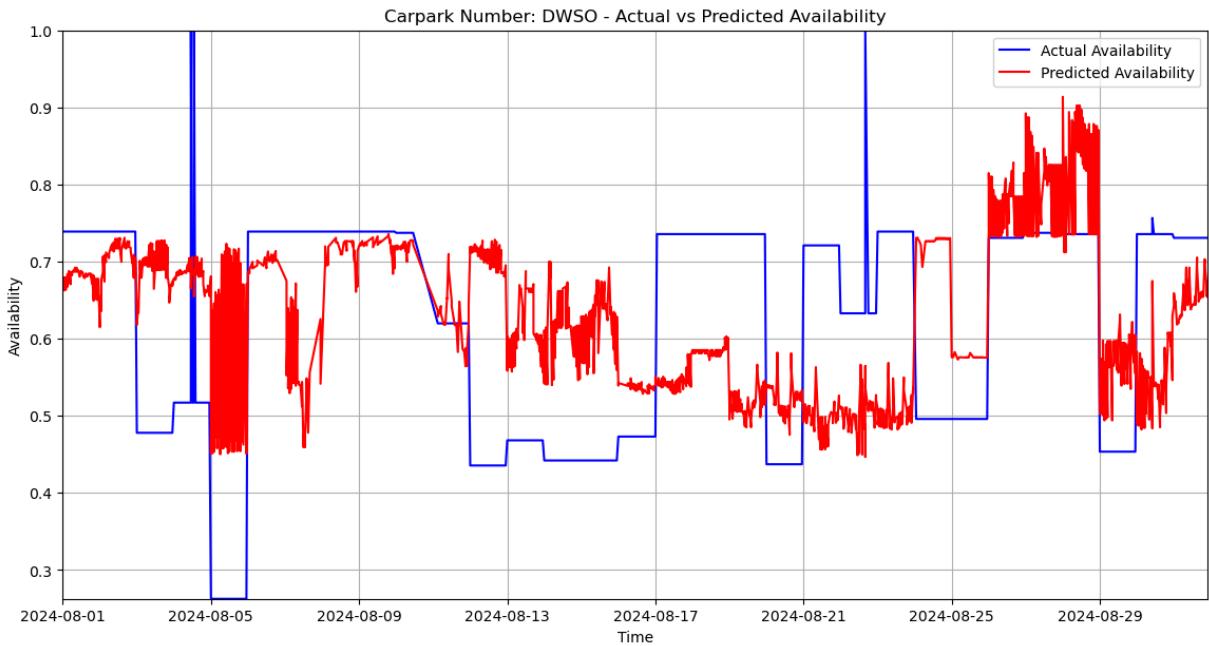
Try using `.loc[row_indexer,col_indexer] = value` instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.027565414876237676

R-squared: -0.3008414862275546



Model saved as model_DWSO.sav

Training model for carpark_number: DWSP

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

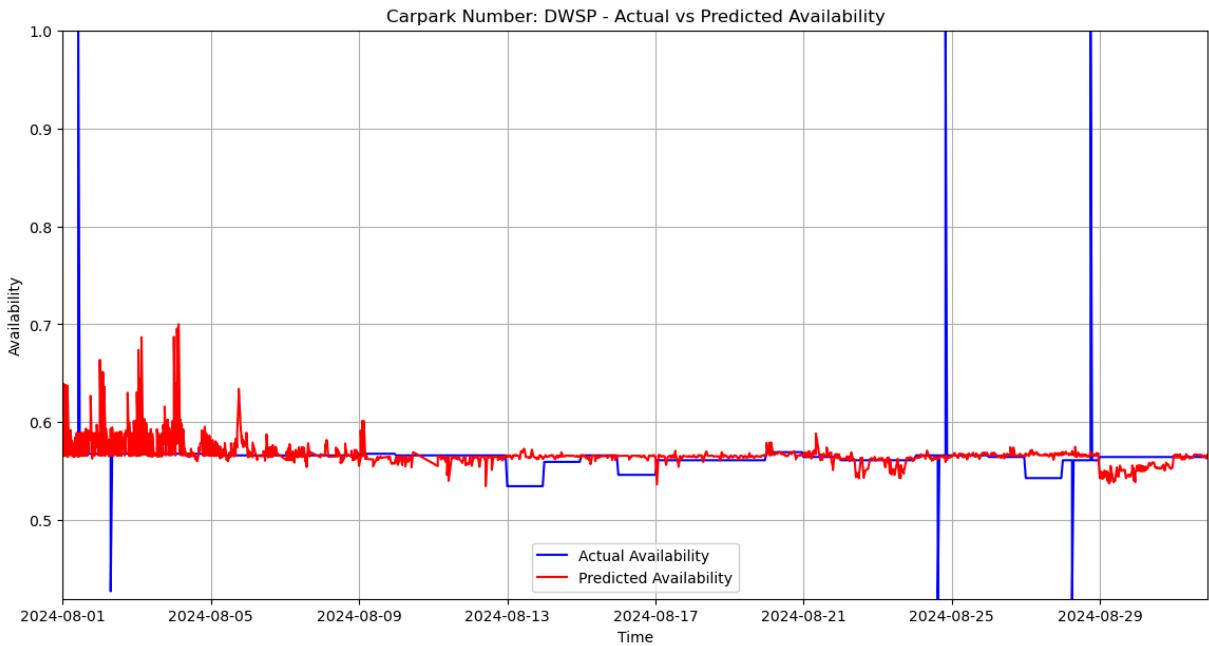
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.0011703037065071958

R-squared: -0.18999165737832047



Model saved as model_DWSP.sav

Training model for carpark_number: DWST

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

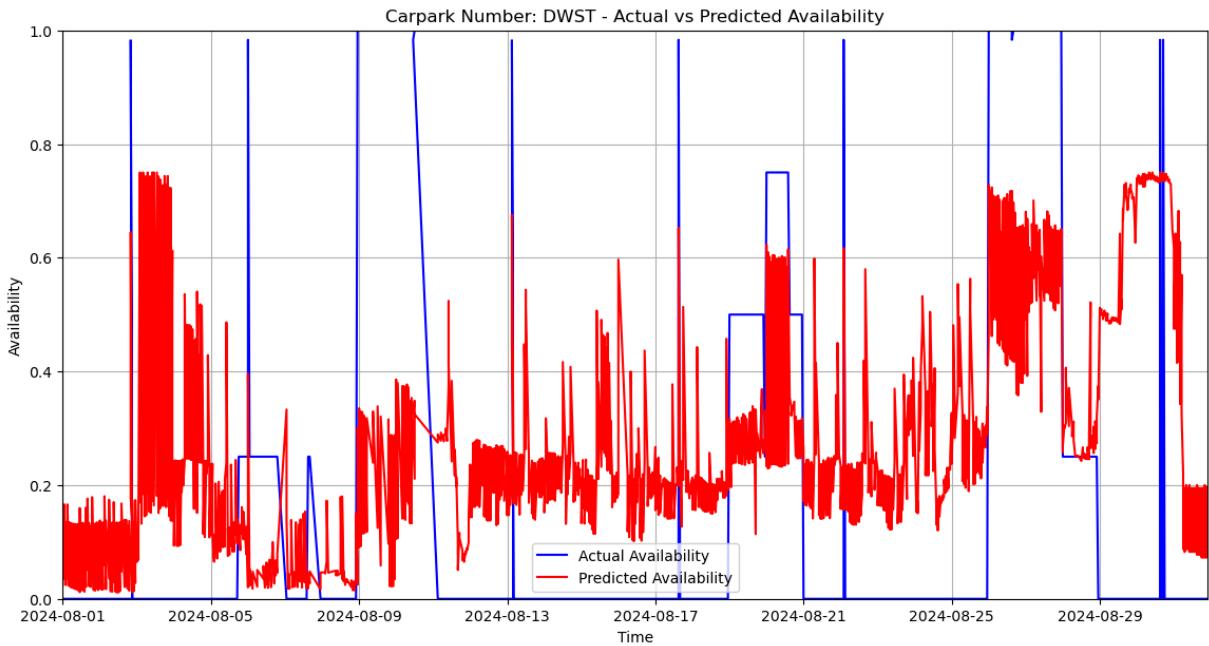
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.12365279243893935

R-squared: -0.06320276511998646



Model saved as `model_DWST.sav`

Training model for carpark_number: DWSV

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
```

Try using `.loc[row_indexer,col_indexer] = value` instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
```

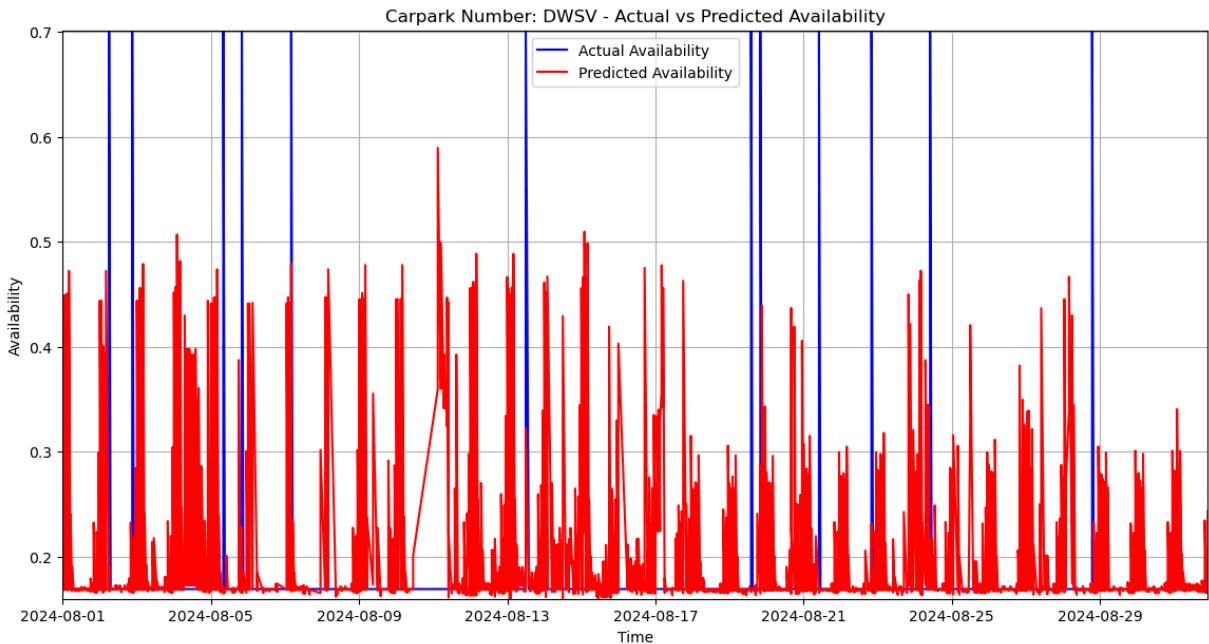
Try using `.loc[row_indexer,col_indexer] = value` instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.013053199282096745

R-squared: -1.4786273563861054



Model saved as model_DWSV.sav

Training model for carpark_number: DWVT

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

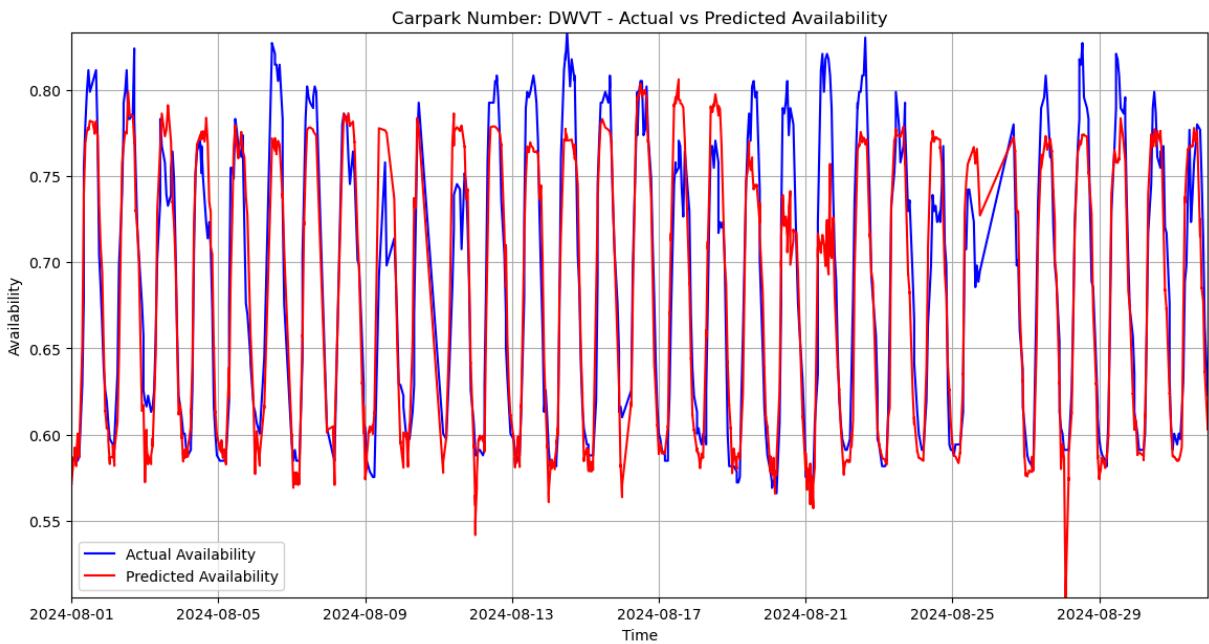
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.000975787014994074

R-squared: 0.8547298384202529



```
Model saved as model_DWVT.sav
```

```
Training model for carpark_number: FR2C
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

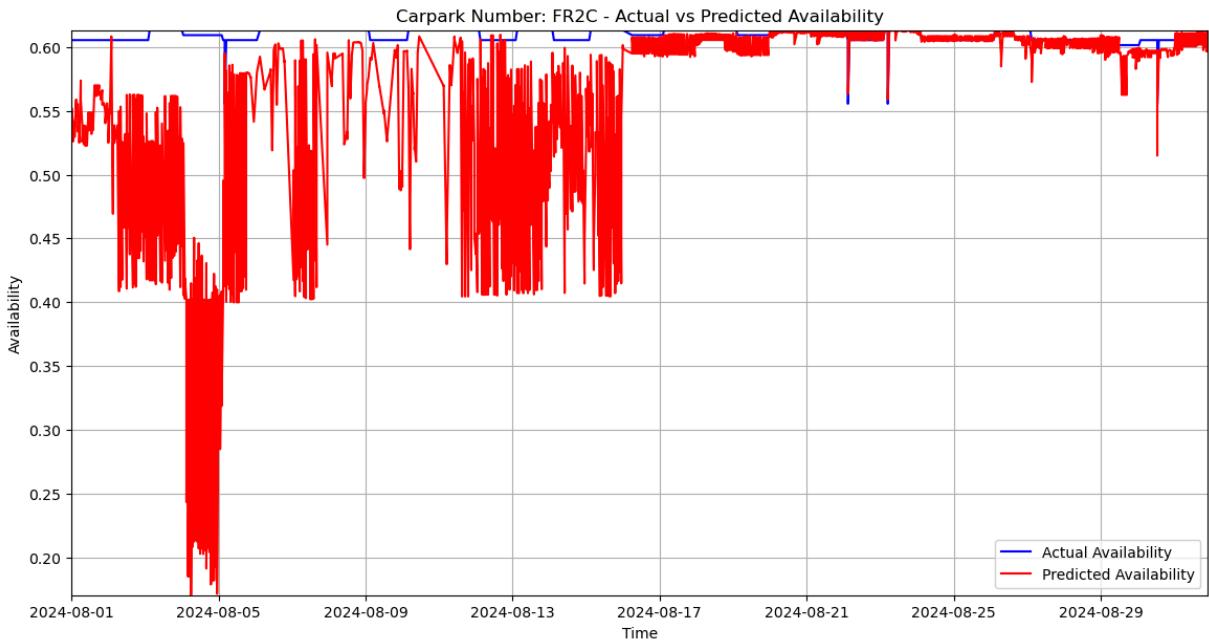
```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

```
Testing MSE: 0.008508546515870203
```

```
R-squared: -276.00631168375406
```



```
Model saved as model_FR2C.sav
```

```
Training model for carpark_number: FR3M
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

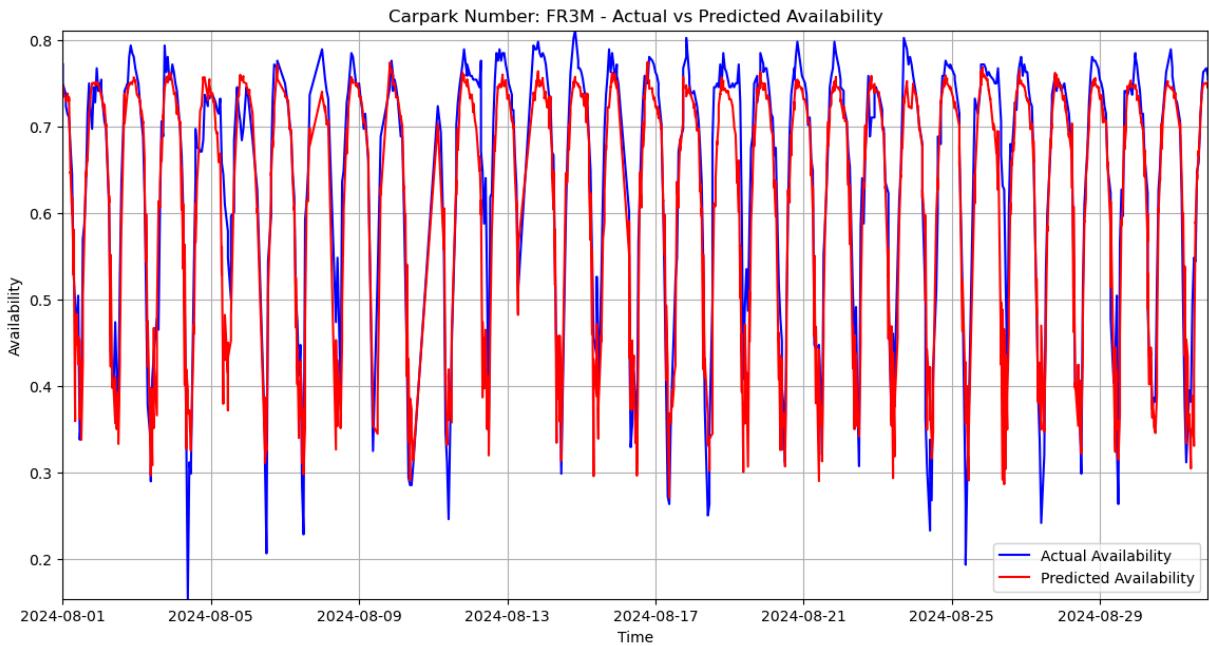
```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

```
Testing MSE: 0.003799353173686852
```

```
R-squared: 0.8326547343855453
```



Model saved as model_FR3M.sav

Training model for carpark_number: FR4M

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
```

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
```

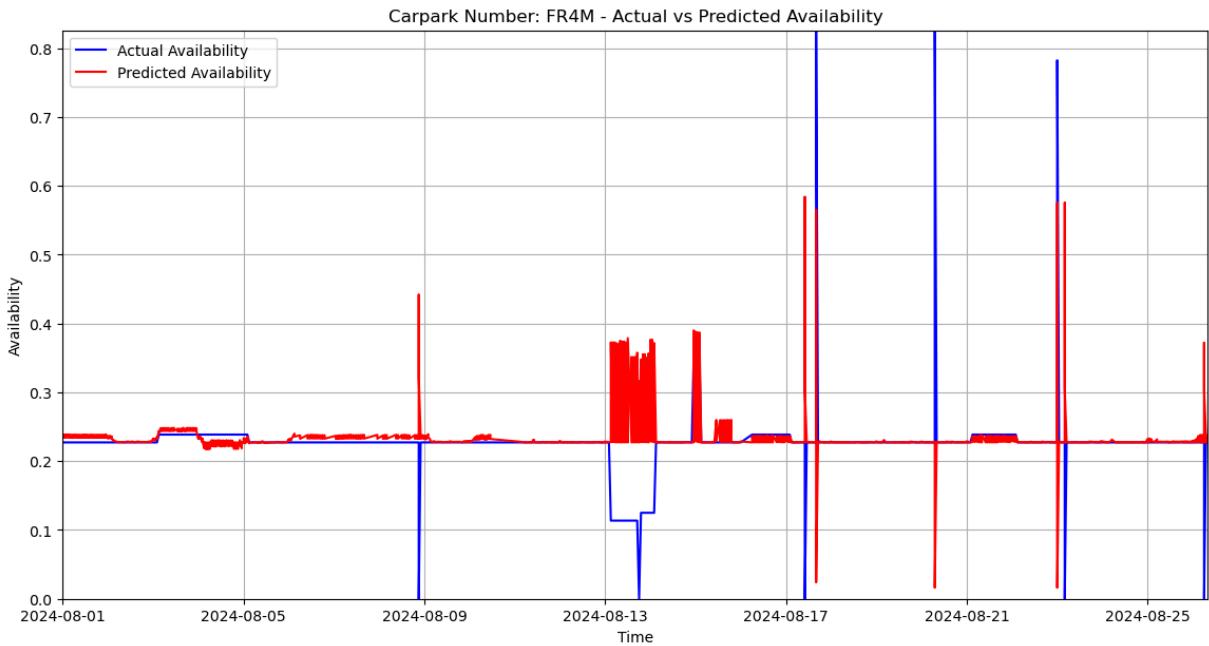
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.005510205598738718

R-squared: -0.8513542793252189



Model saved as model_FR4M.sav

Training model for carpark_number: GM1A

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

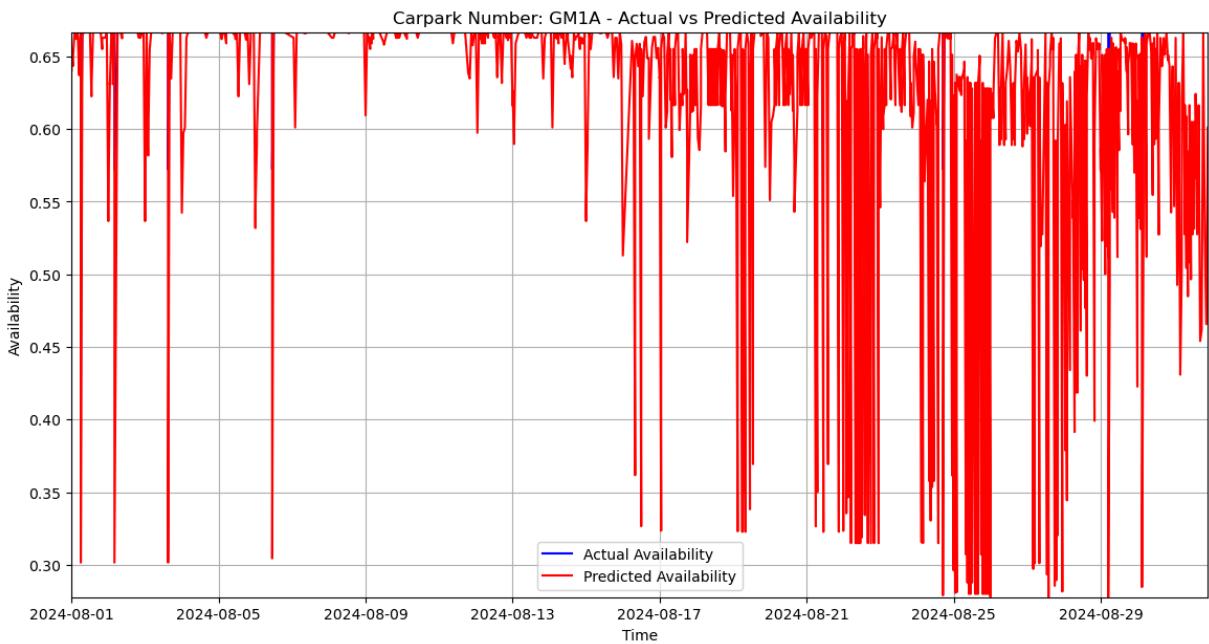
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.008720951431423962

R-squared: -95.59410006396446



```
Model saved as model_GM1A.sav
```

```
Training model for carpark_number: GM1M
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

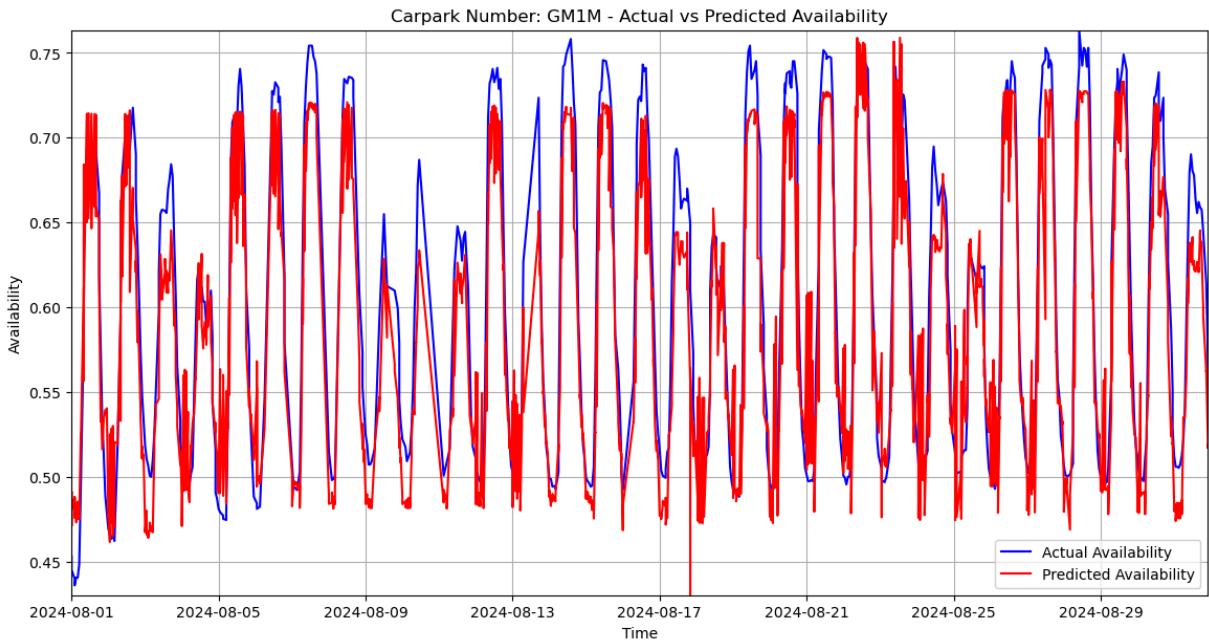
```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

```
Testing MSE: 0.0013388434929980425
```

```
R-squared: 0.8474882956964566
```



```
Model saved as model_GM1M.sav
```

```
Training model for carpark_number: GM2
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

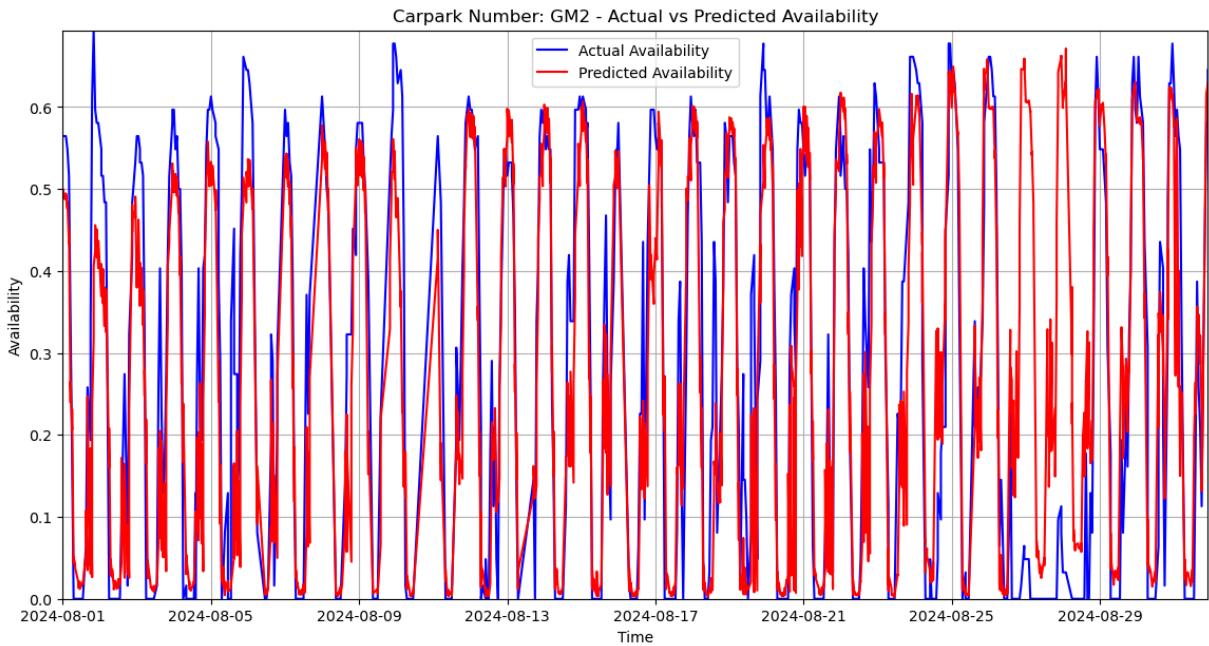
```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

```
Testing MSE: 0.021591717117835835
```

```
R-squared: 0.6386617791577217
```



Model saved as model_GM2.sav

Training model for carpark_number: GM2A

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

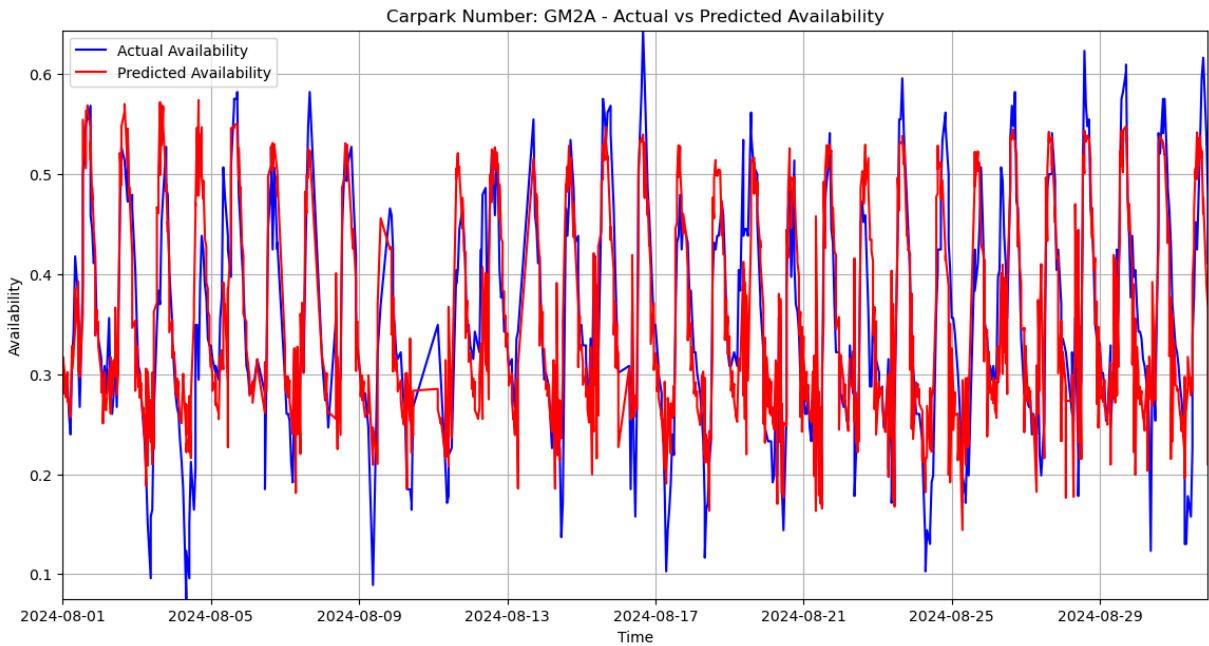
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.004667020225131677

R-squared: 0.6423241282934411



Model saved as model_GM2A.sav

Training model for carpark_number: GM3

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

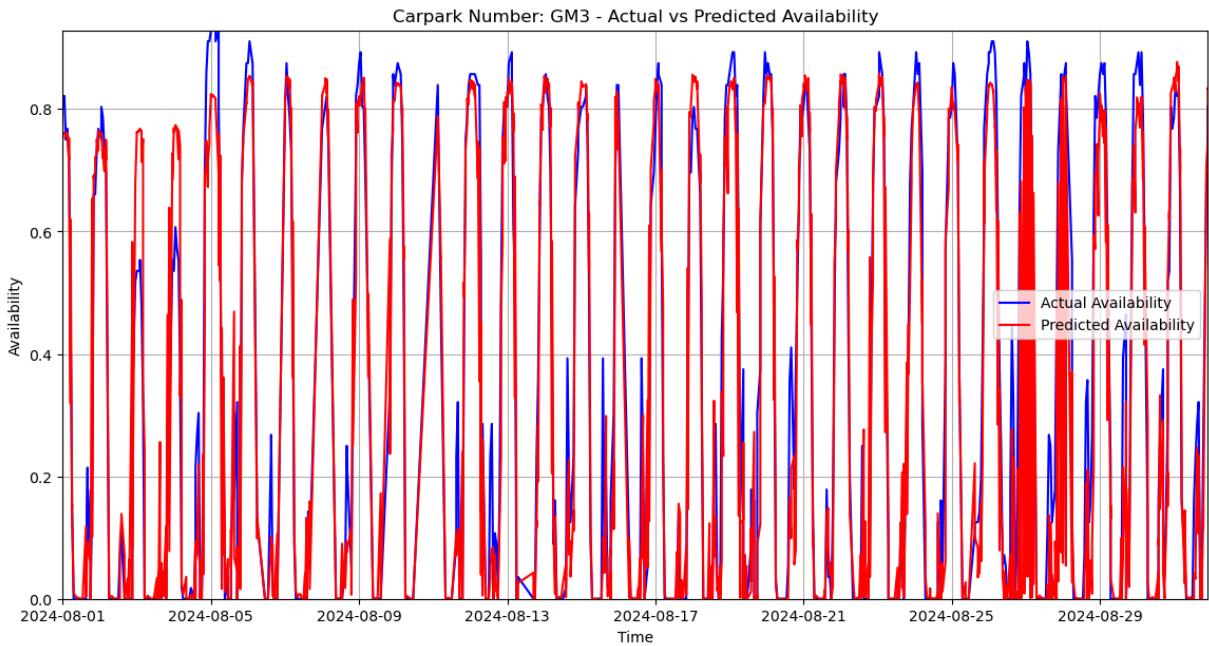
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.01755571127119161

R-squared: 0.8588344108715952



Model saved as model_GM3.sav

Training model for carpark_number: GM5

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

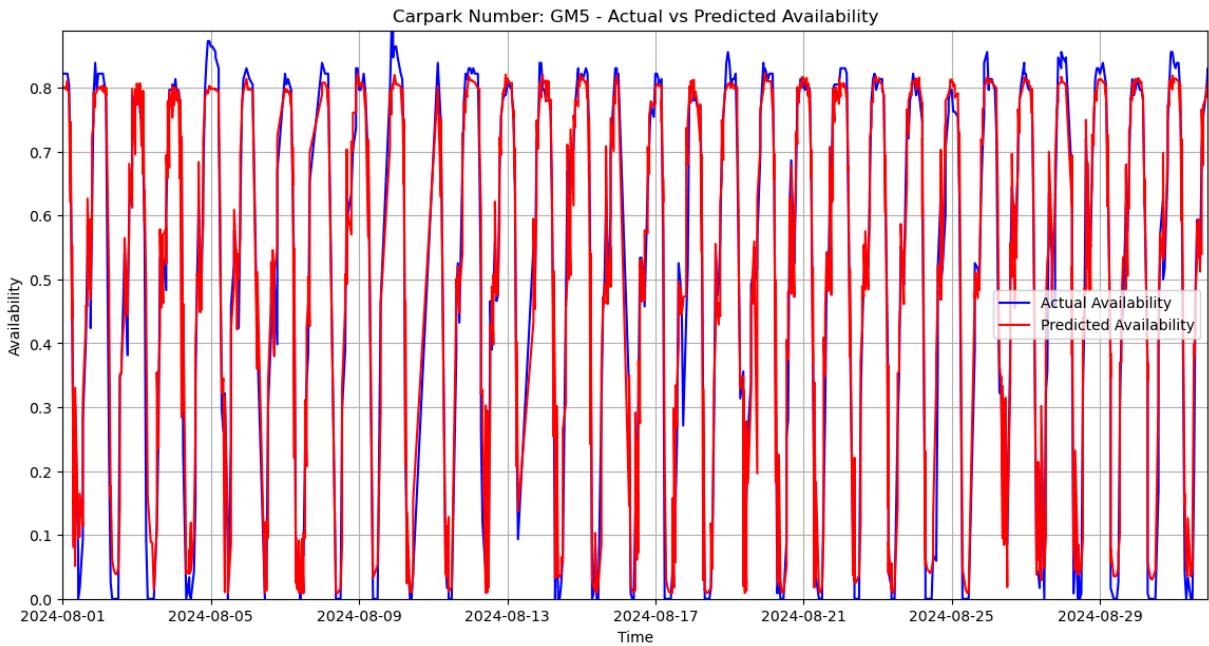
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.005688832957432185

R-squared: 0.9417089614655589



Model saved as model_GM5.sav

Training model for carpark_number: GM6A

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

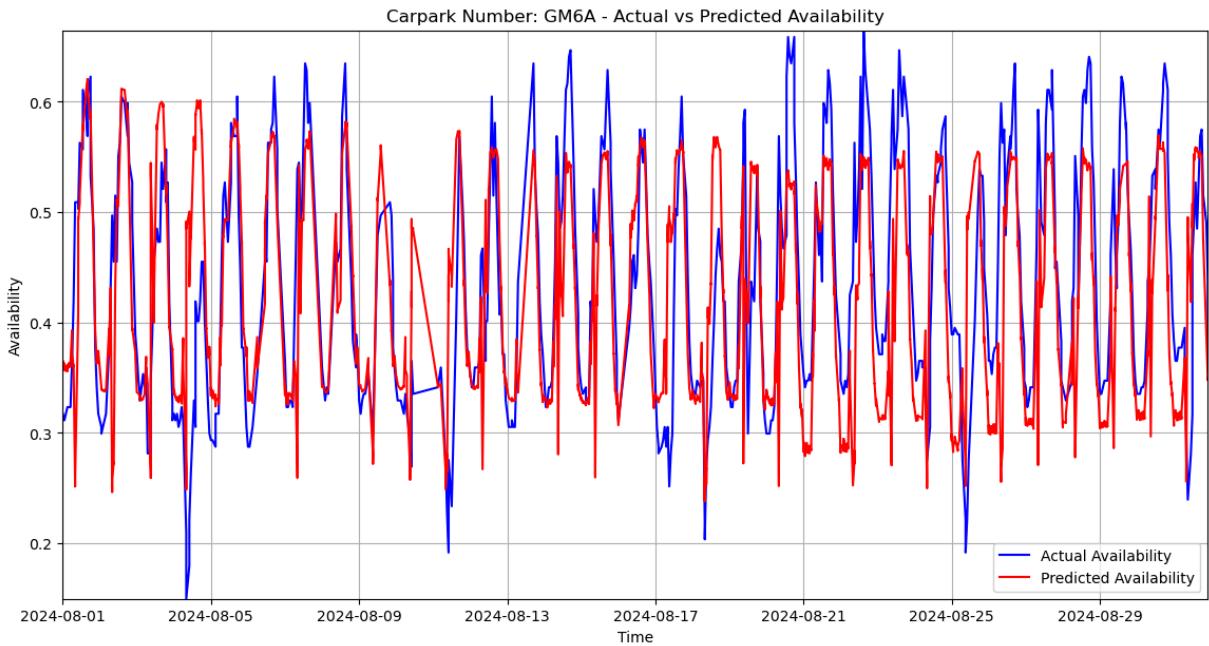
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.007198640277058146

R-squared: 0.38200875986333893



Model saved as model_GM6A.sav

Training model for carpark_number: GM6B

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
```

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
```

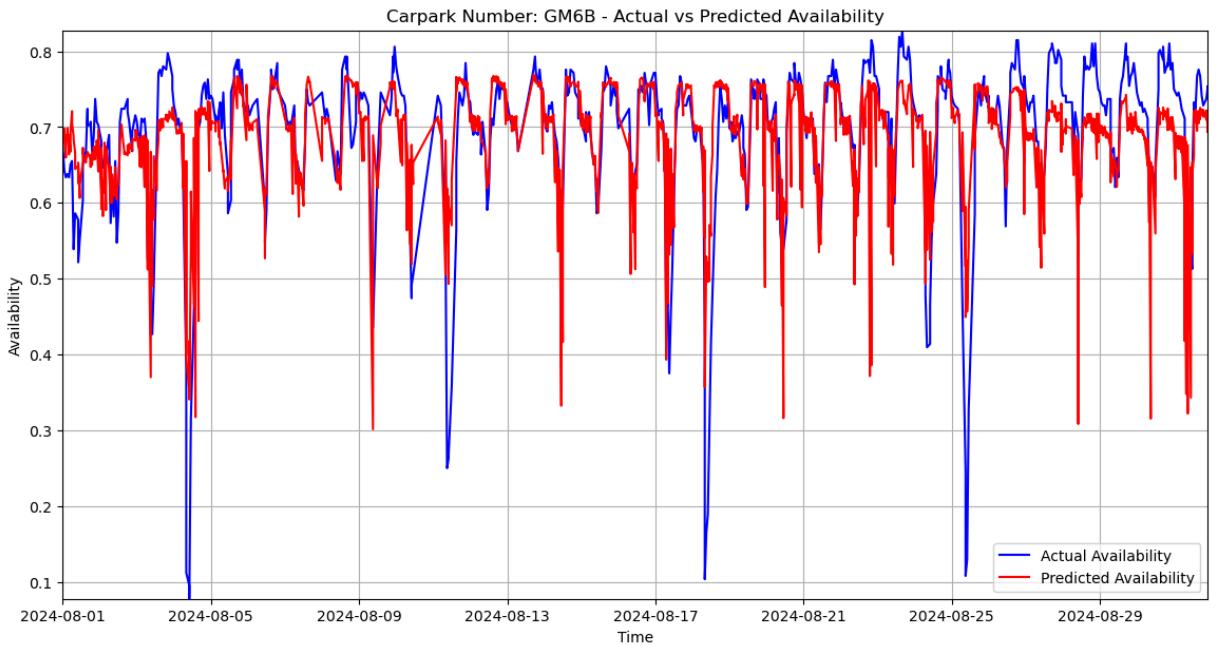
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.006356372544606355

R-squared: 0.4827819696945127

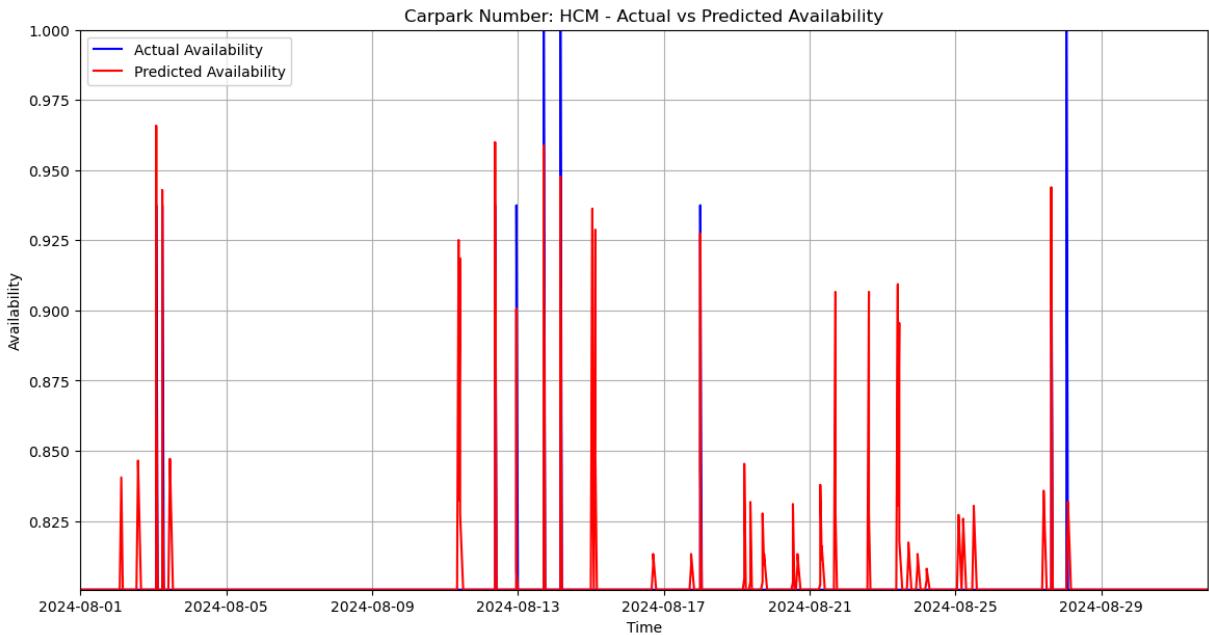


```
Model saved as model_GM6B.sav
Training model for carpark_number: HCM
Testing MSE: 0.00022690476969732787
R-squared: 0.31985424233012516
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Model saved as model_HCM.sav

Training model for carpark_number: HE12

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.
```

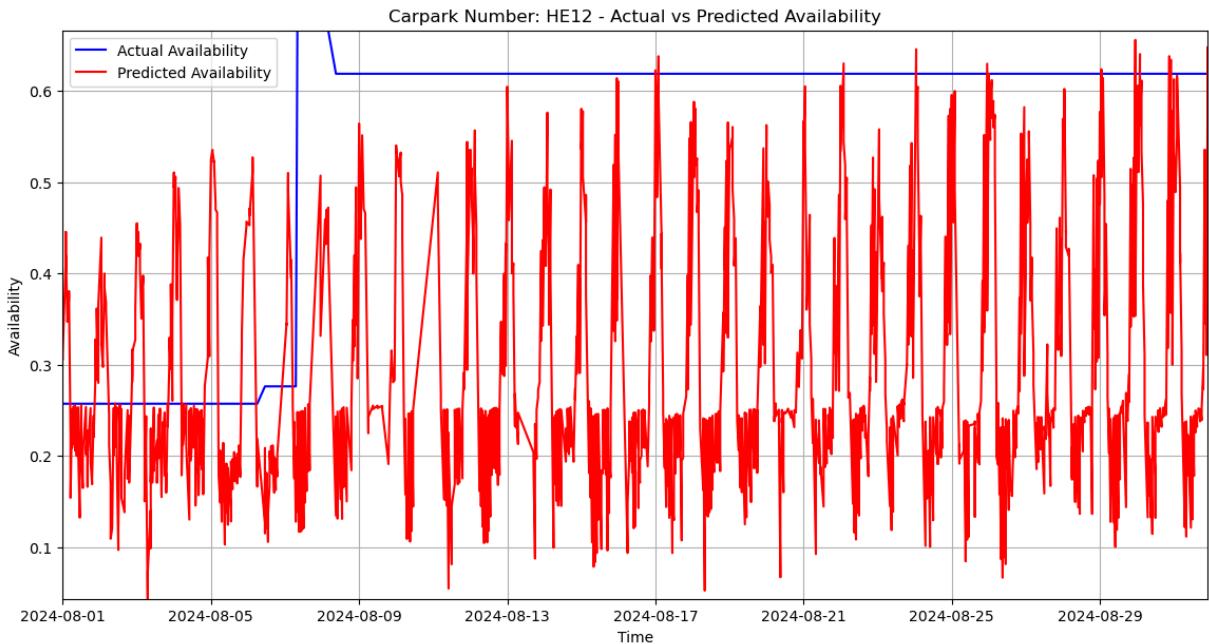
```
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.09834592841786906

R-squared: -3.5365619366273044



Model saved as model_HE12.sav

Training model for carpark_number: HE12

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

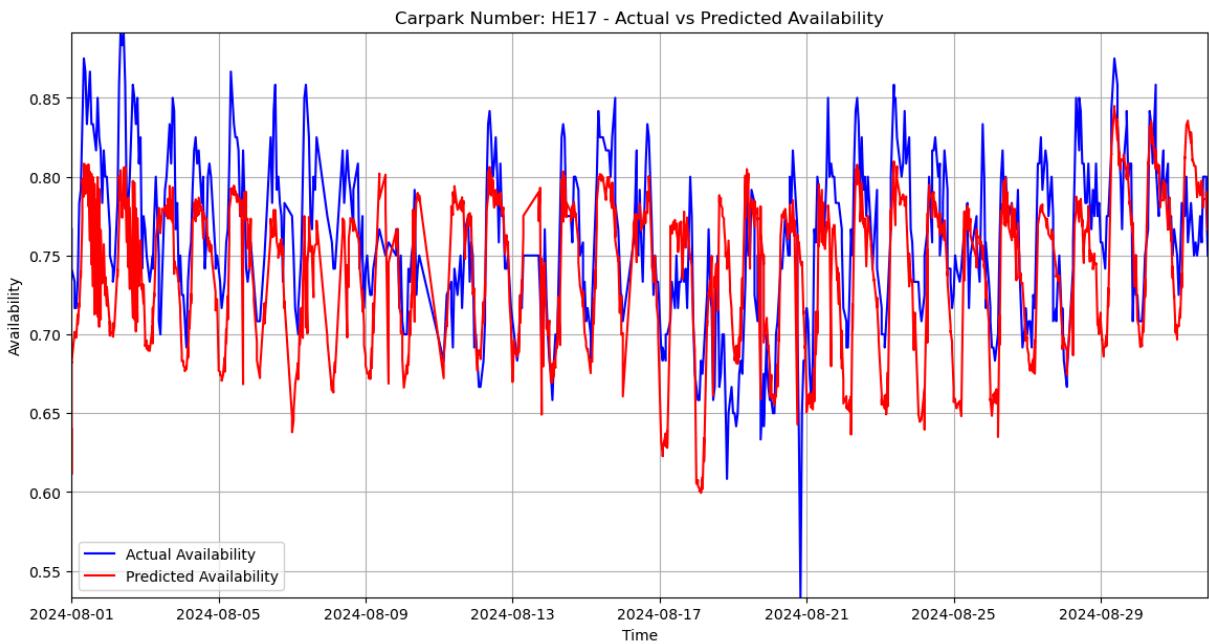
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.0022539639854392123

R-squared: 0.16065443196542684



```
Model saved as model_HE17.sav
```

```
Training model for carpark_number: HE19
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

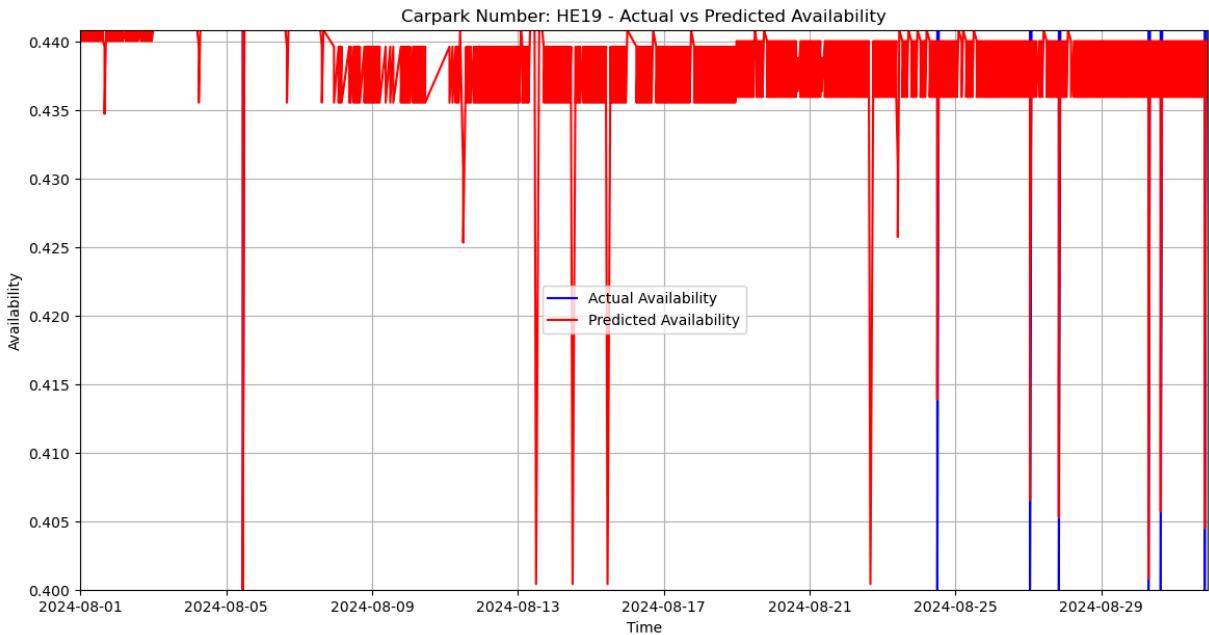
```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

```
Testing MSE: 3.0367403486395285e-05
```

```
R-squared: -0.7969911122825393
```



```
Model saved as model_HE19.sav
```

```
Training model for carpark_number: HE24
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.
```

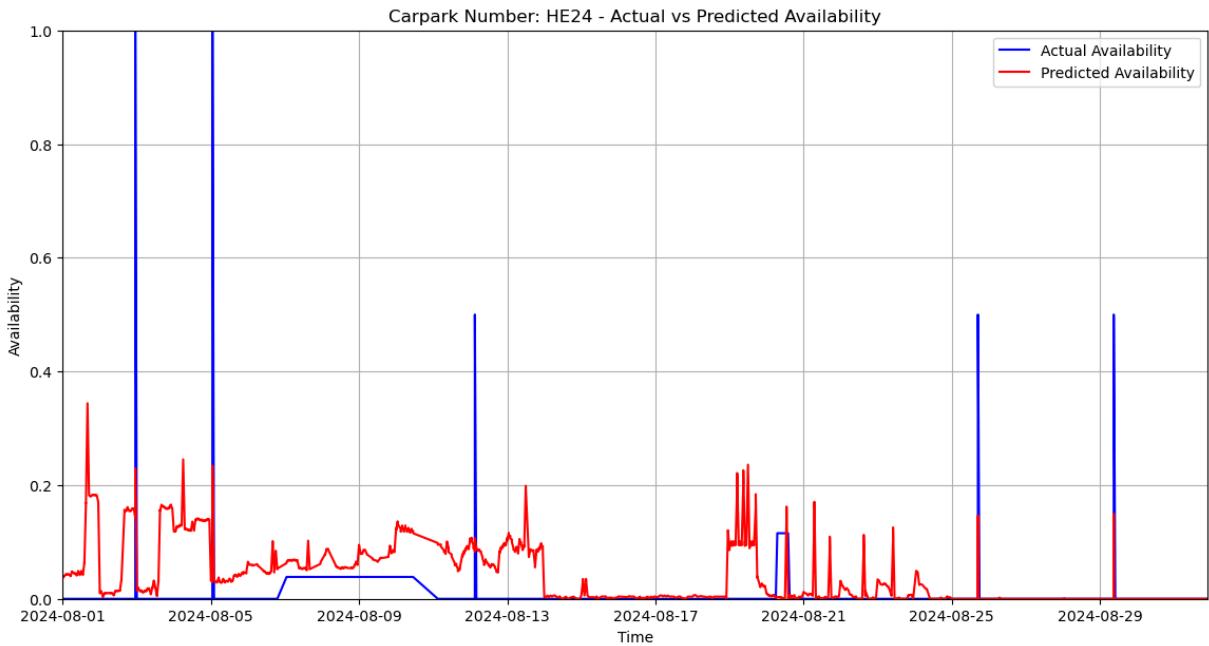
```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

```
Testing MSE: 0.0061640295787520494
```

```
R-squared: -0.4624190665388399
```



Model saved as model_HE24.sav

Training model for carpark_number: HE9

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

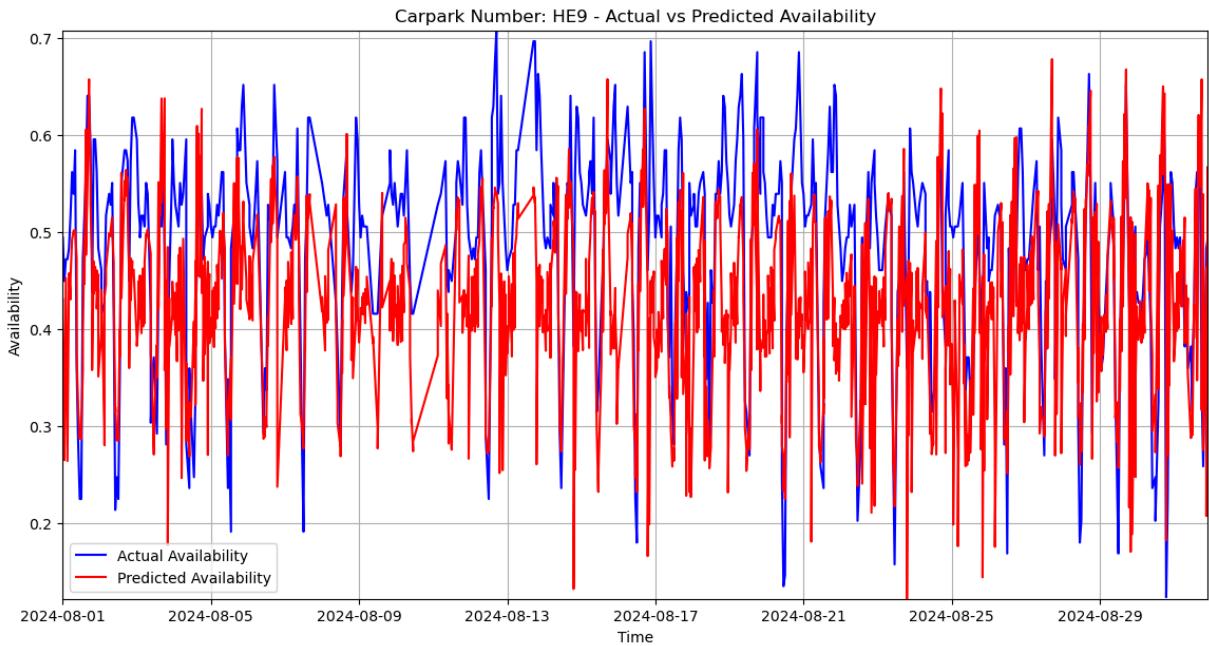
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.0123555951845639

R-squared: -0.12969548593440727



Model saved as model_HE9.sav

Training model for carpark_number: HRM

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

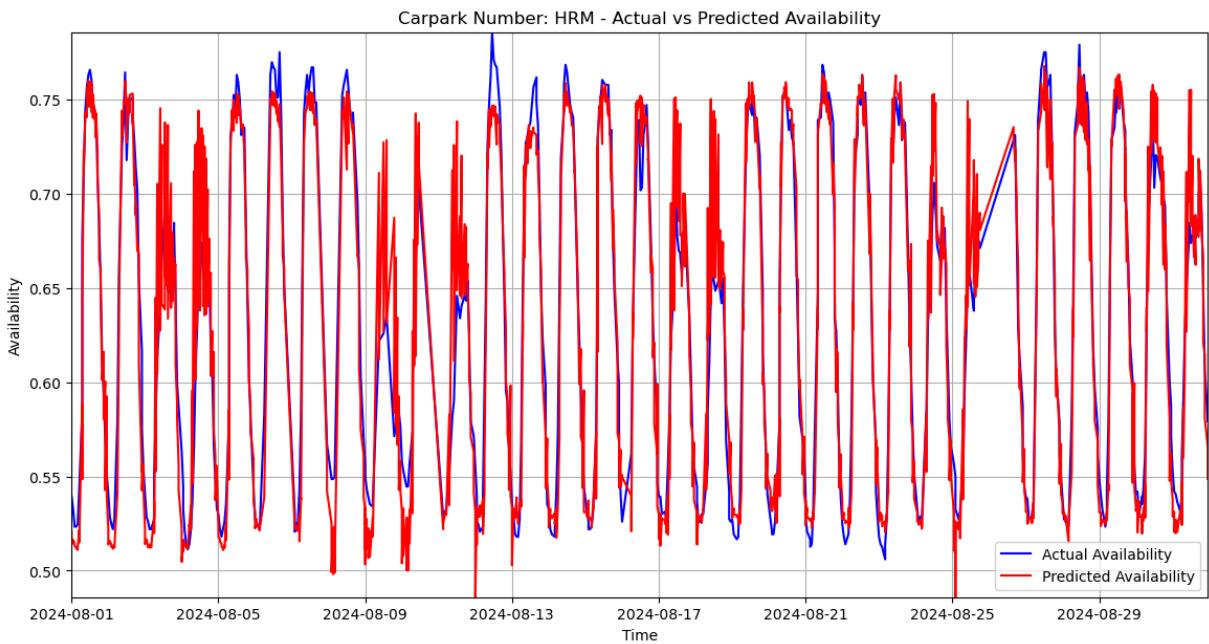
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.0006825926434777506

R-squared: 0.909881180996849



```
Model saved as model_HRM.sav
```

```
Training model for carpark_number: JRTM
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

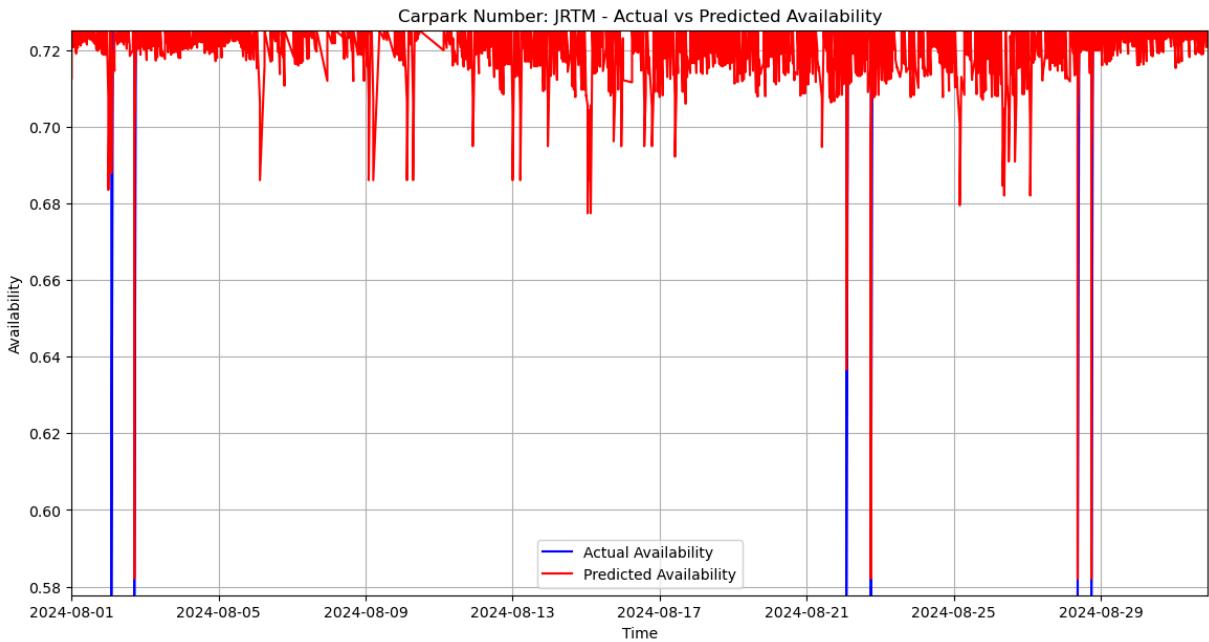
```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

```
Testing MSE: 0.00014365500662732157
```

```
R-squared: 0.24007767481852516
```



```
Model saved as model_JRTM.sav
Training model for carpark_number: LBM
Testing MSE: 0.0006188555399572789
R-squared: 0.8280429010297681
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
```

```
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

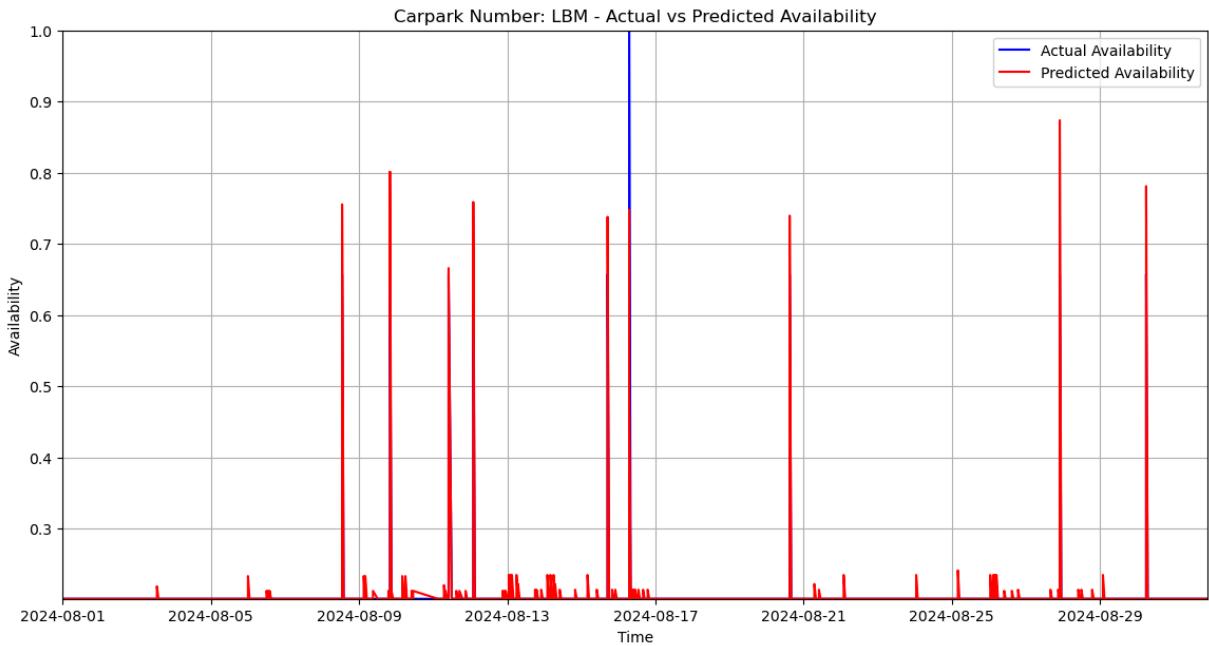
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
```

```
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Model saved as model_LBM.sav

Training model for carpark_number: MLM

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

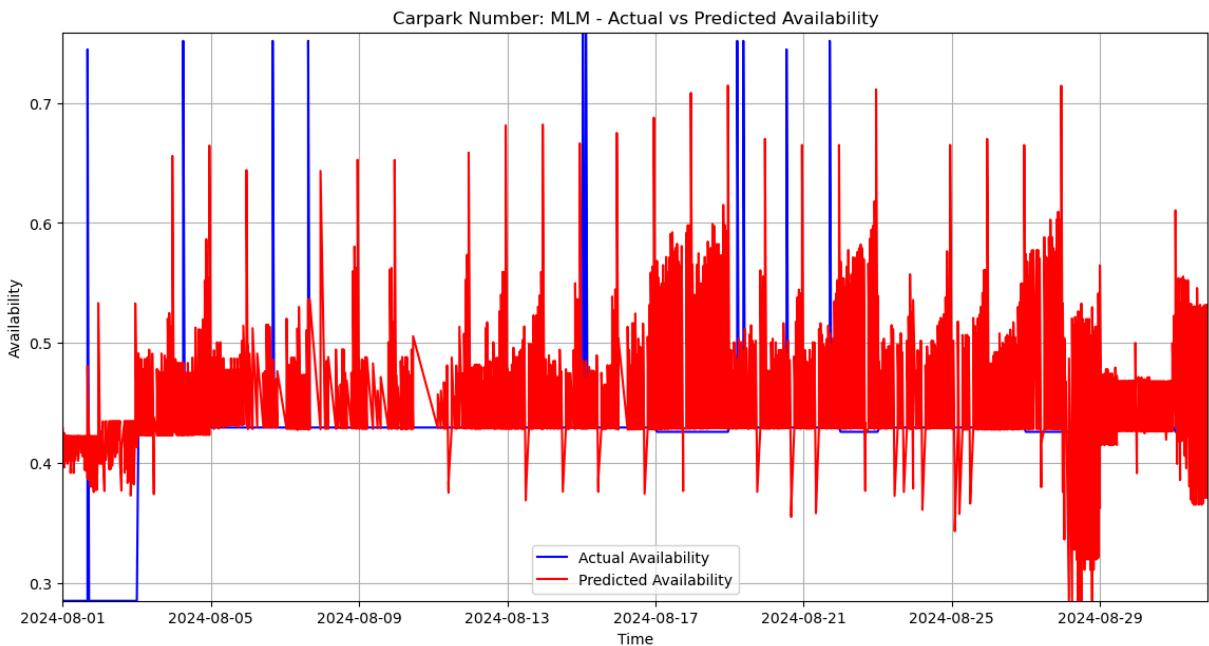
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.007184374784410377

R-squared: -1.4282719698286668



Model saved as model_MLM.sav

Training model for carpark_number: MLM1

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

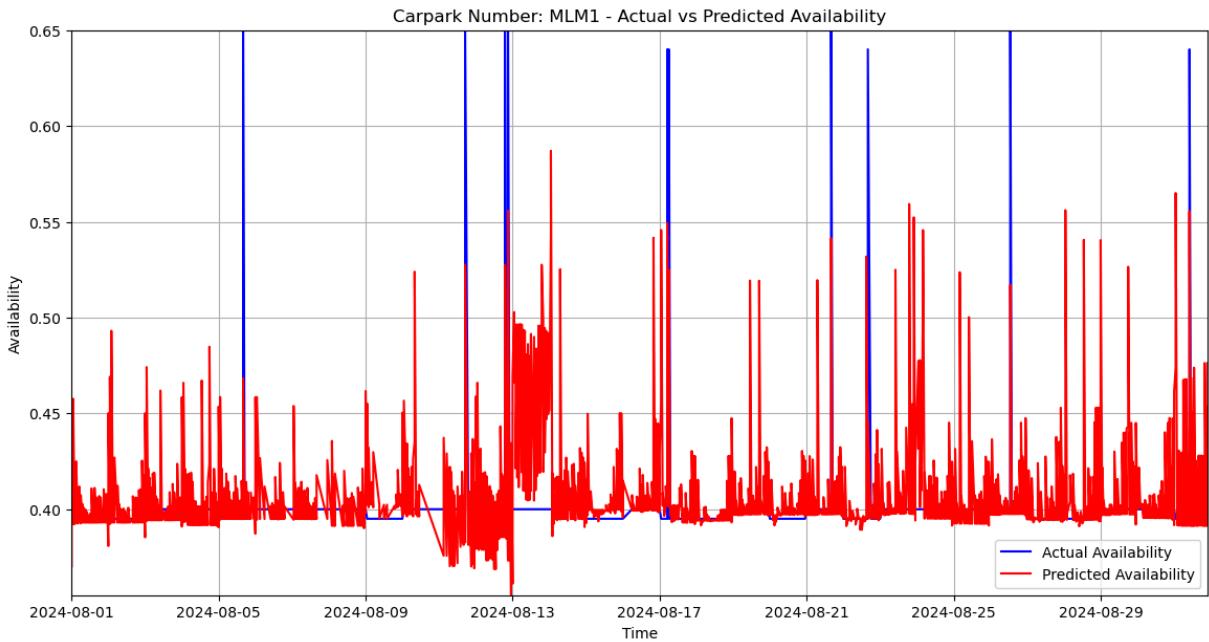
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.0010986793518506384

R-squared: -0.1352273849377421



```
Model saved as model_MLM1.sav
```

```
Training model for carpark_number: PDQ5
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

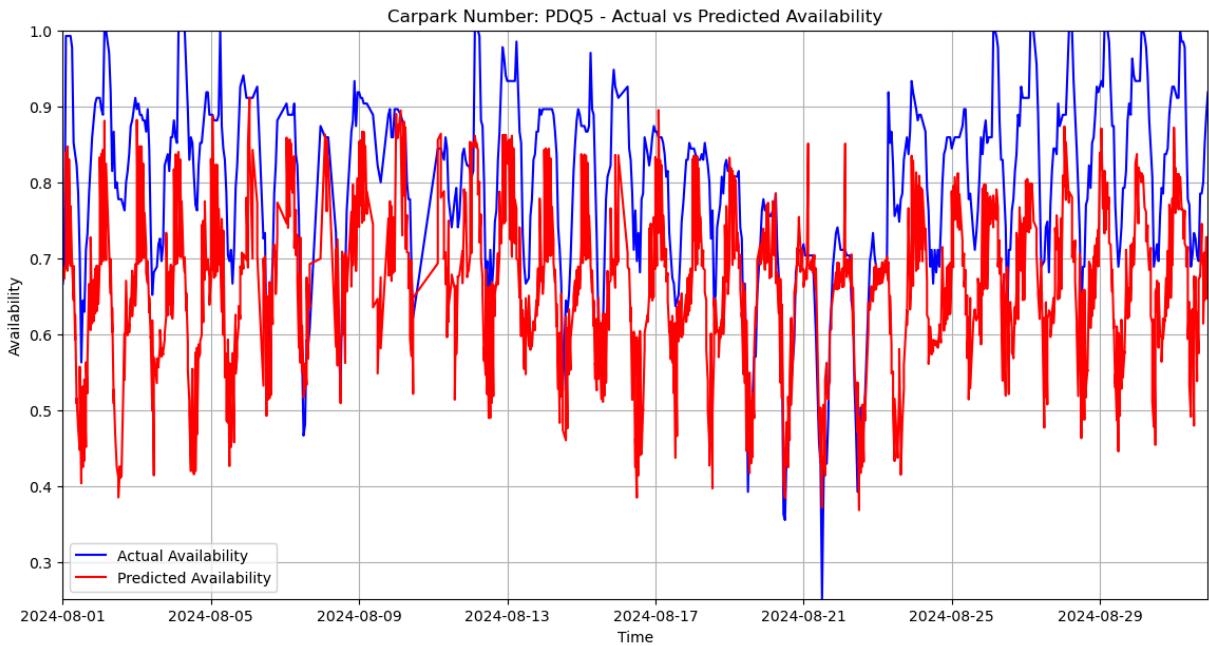
```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

```
Testing MSE: 0.028769179482121078
```

```
R-squared: -0.8642242931471371
```



Model saved as model_PDQ5.sav

Training model for carpark_number: Q16

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

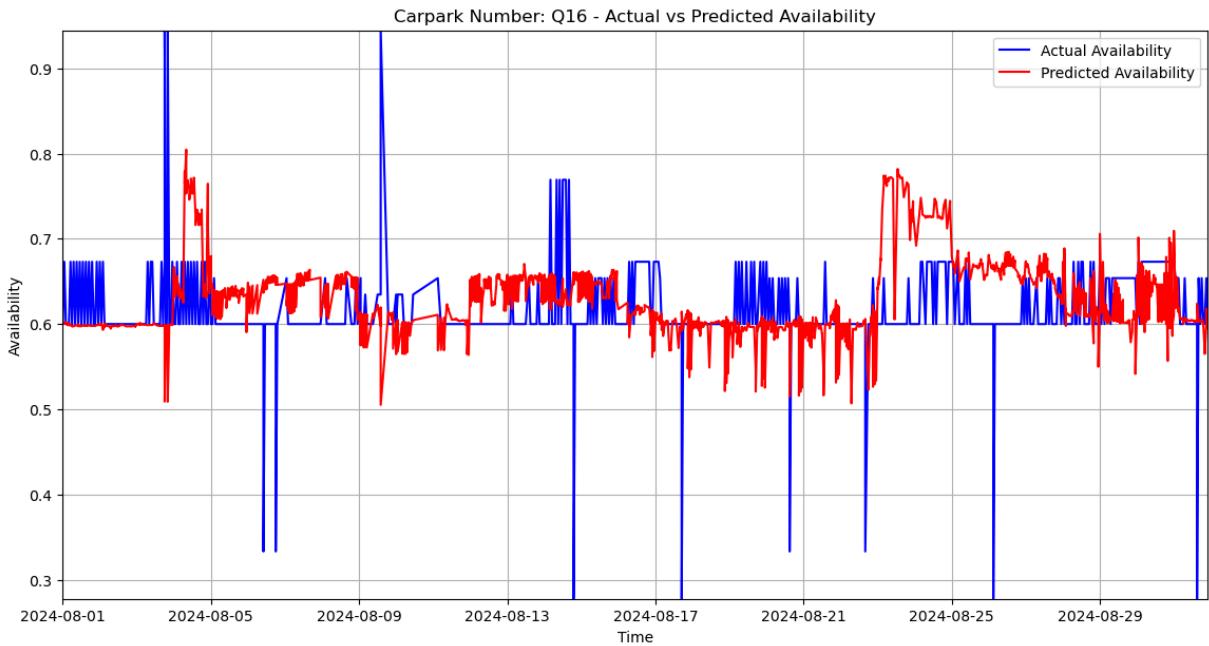
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.004897384403936845

R-squared: -0.7638815021989898



Model saved as model_Q16.sav

Training model for carpark_number: Q17

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

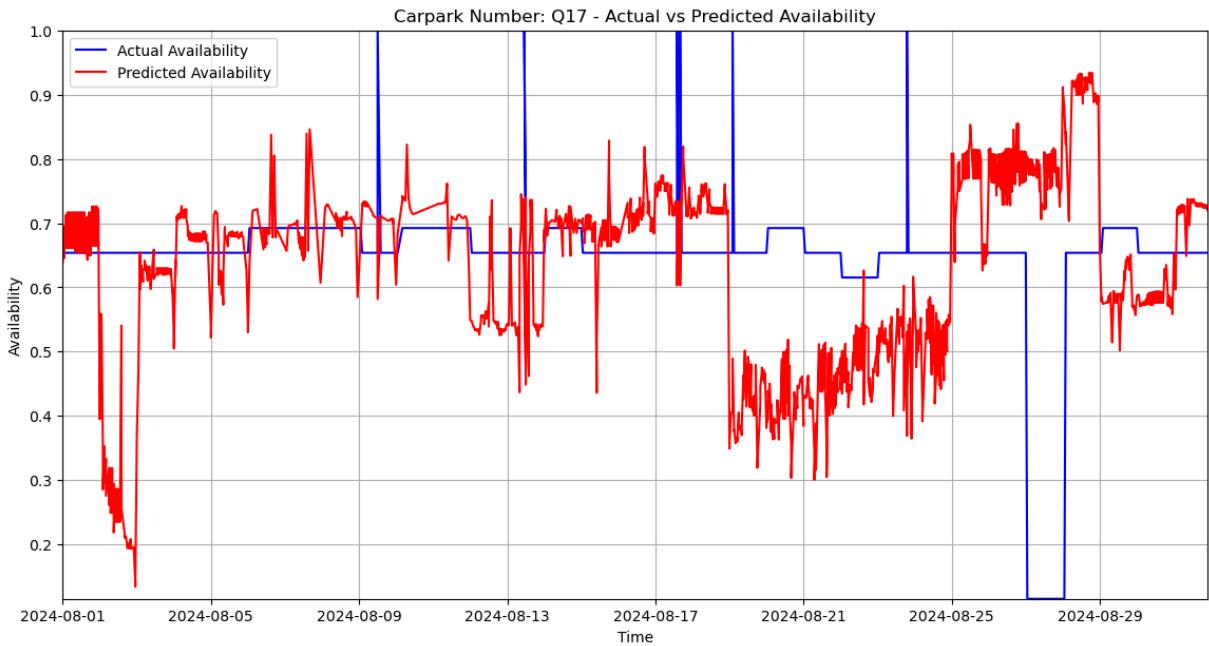
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.03812024635912657

R-squared: -2.315828068656866



Model saved as model_Q17.sav

Training model for carpark_number: Q19

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

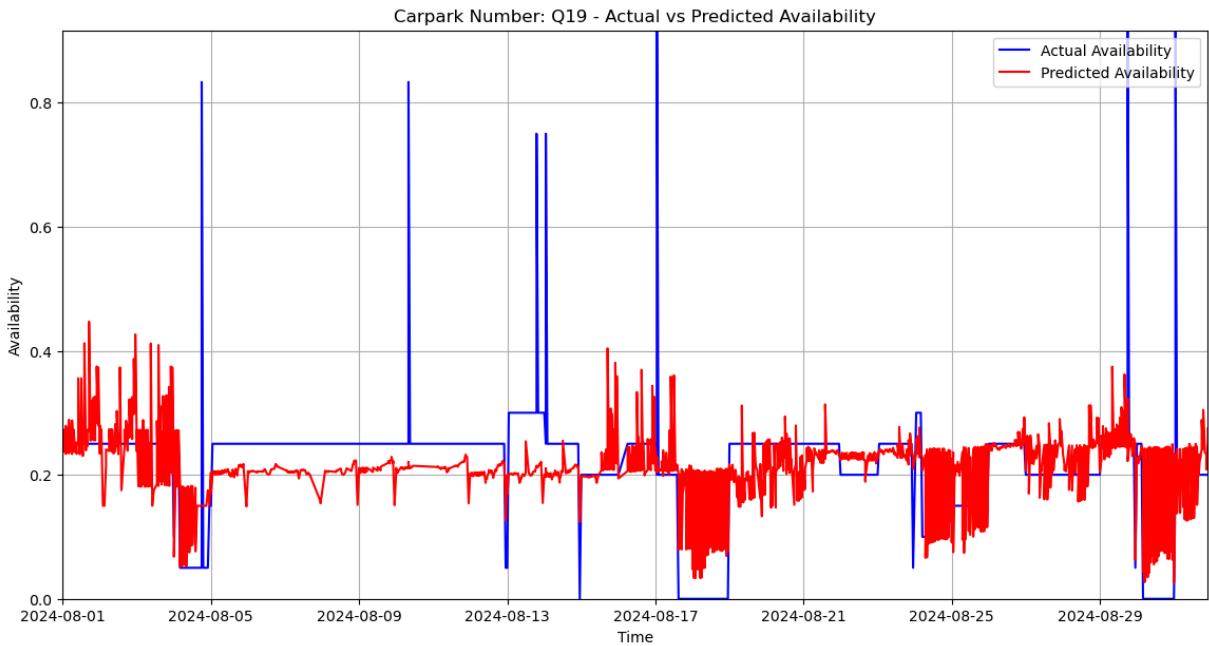
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.00927560725303658

R-squared: 0.10384372966379107



Model saved as model_Q19.sav

Training model for carpark_number: Q41

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

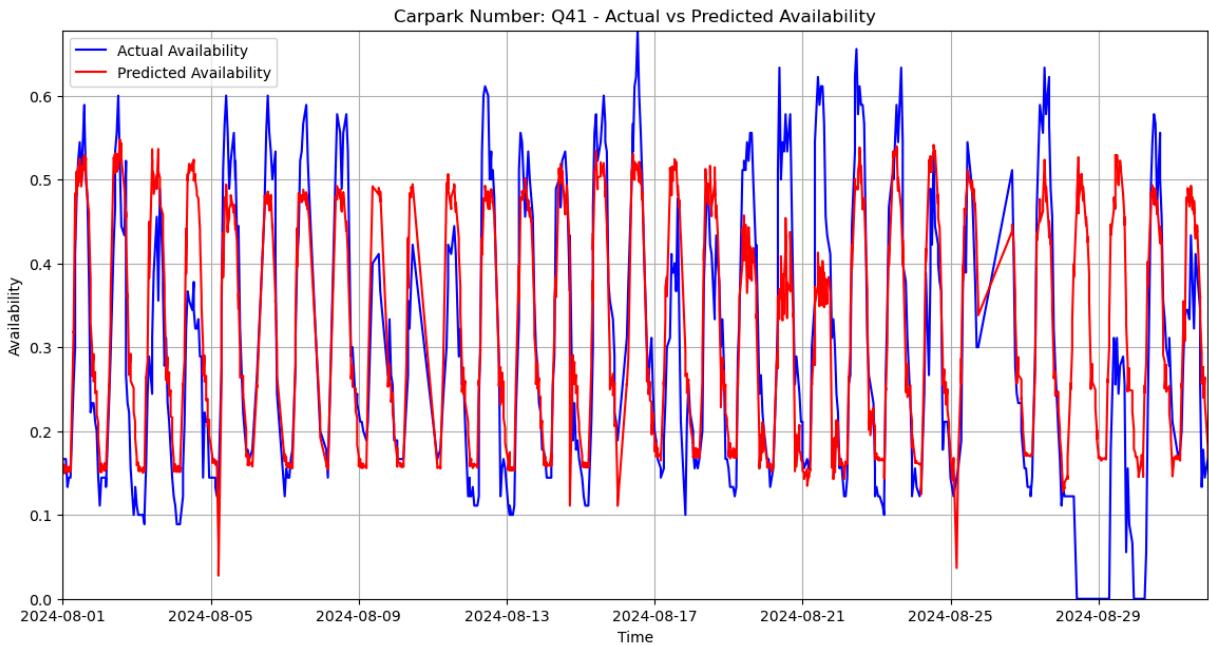
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.01178192004404395

R-squared: 0.5906264869779572



Model saved as model_Q41.sav

Training model for carpark_number: Q65

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

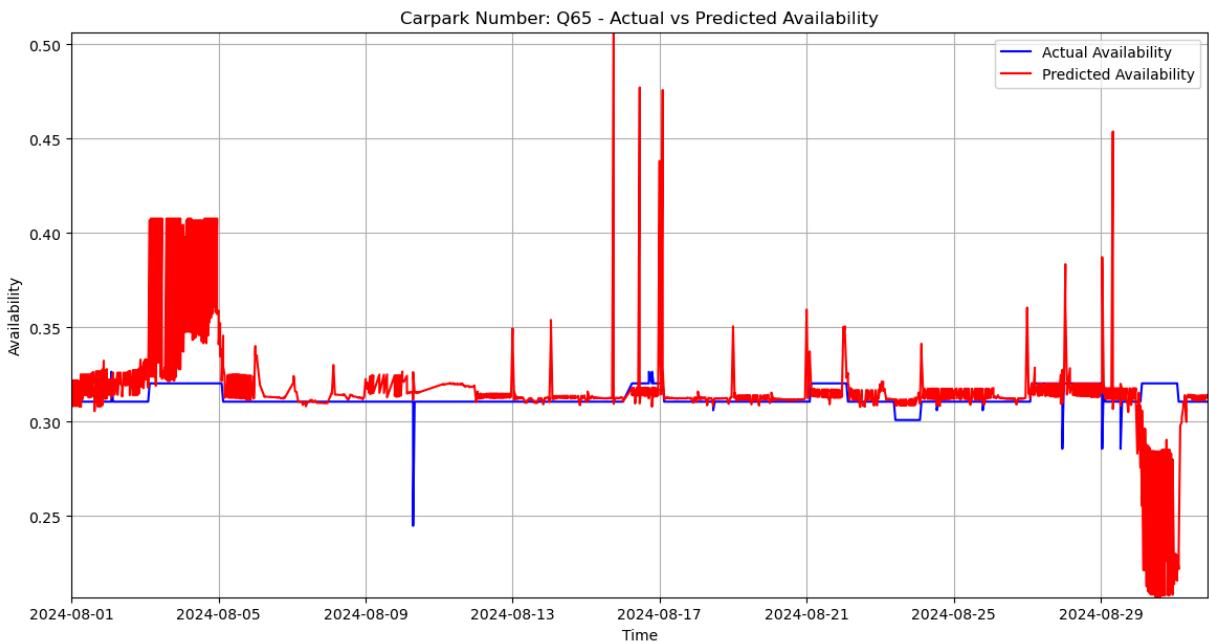
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.0006689609873663028

R-squared: -20.249101265339437



```
Model saved as model_Q65.sav
```

```
Training model for carpark_number: Q66
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

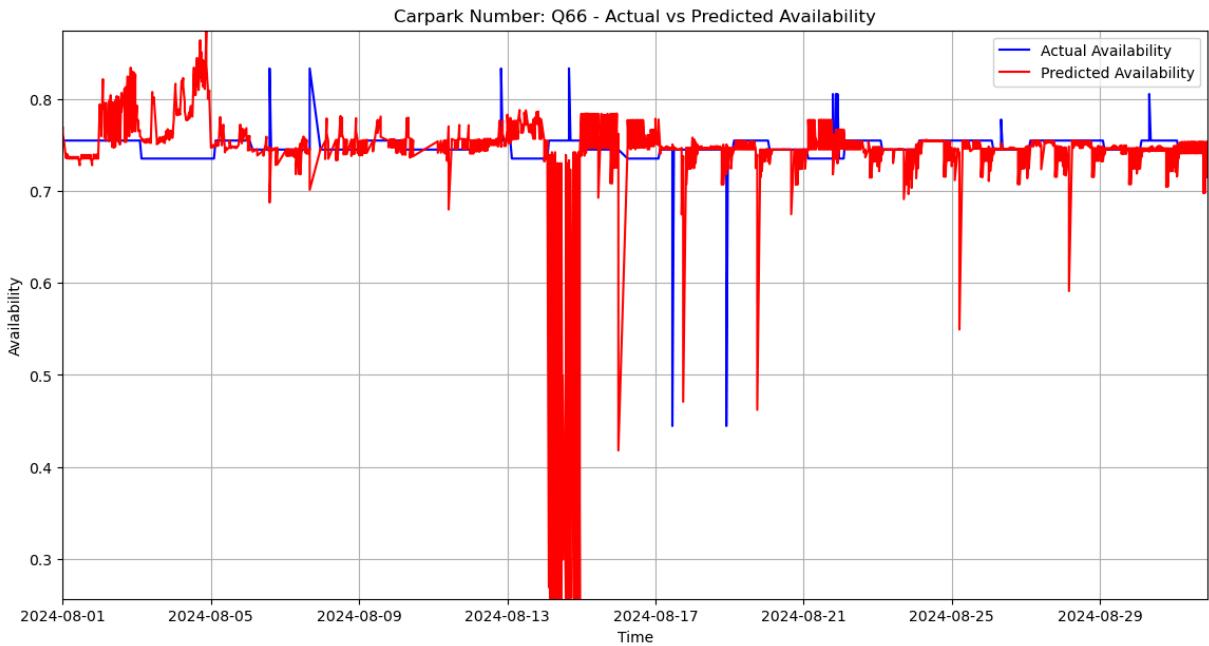
```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

```
Testing MSE: 0.004984350974045204
```

```
R-squared: -12.05747040991099
```



Model saved as model_Q66.sav

Training model for carpark_number: Q67

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

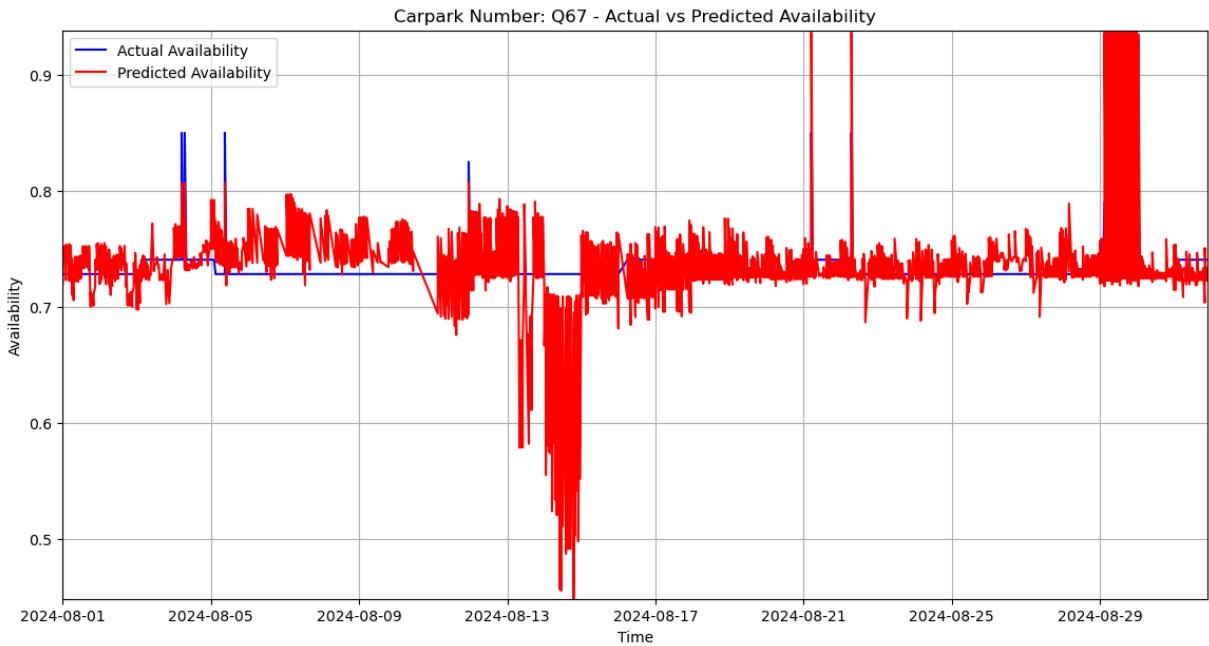
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.0018280659814124411

R-squared: -6.349414939782001



Model saved as model_Q67.sav

Training model for carpark_number: Q68

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

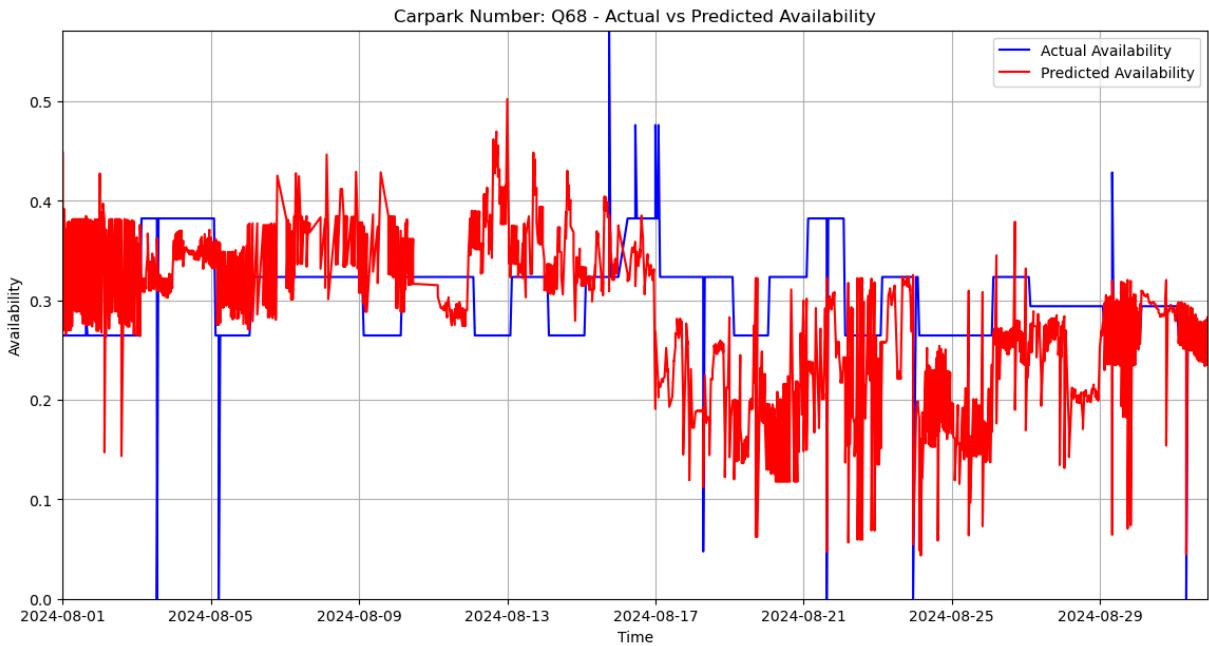
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.008049839475922131

R-squared: -1.949596407813547



Model saved as model_Q68.sav

Training model for carpark_number: Q70

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

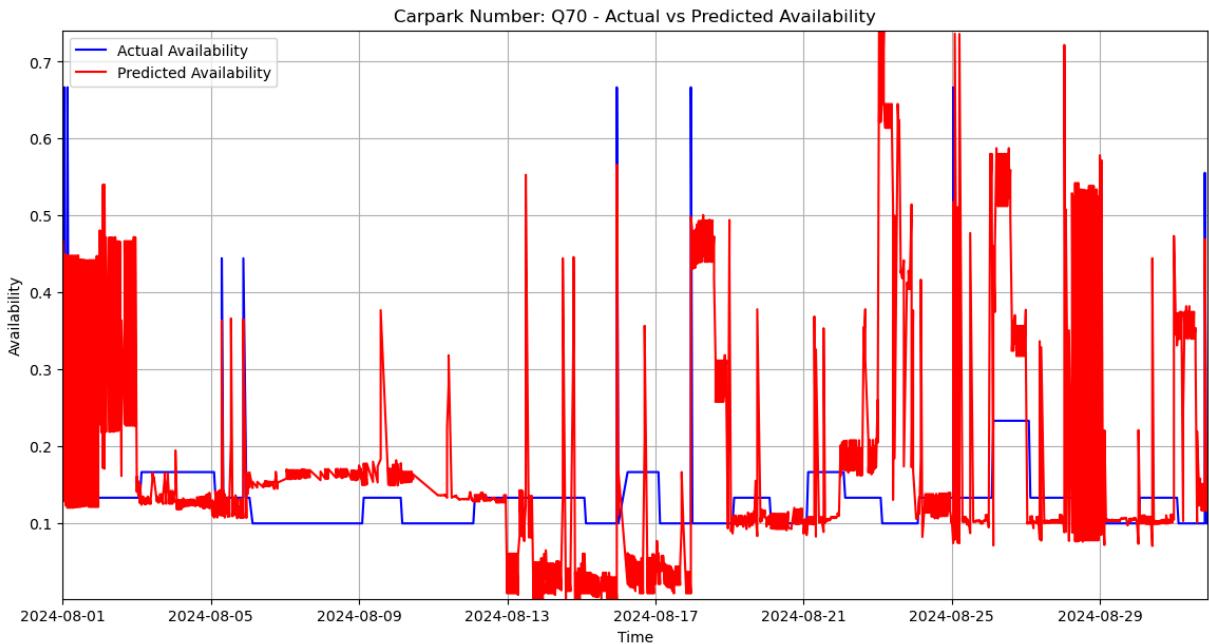
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.02705326306235276

R-squared: -6.73678237597929



Model saved as model_Q70.sav

Training model for carpark_number: Q73

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

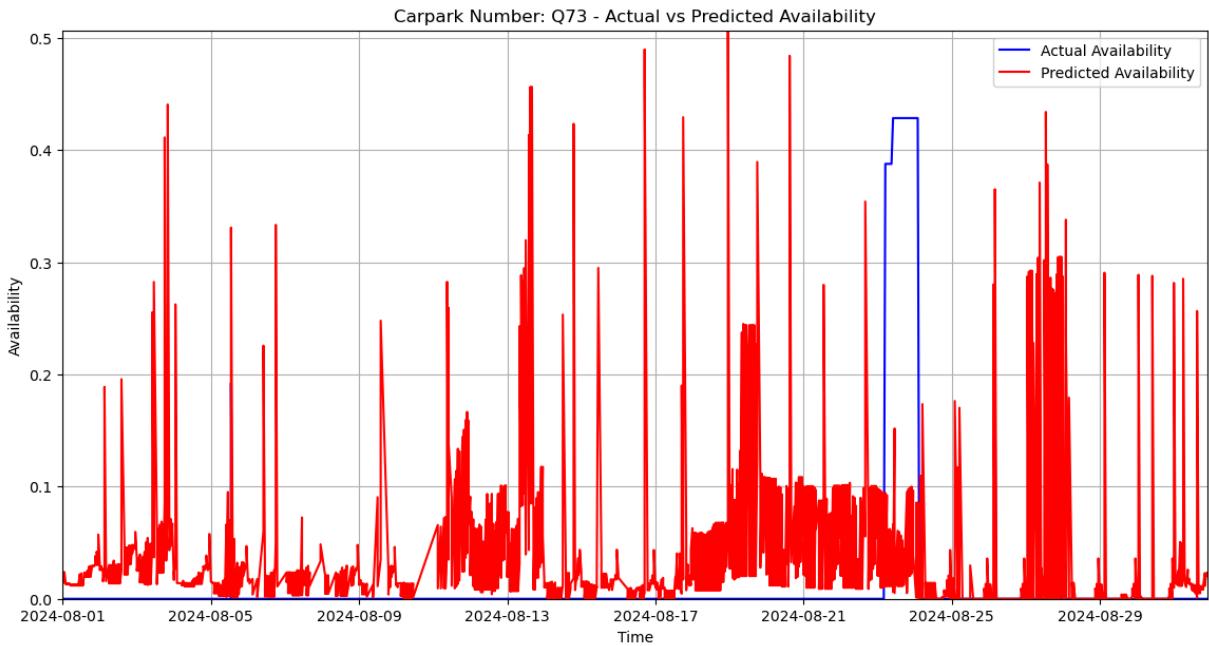
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.013029320714353206

R-squared: -1.3223330566238025



Model saved as model_Q73.sav

Training model for carpark_number: Q75M

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

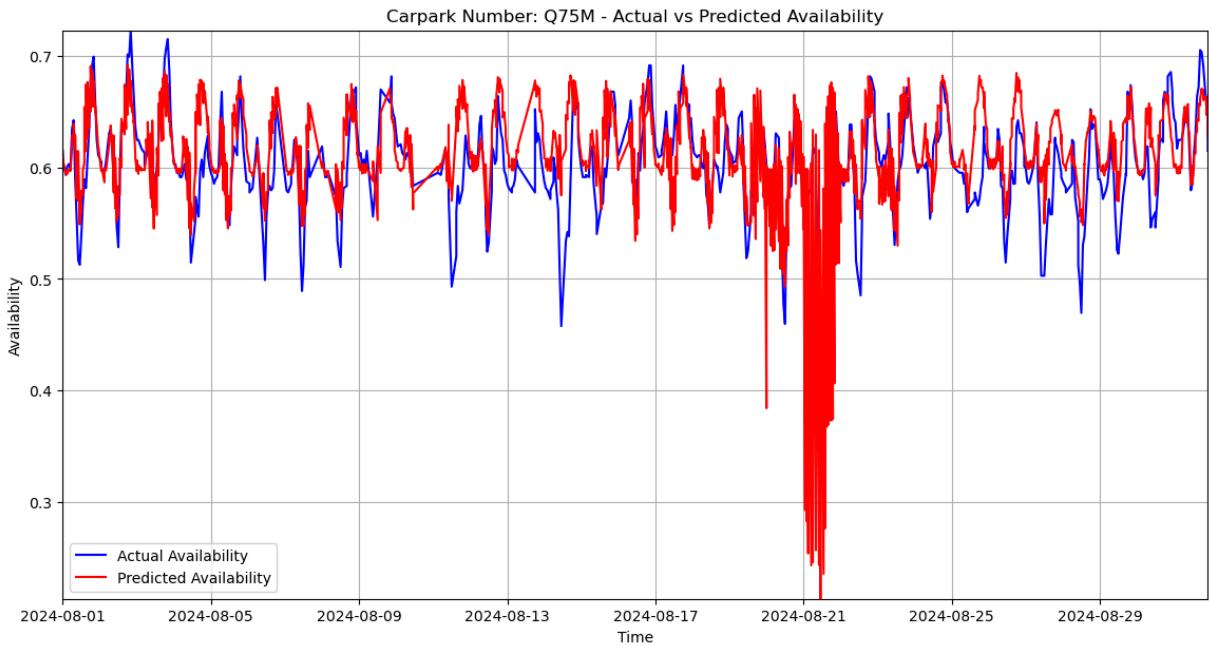
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.0025363544103333808

R-squared: -0.48398753945239537



Model saved as model_Q75M.sav

Training model for carpark_number: Q77M

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

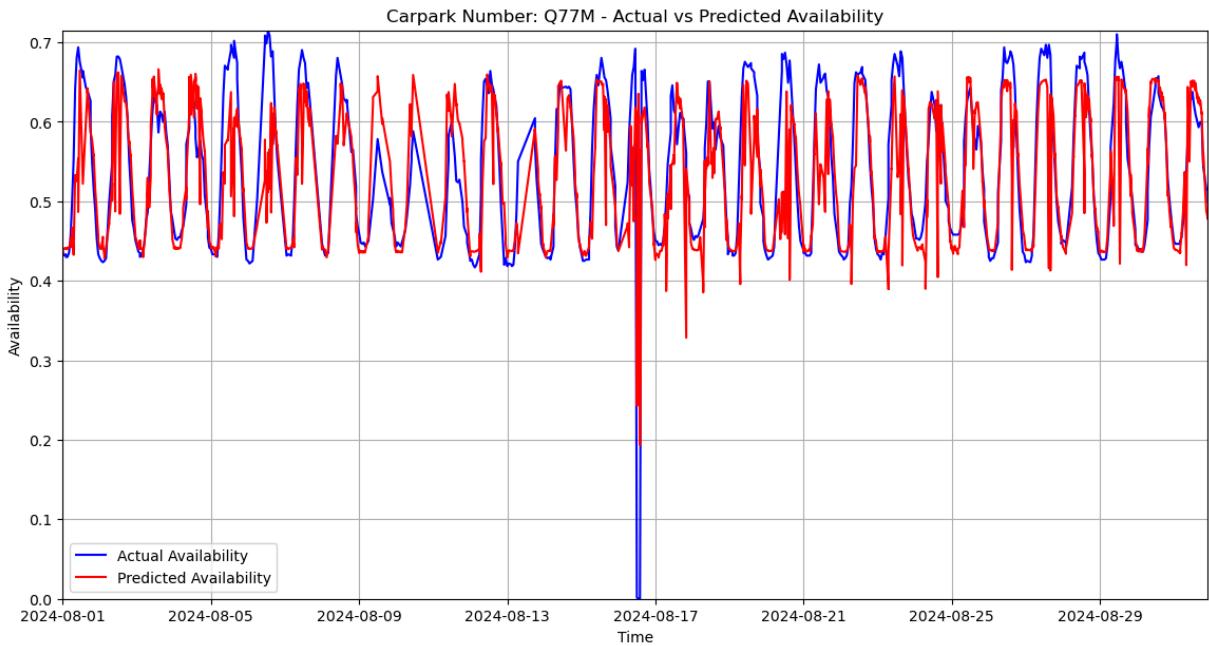
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.0043158119349981

R-squared: 0.5506548306683868



Model saved as model_Q77M.sav

Training model for carpark_number: Q8

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

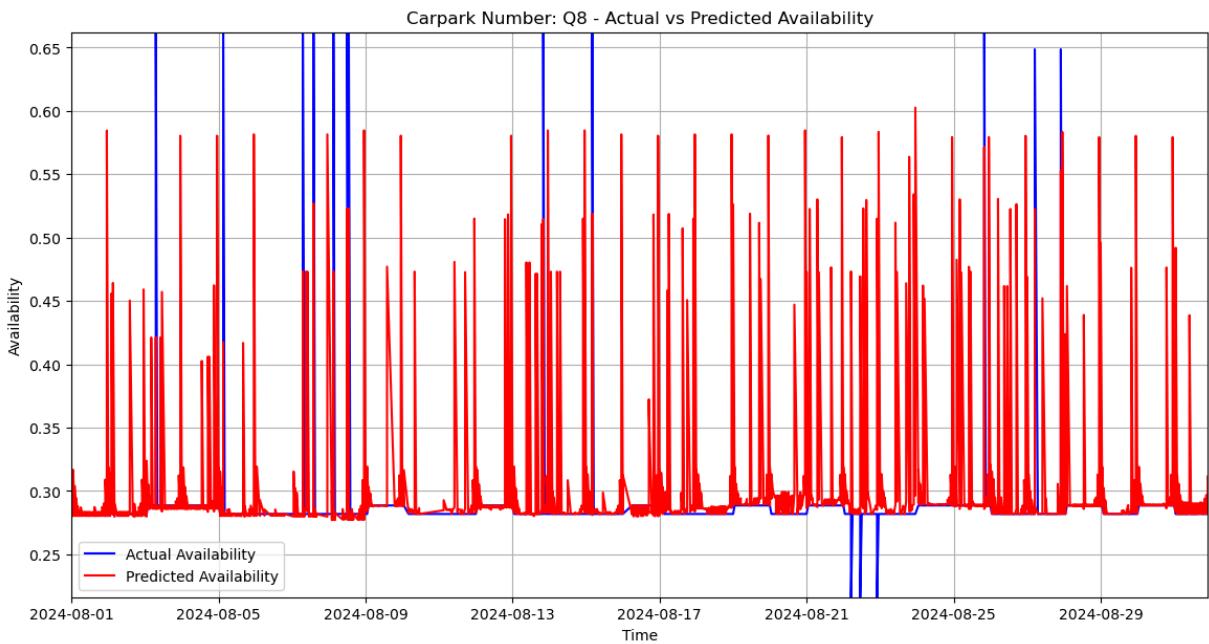
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.006617115027434191

R-squared: -1.7159358131342137



```
Model saved as model_Q8.sav
```

```
Training model for carpark_number: Q80
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

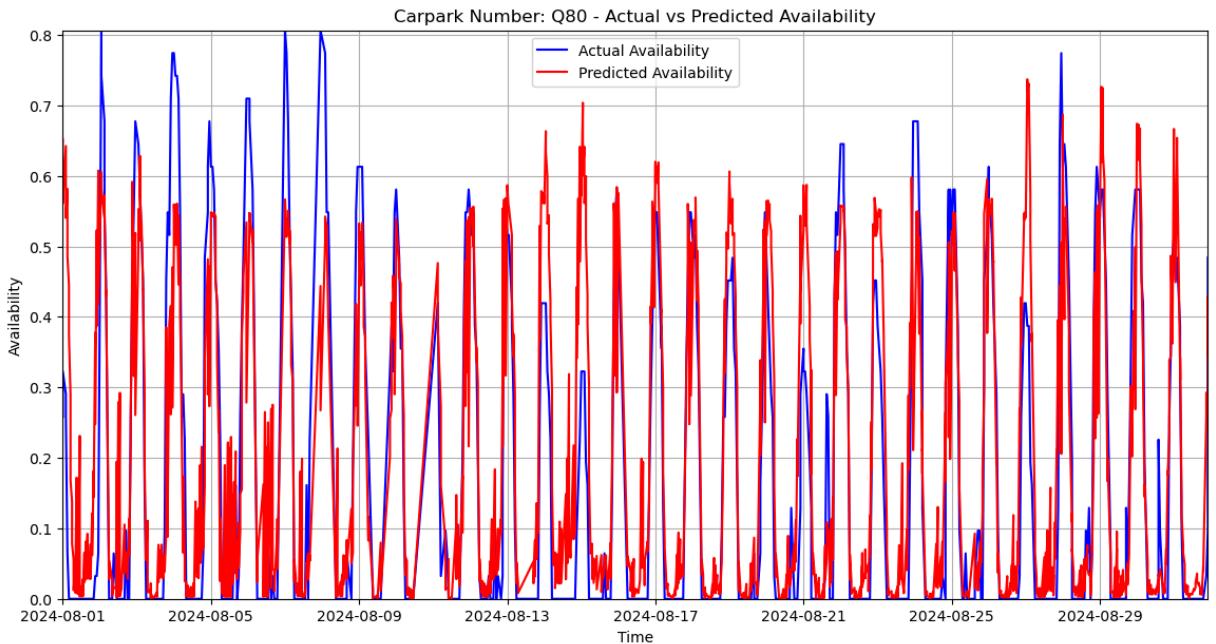
```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

```
Testing MSE: 0.016636940999275304
```

```
R-squared: 0.7024986864928884
```



Model saved as model_Q80.sav

Training model for carpark_number: Q81

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

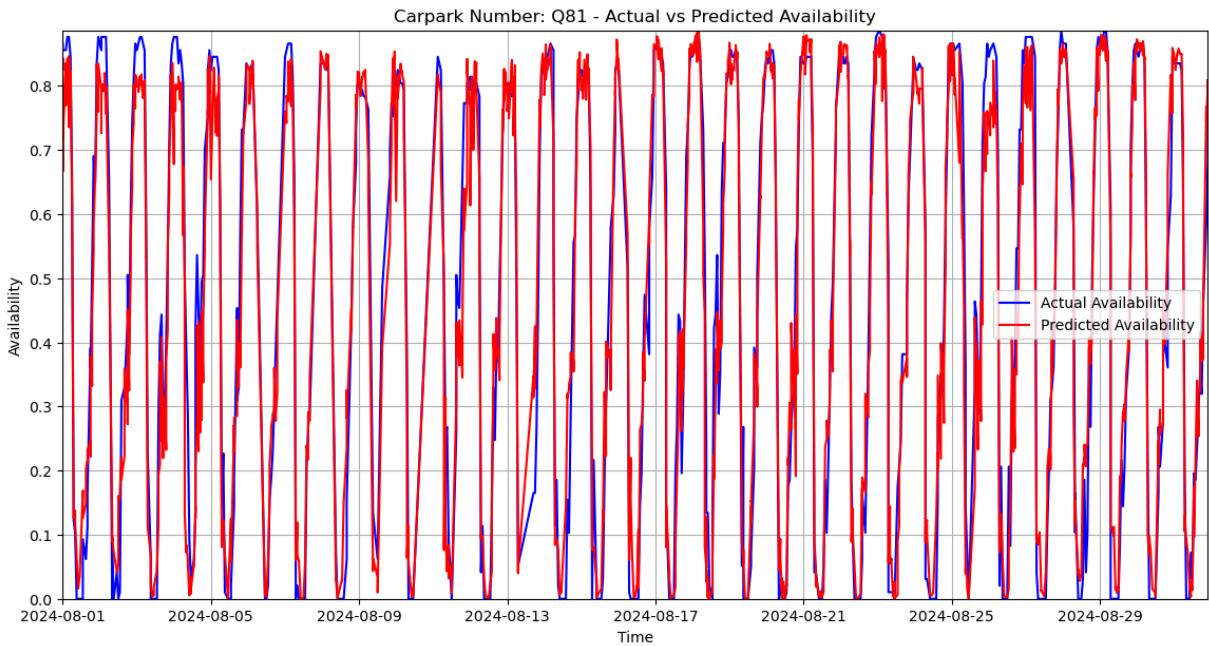
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.0077119854829126545

R-squared: 0.9330160687296638



Model saved as model_Q81.sav

Training model for carpark_number: Q84

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

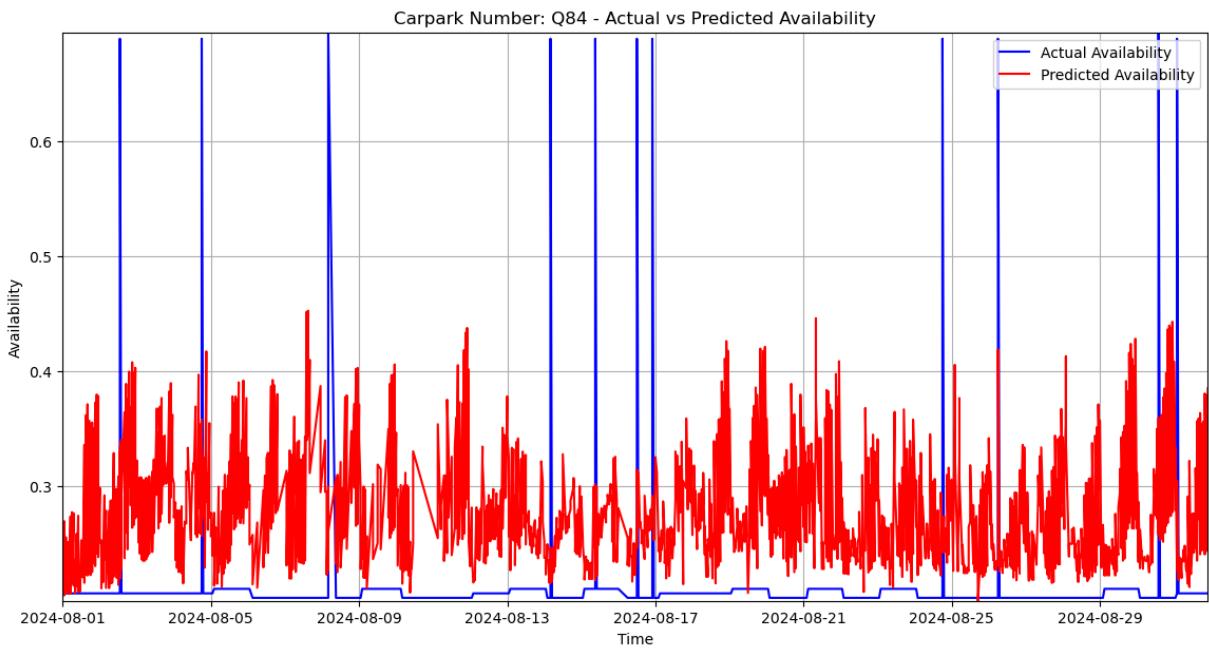
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.010001618379321633

R-squared: -1.712377708515466



Model saved as model_Q84.sav

Training model for carpark_number: Q85

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

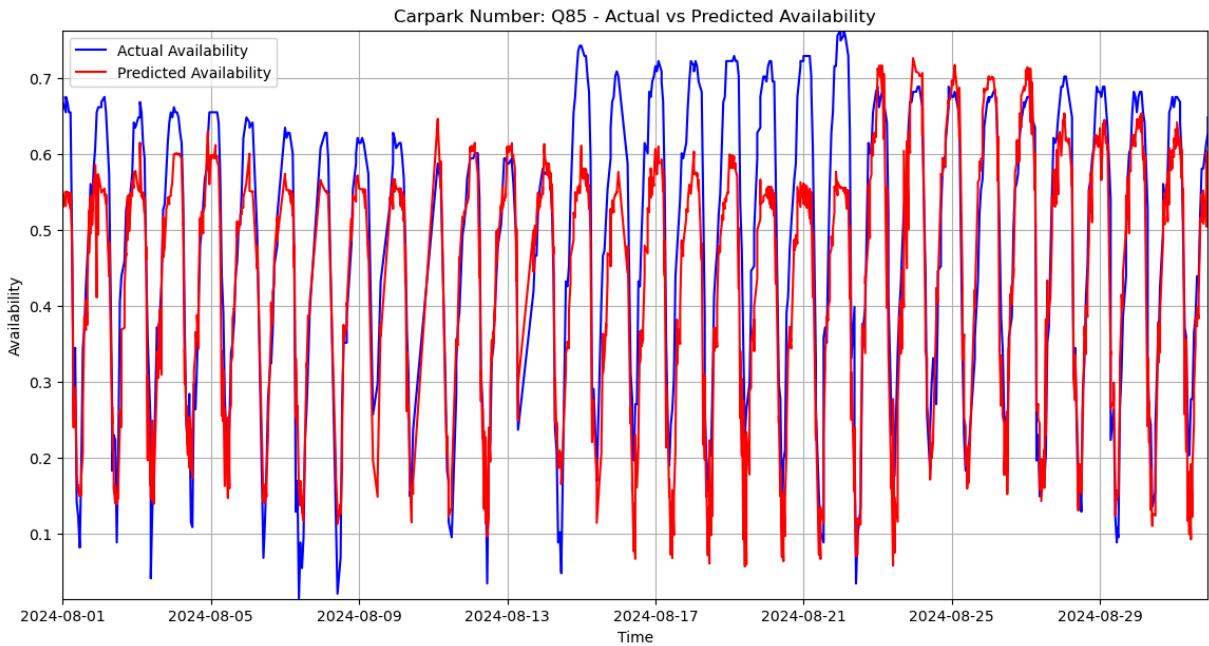
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.0083859131585485

R-squared: 0.7726663950504833



Model saved as model_Q85.sav

Training model for carpark_number: Q86

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

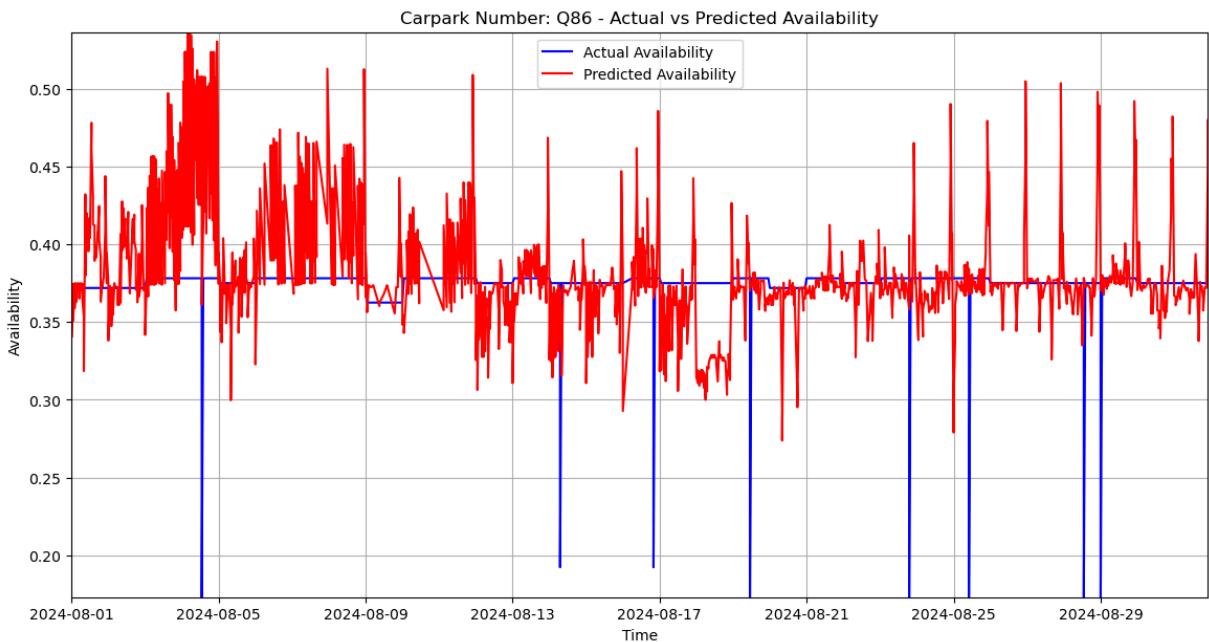
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.0017497270902114095

R-squared: -2.798578190828472



```
Model saved as model_Q86.sav
```

```
Training model for carpark_number: Q87
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

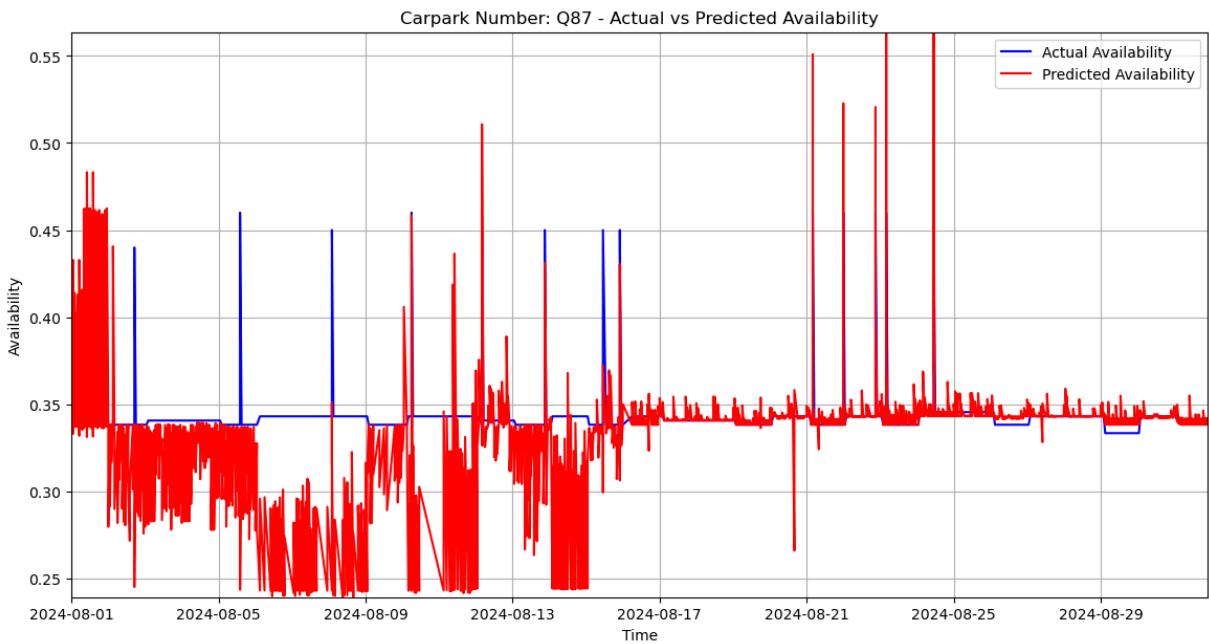
```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

```
Testing MSE: 0.0015323846373096073
```

```
R-squared: -4.805527066614047
```



```
Model saved as model_Q87.sav
```

```
Training model for carpark_number: Q88
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

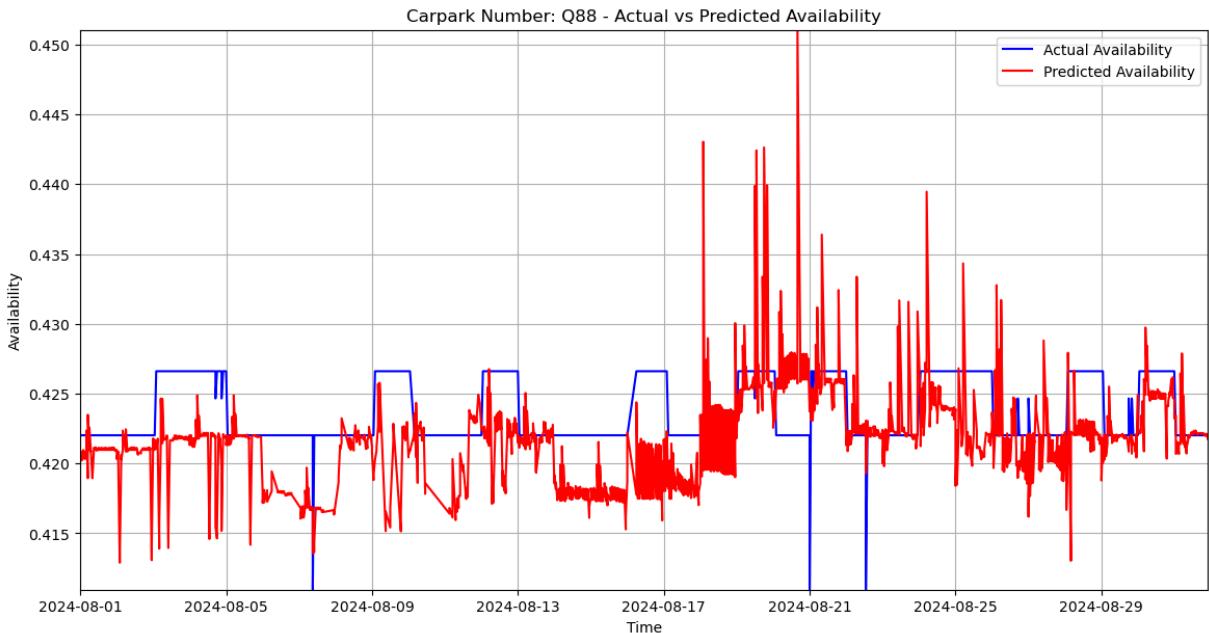
```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

```
Testing MSE: 1.8719309219555727e-05
```

```
R-squared: -2.3847261946168086
```



Model saved as model_Q88.sav

Training model for carpark_number: Q89

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.
```

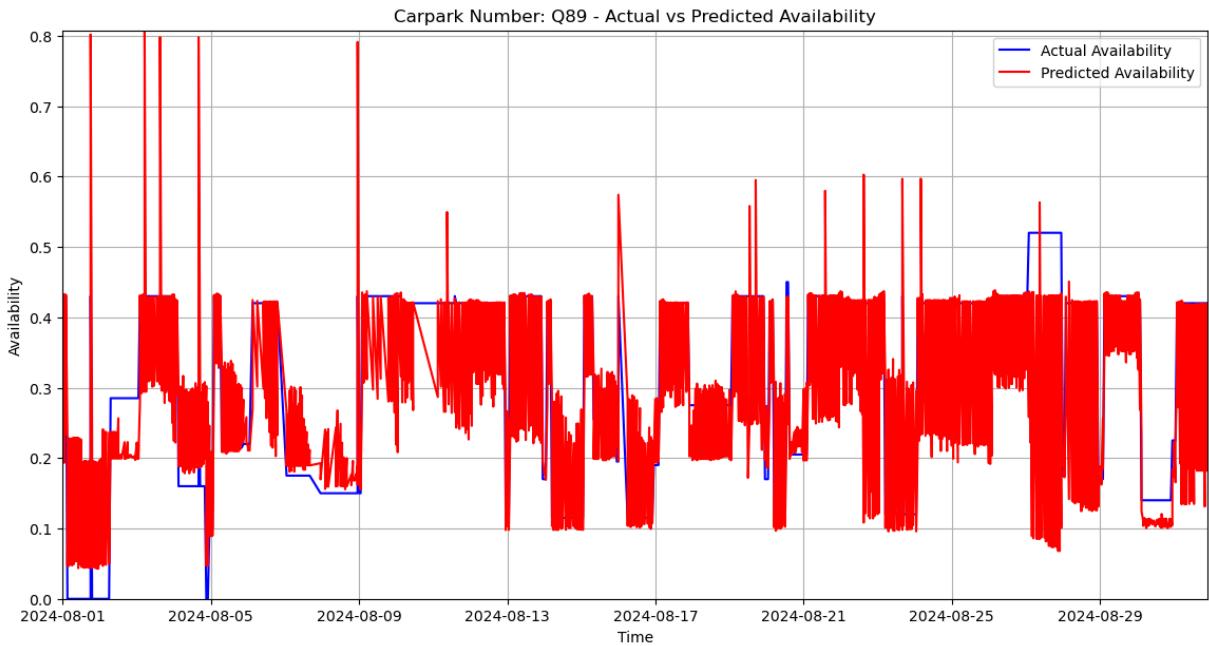
```
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.015254975080722303

R-squared: 0.2462731991007472



Model saved as model_Q89.sav

Training model for carpark_number: Q94

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

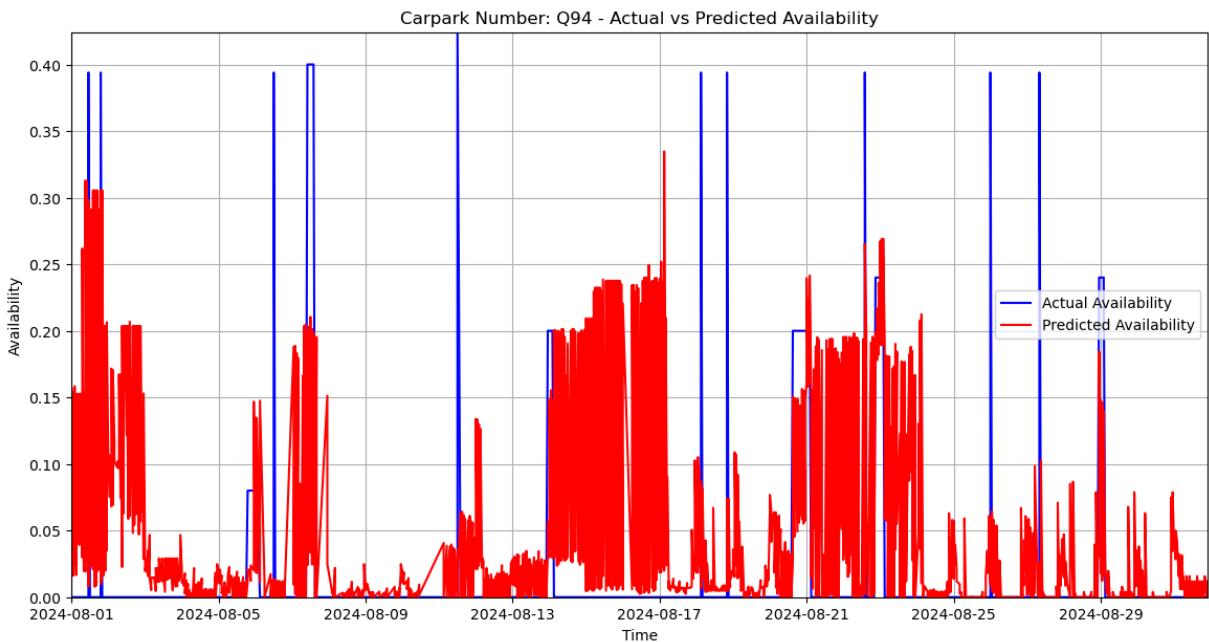
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.00925349131484042

R-squared: -0.9379320044193735



```
Model saved as model_Q94.sav
```

```
Training model for carpark_number: Q96
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

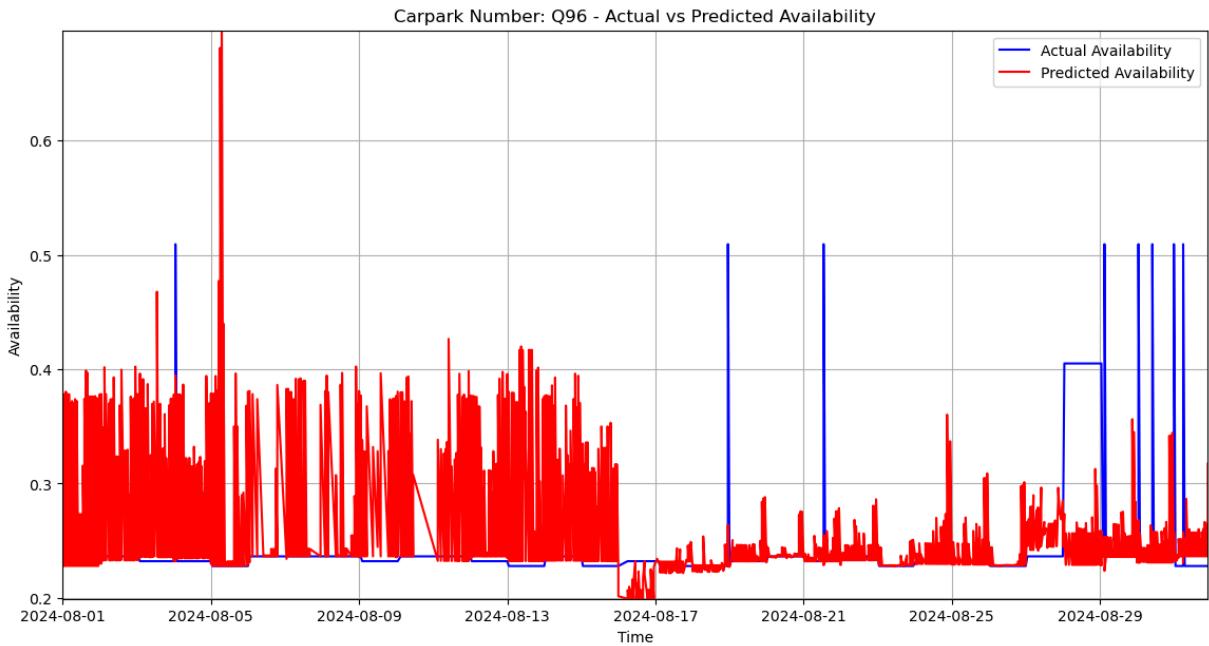
```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

```
Testing MSE: 0.005595853629487029
```

```
R-squared: -2.001957917831037
```



Model saved as model_Q96.sav

Training model for carpark_number: RHM

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

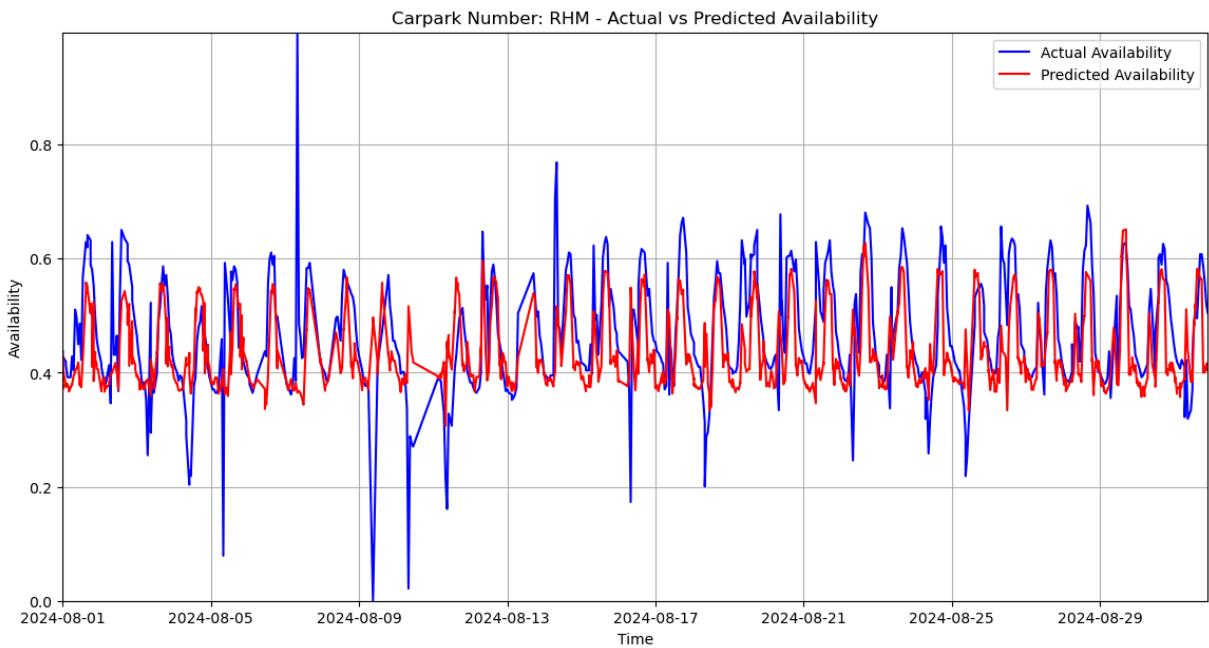
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.008070350266444653

R-squared: 0.23680602730402034



Model saved as model_RHM.sav

Training model for carpark_number: RHM2

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

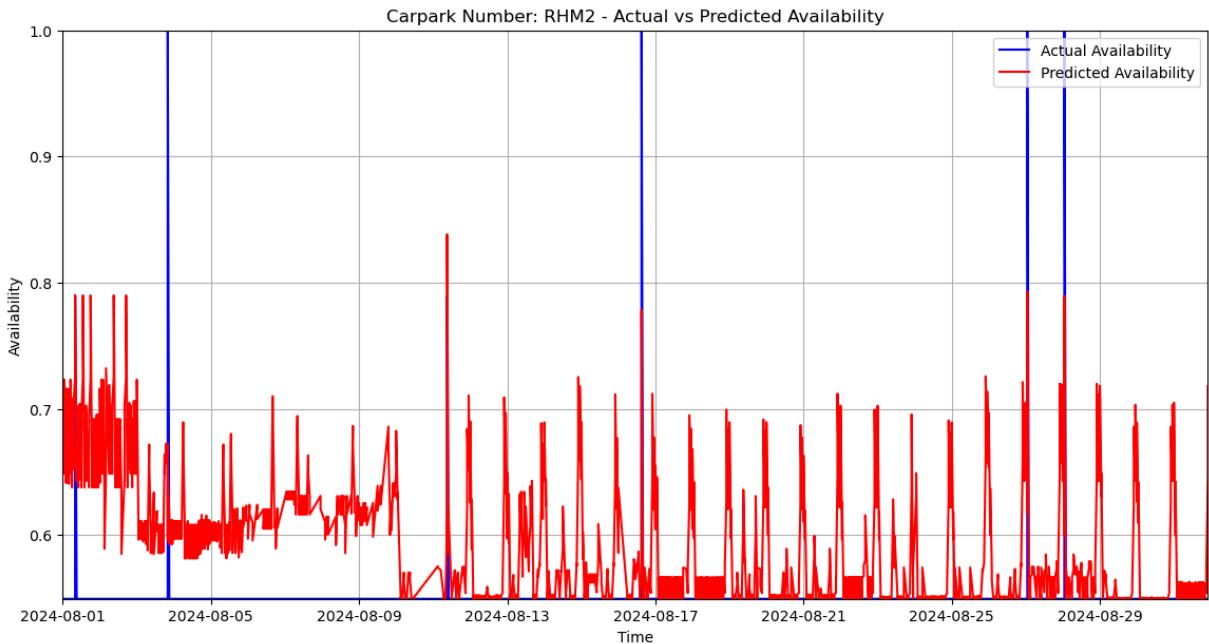
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.004420241859073387

R-squared: -2.287048961284238



Model saved as model_RHM2.sav

Training model for carpark_number: RHM3

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

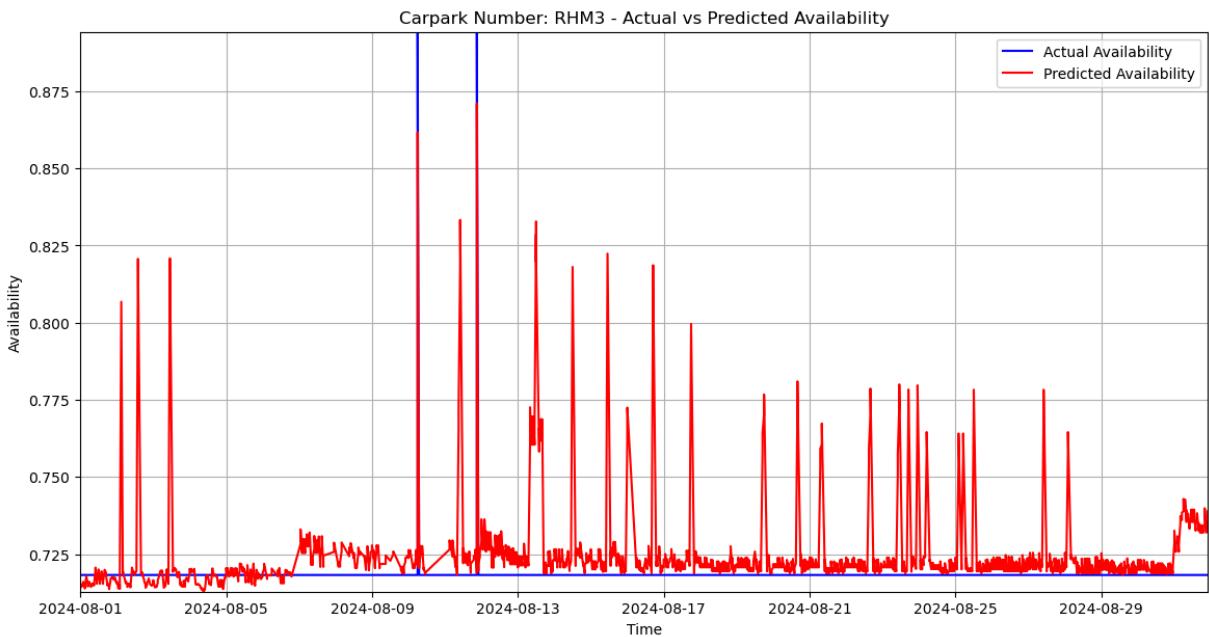
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.0004568270810020792

R-squared: -4.0273749025690115



Model saved as model_RHM3.sav

Training model for carpark_number: RHM4

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.
```

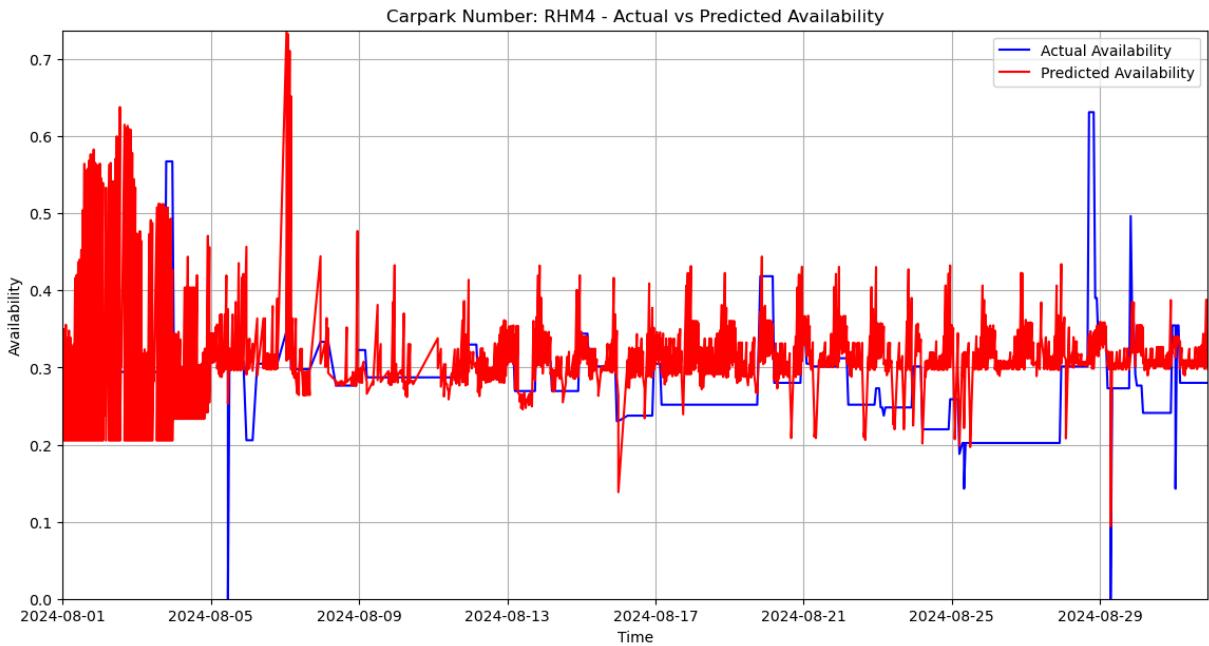
```
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.00822133187994275

R-squared: -1.4352540234854363



Model saved as model_RHM4.sav

Training model for carpark_number: RHS

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

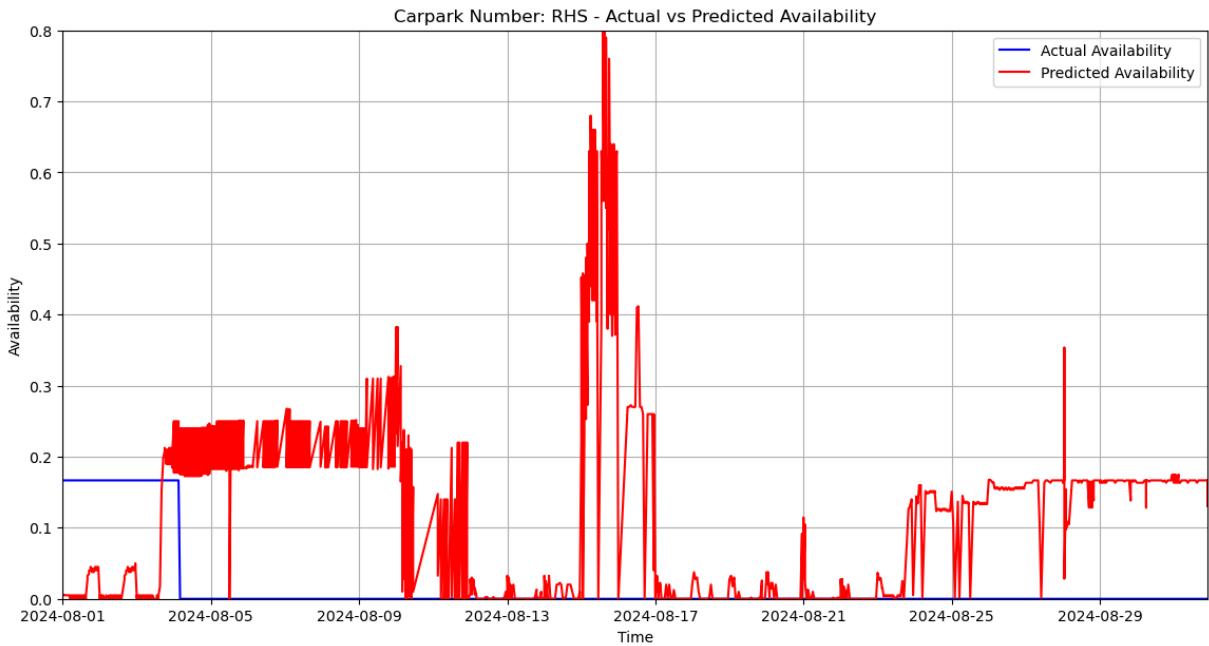
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.028420435682420055

R-squared: -9.379127527284172



Model saved as model_RHS.sav

Training model for carpark_number: SAM

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

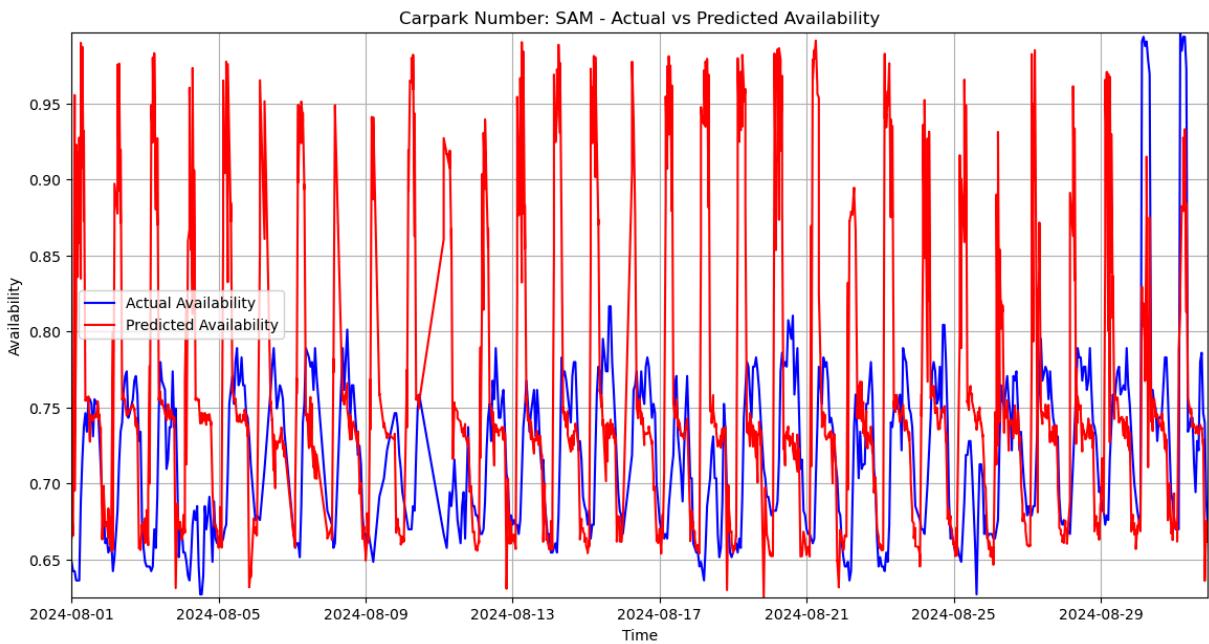
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.01250940894602618

R-squared: -2.855230026700547



```
Model saved as model_SAM.sav
```

```
Training model for carpark_number: SAM2
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

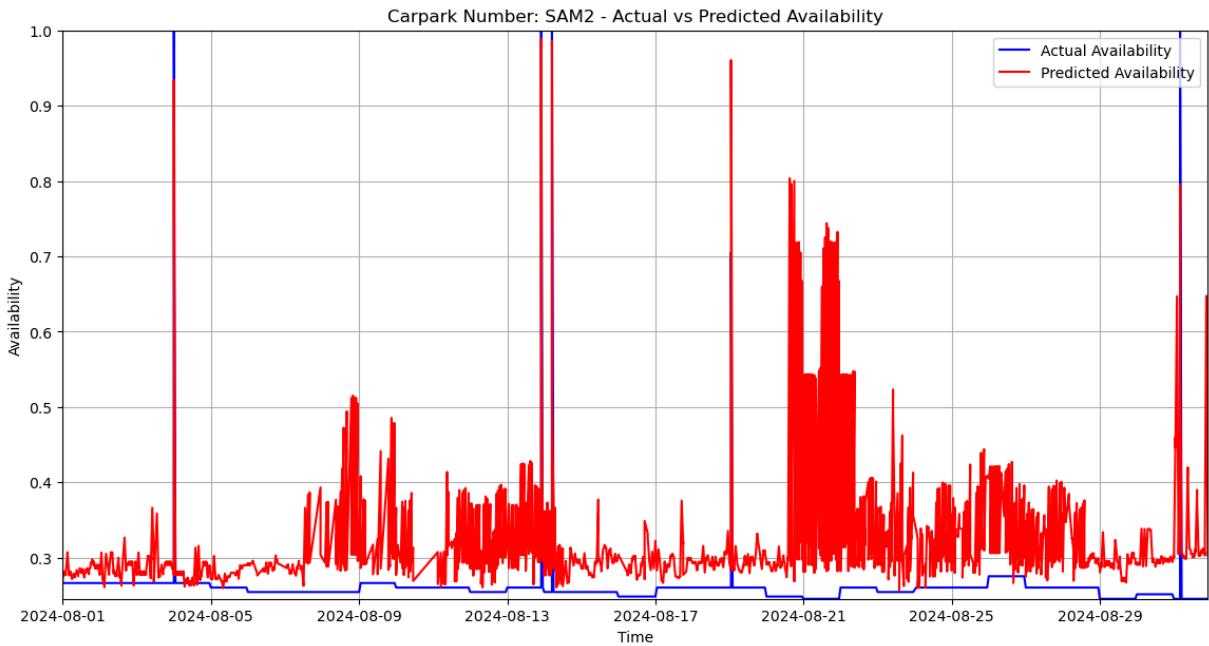
```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

```
Testing MSE: 0.009957185134941855
```

```
R-squared: -1.8091459529257108
```



Model saved as model_SAM2.sav

Training model for carpark_number: SMM

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

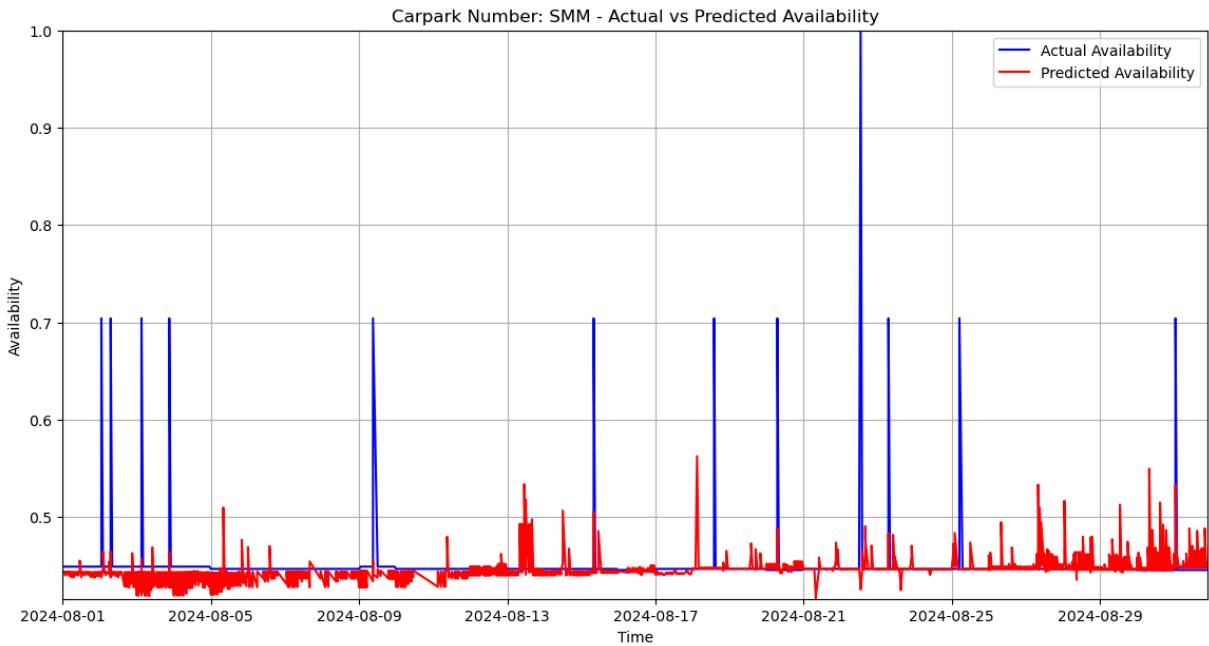
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.0017087988427884275

R-squared: -0.08987058513958357



Model saved as model_SMM.sav

Training model for carpark_number: STAM

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

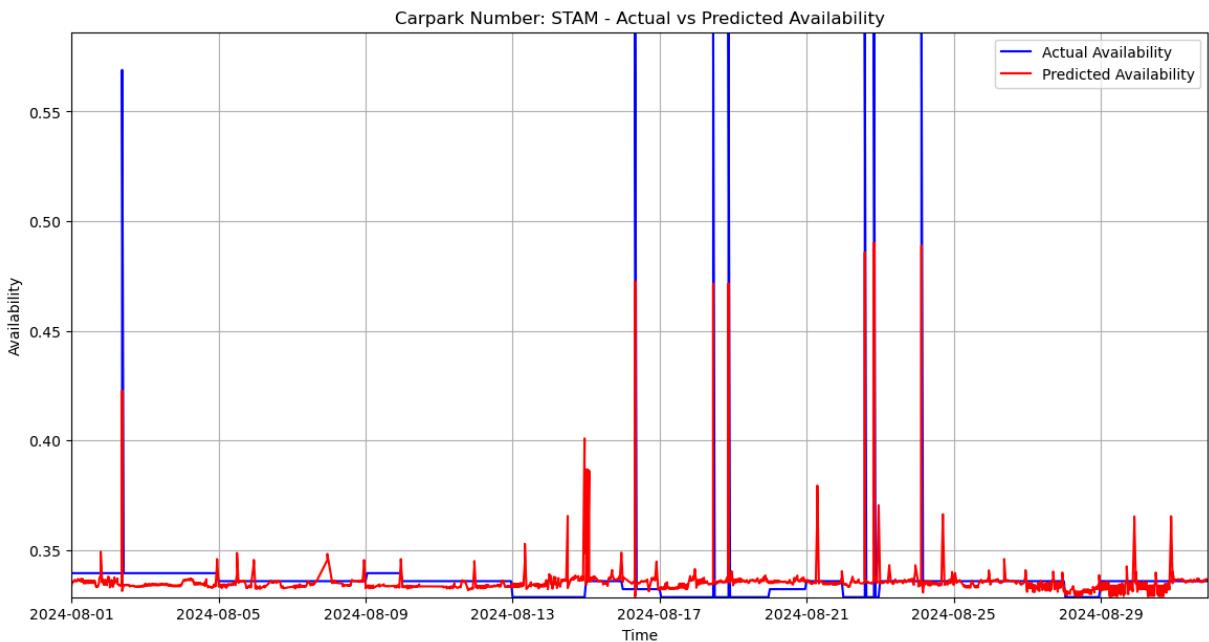
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.0004216410471866602

R-squared: 0.3449026537291875



```
Model saved as model_STAM.sav
```

```
Training model for carpark_number: STM1
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

```
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

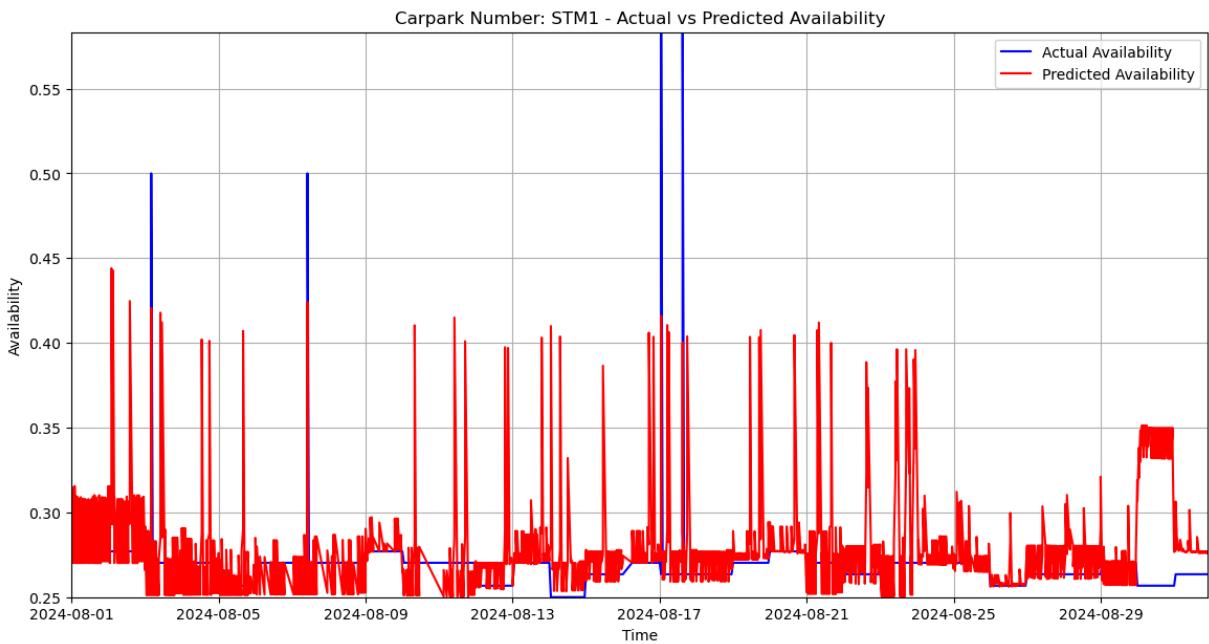
```
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

```
Testing MSE: 0.0016822753645016817
```

```
R-squared: -2.3945211892876537
```



```
Model saved as model_STM1.sav
```

```
Training model for carpark_number: STM2
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

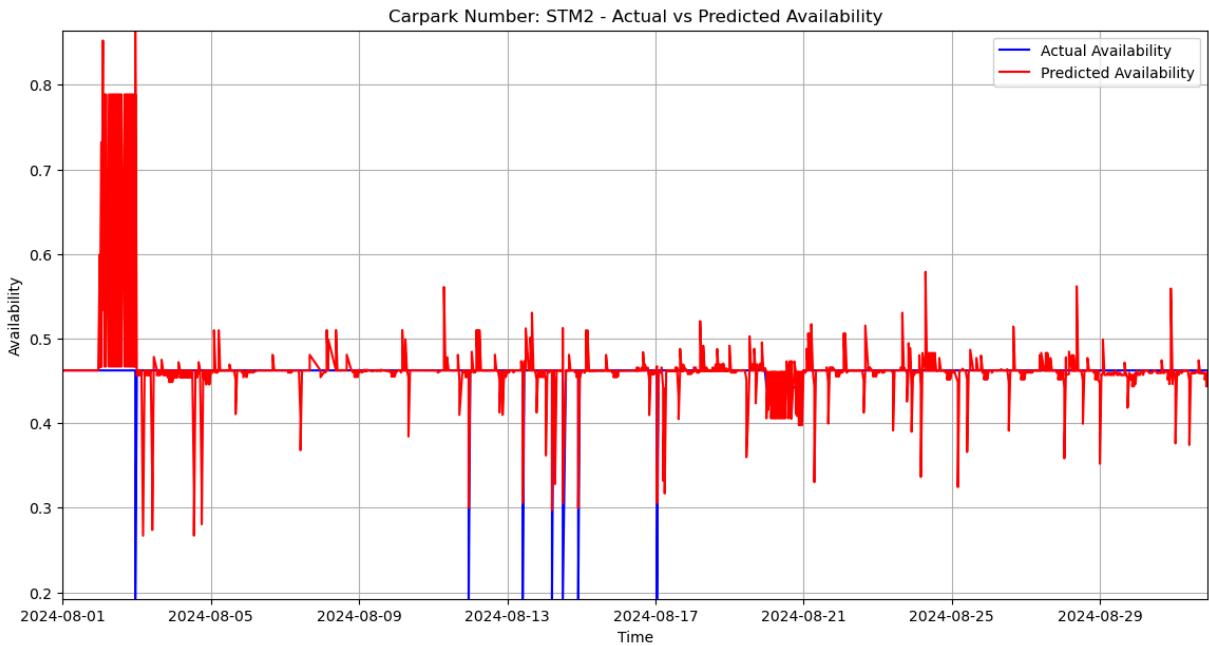
```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

```
Testing MSE: 0.0029029221131840776
```

```
R-squared: -2.4148952611498107
```

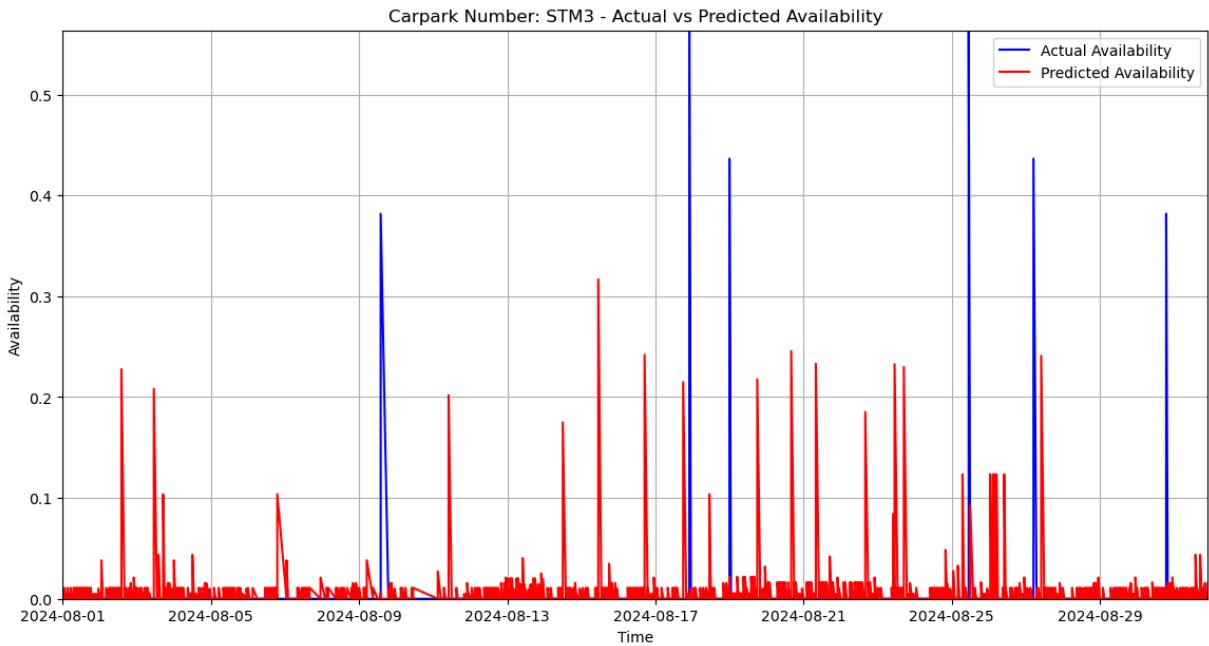


```
Model saved as model_STM2.sav
Training model for carpark_number: STM3
Testing MSE: 0.003697420907216744
R-squared: -0.9490964504077481
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



Model saved as model_STM3.sav

Training model for carpark_number: TB1

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

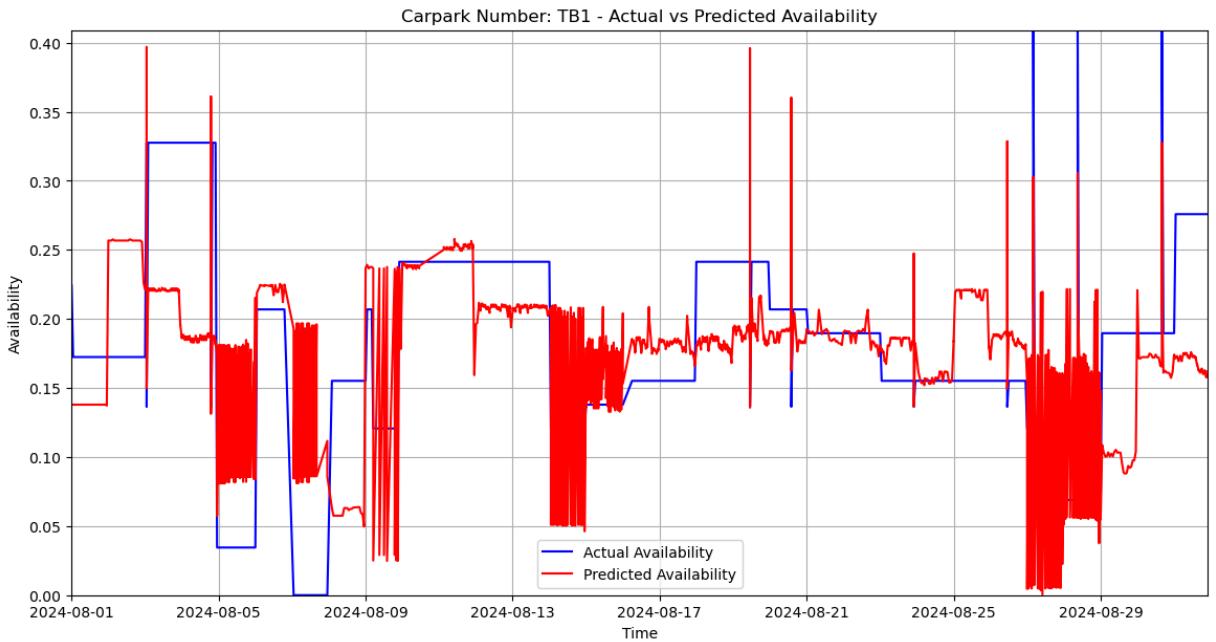
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.004914517743413945

R-squared: 0.05725781654643036



```
Model saved as model_TB1.sav
```

```
Training model for carpark_number: TB14
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

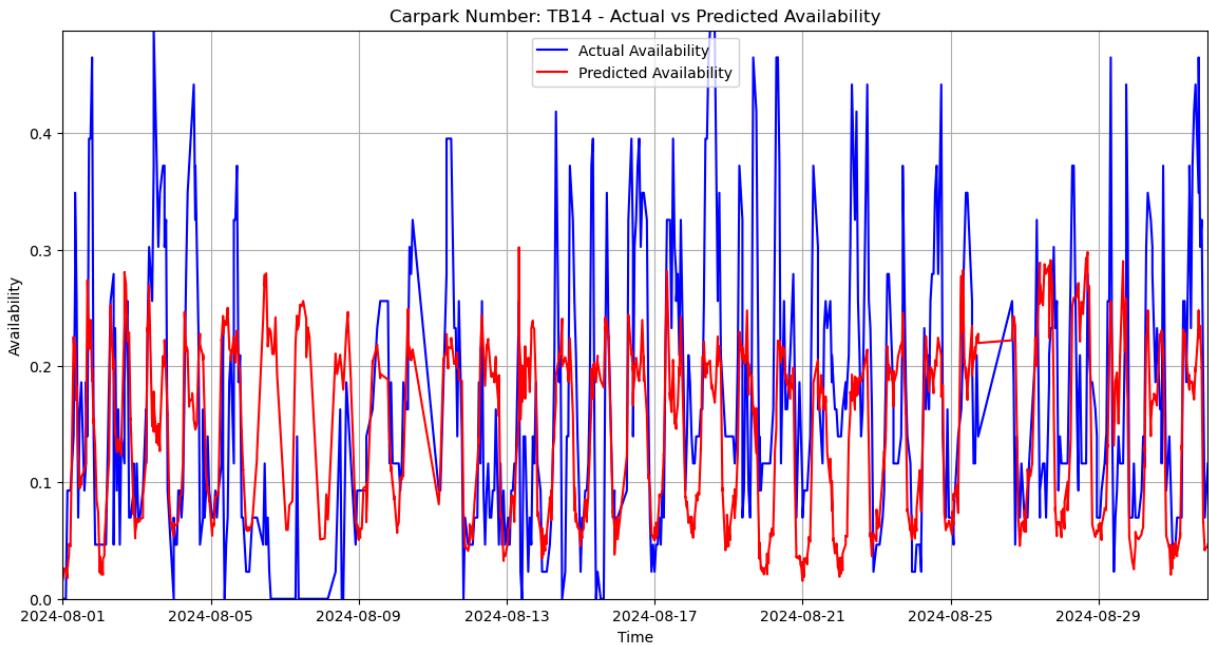
```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

```
Testing MSE: 0.012039926495520418
```

```
R-squared: 0.1299784950106314
```



Model saved as model_TB14.sav

Training model for carpark_number: TB14

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

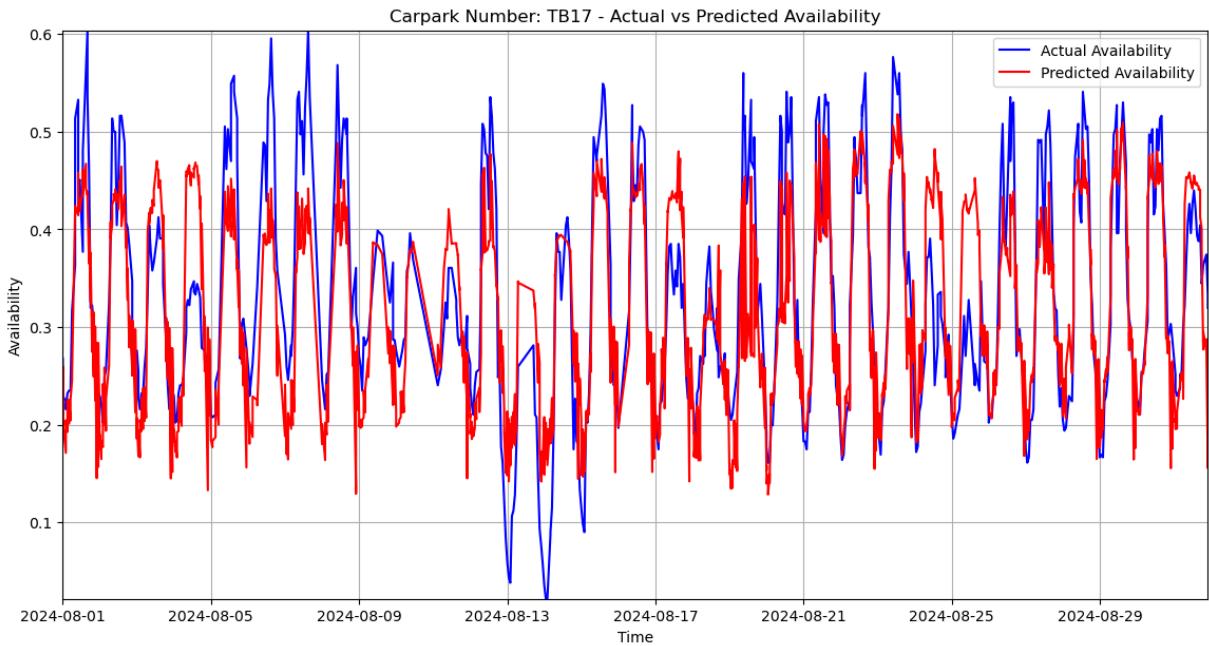
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.005224421148744242

R-squared: 0.6309040348866459



Model saved as model_TB17.sav

Training model for carpark_number: TB18

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
```

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
```

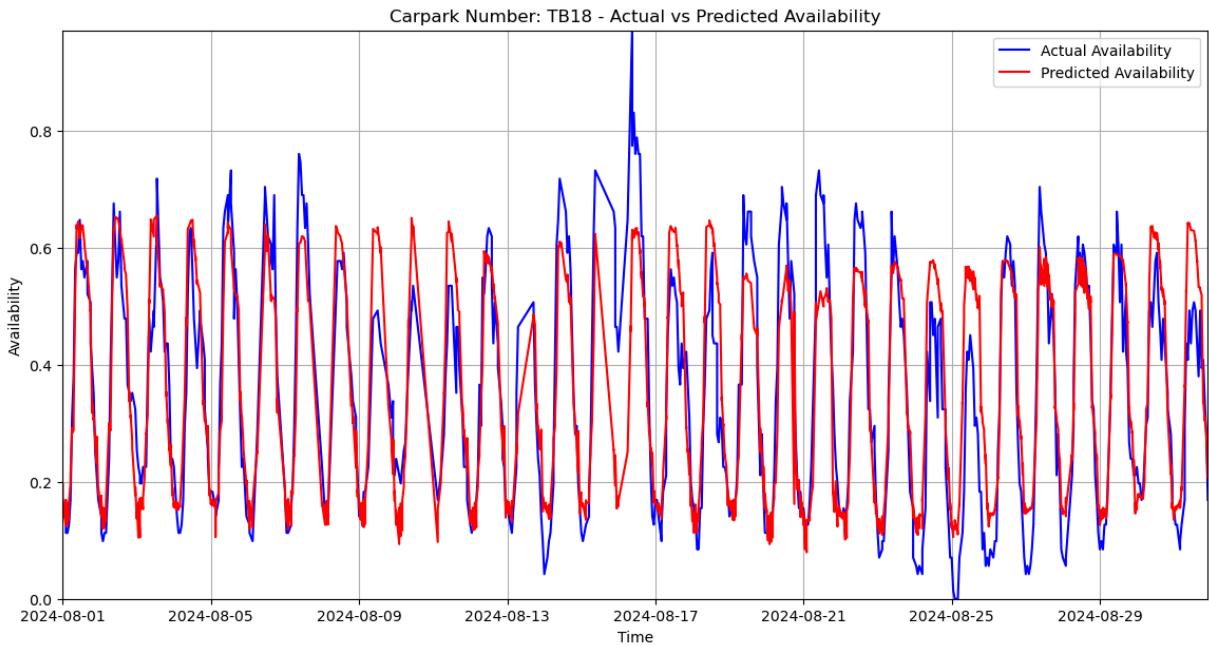
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.009373843887531663

R-squared: 0.7664693971817107



Model saved as model_TB18.sav

Training model for carpark_number: TB18

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

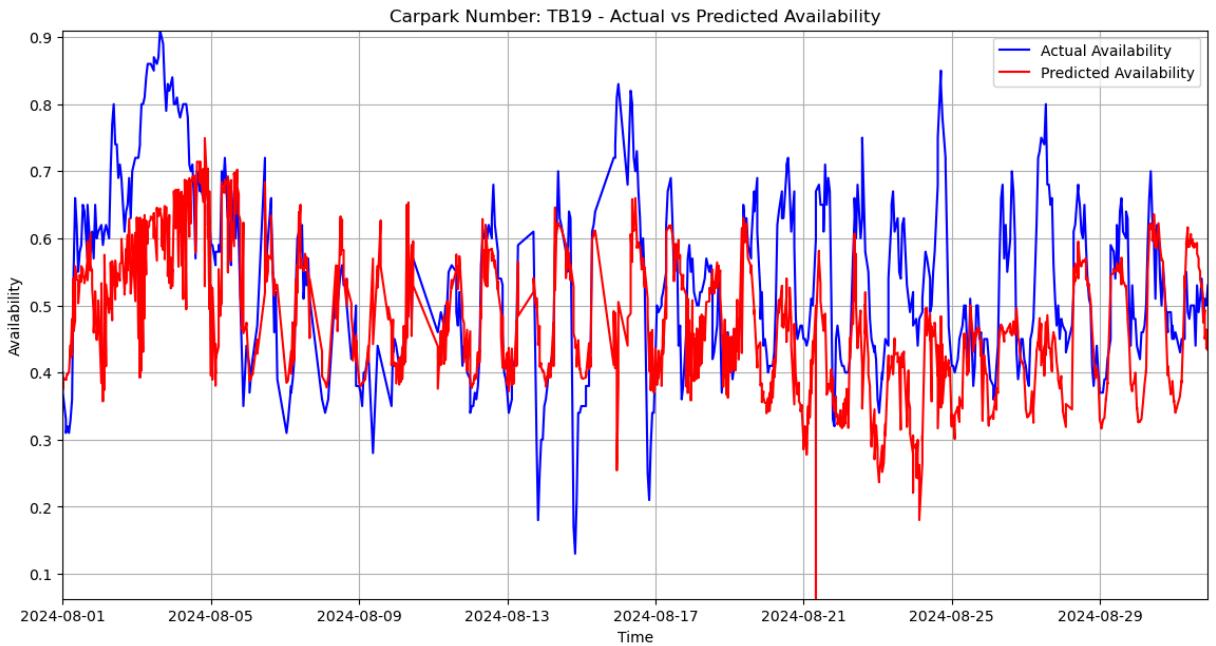
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.017351188054052384

R-squared: 0.04109839691933248

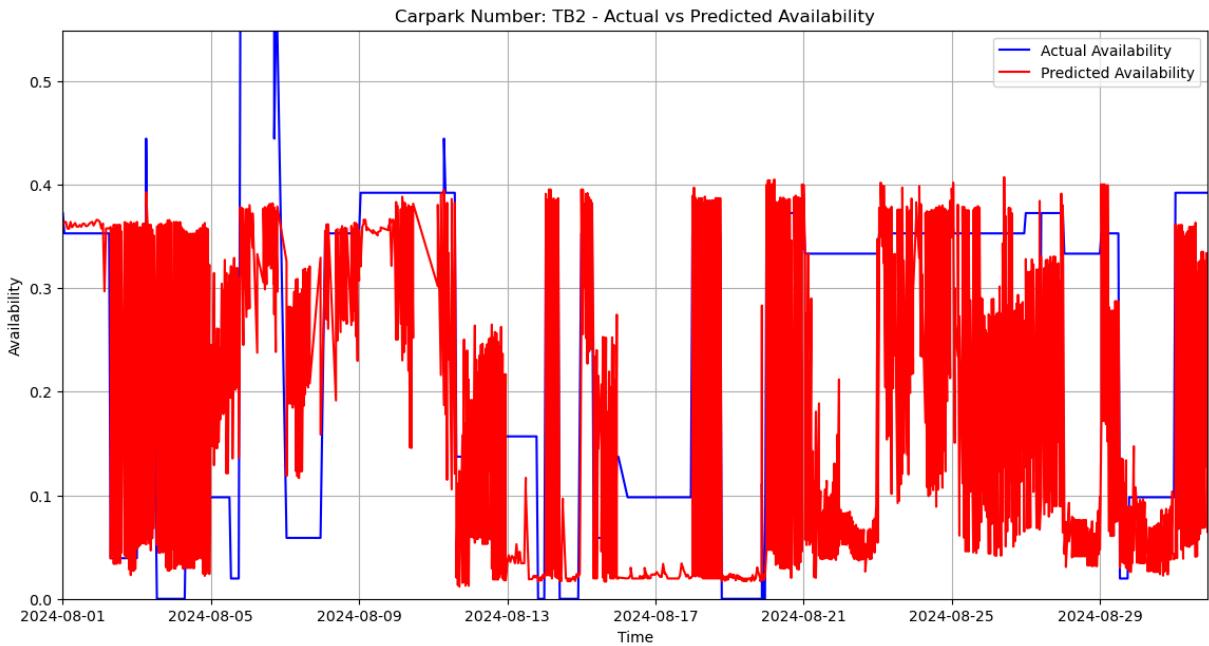


```
Model saved as model_TB19.sav
Training model for carpark_number: TB2
Testing MSE: 0.029293131250650844
R-squared: -0.2782262535051252
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

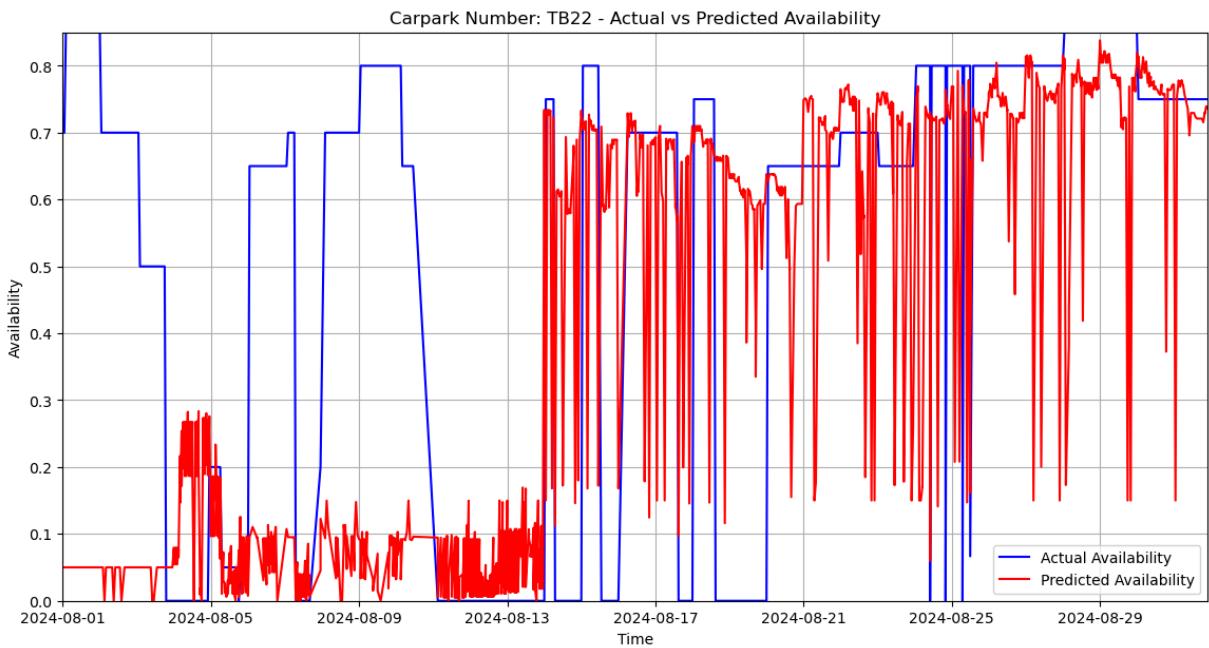


```
Model saved as model_TB2.sav
Training model for carpark_number: TB2
Testing MSE: 0.14585619055655027
R-squared: -0.25148936227846863
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

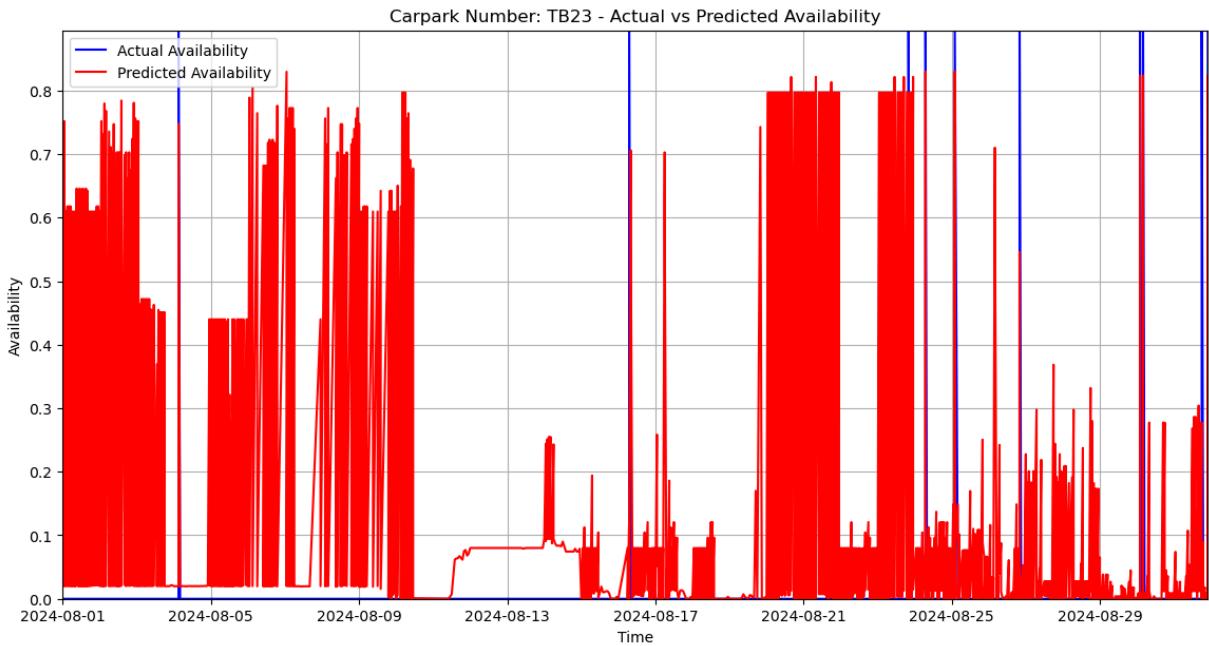


```
Model saved as model_TB22.sav
Training model for carpark_number: TB23
Testing MSE: 0.08806779989054872
R-squared: -5.997330877710914
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

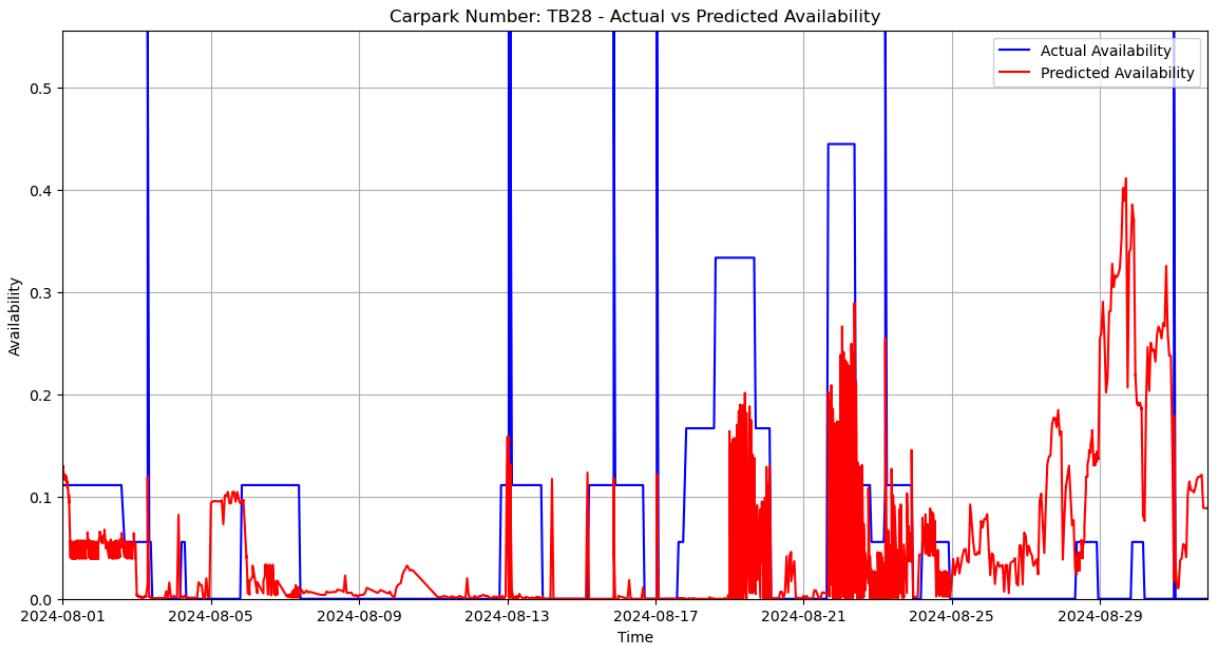


```
Model saved as model_TB23.sav
Training model for carpark_number: TB28
Testing MSE: 0.017484565405018006
R-squared: -0.43603146238294954
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



```

Model saved as model_TB28.sav
Training model for carpark_number: TB3
Testing MSE: 0.01551851342618468
R-squared: -0.4028261067147123

```

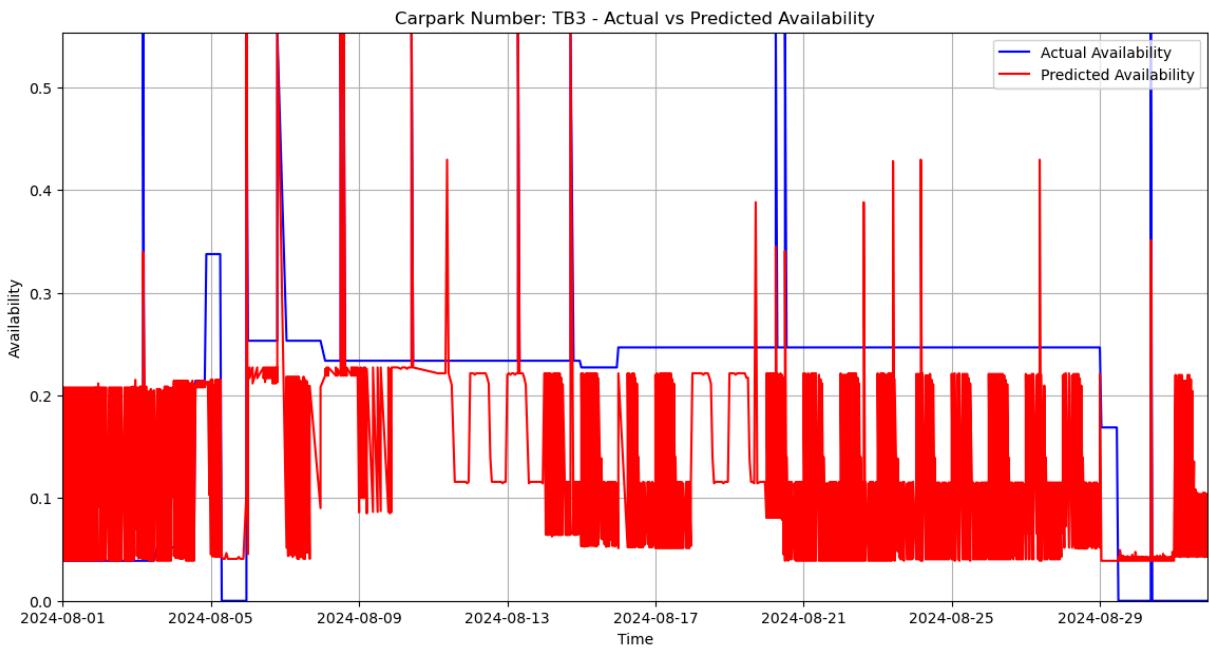
```

/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)

```

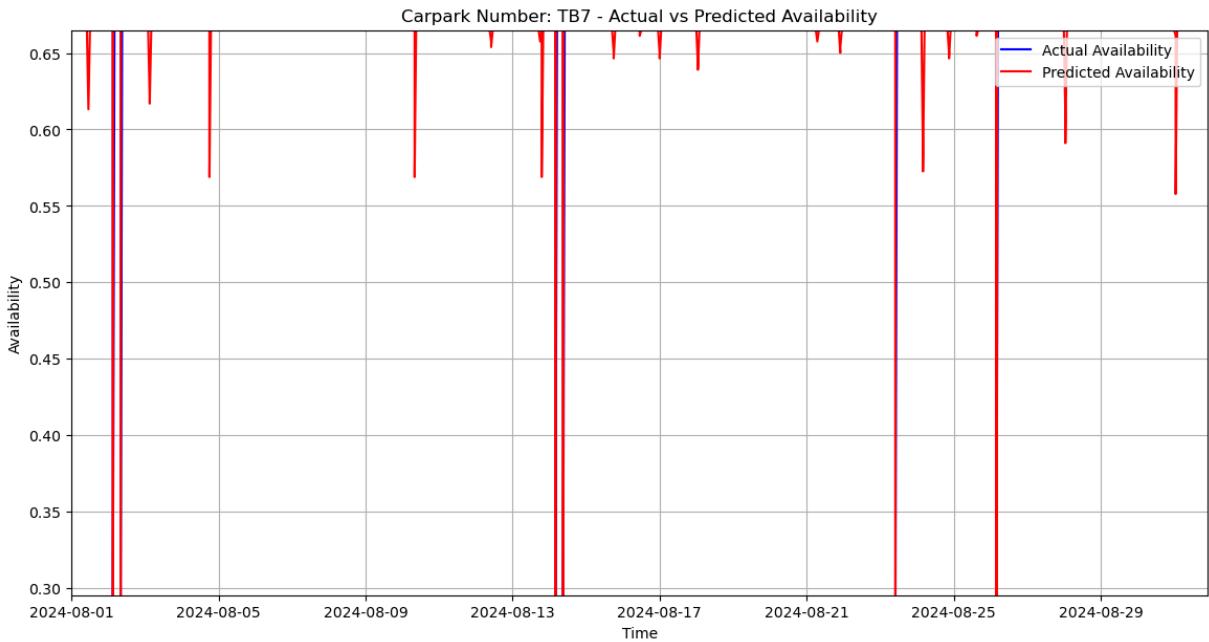


```
Model saved as model_TB3.sav
Training model for carpark_number: TB7
Testing MSE: 0.0008536997915061691
R-squared: 0.3822252187664734
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



```
Model saved as model_TB7.sav
Training model for carpark_number: TB8
Testing MSE: 3.0438003815779543e-06
R-squared: 0.9658854913405919
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

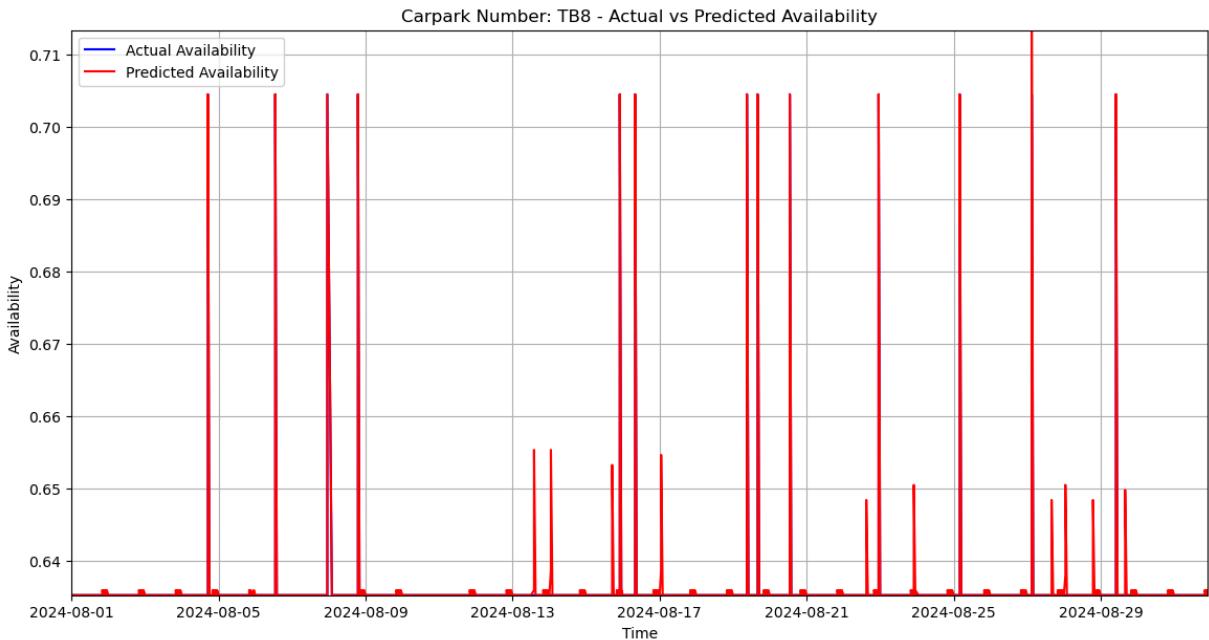
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

A value is trying to be set on a copy of a slice from a DataFrame.

```
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



```
Model saved as model_TB8.sav
```

```
Training model for carpark_number: TBC2
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

```
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

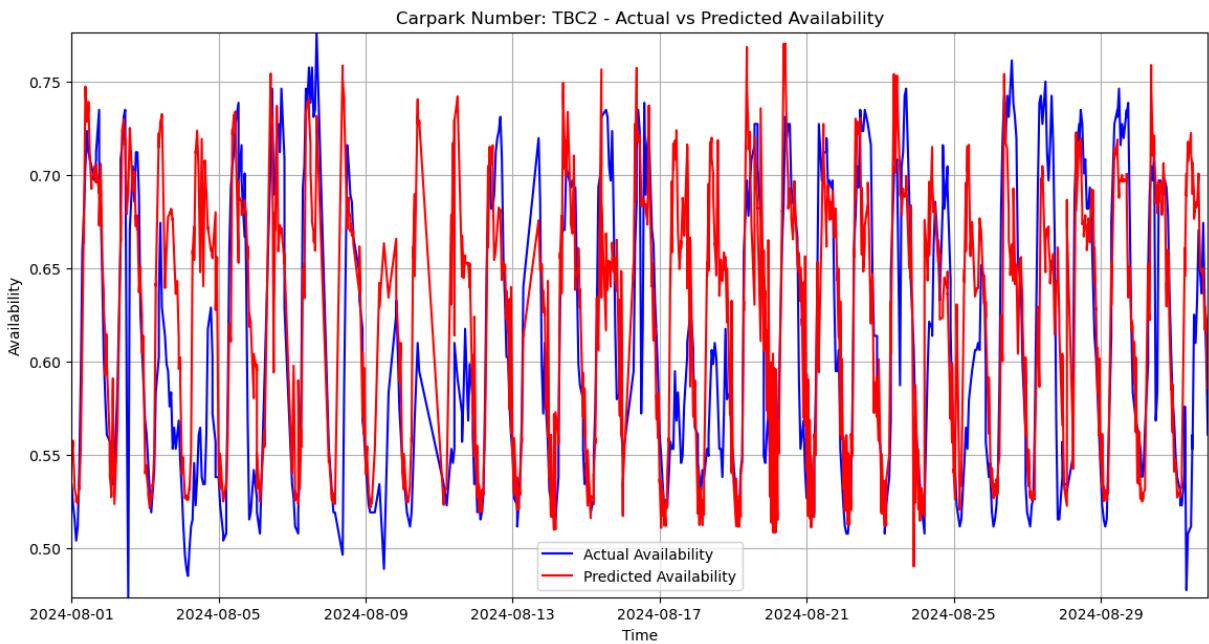
```
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

```
Testing MSE: 0.0037261268394337024
```

```
R-squared: 0.374118776878701
```



```
Model saved as model_TBC2.sav
Training model for carpark_number: TBC3
Testing MSE: 0.007251935255691273
R-squared: 0.19010701183622214
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
```

```
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

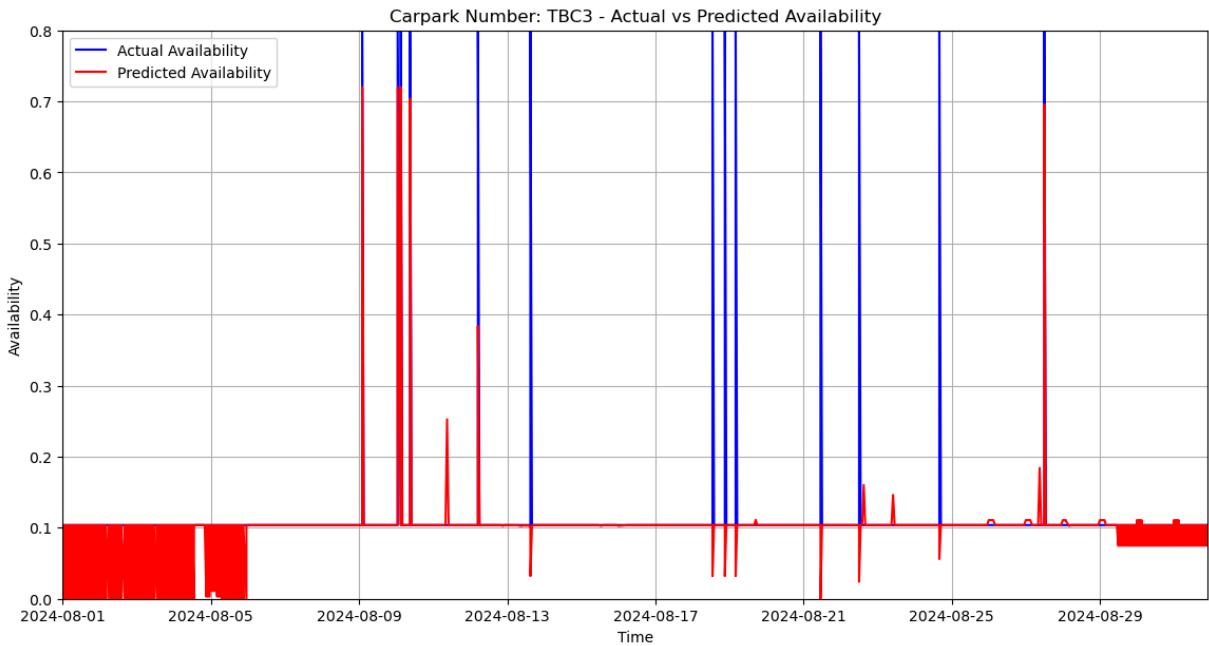
```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
```

```
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

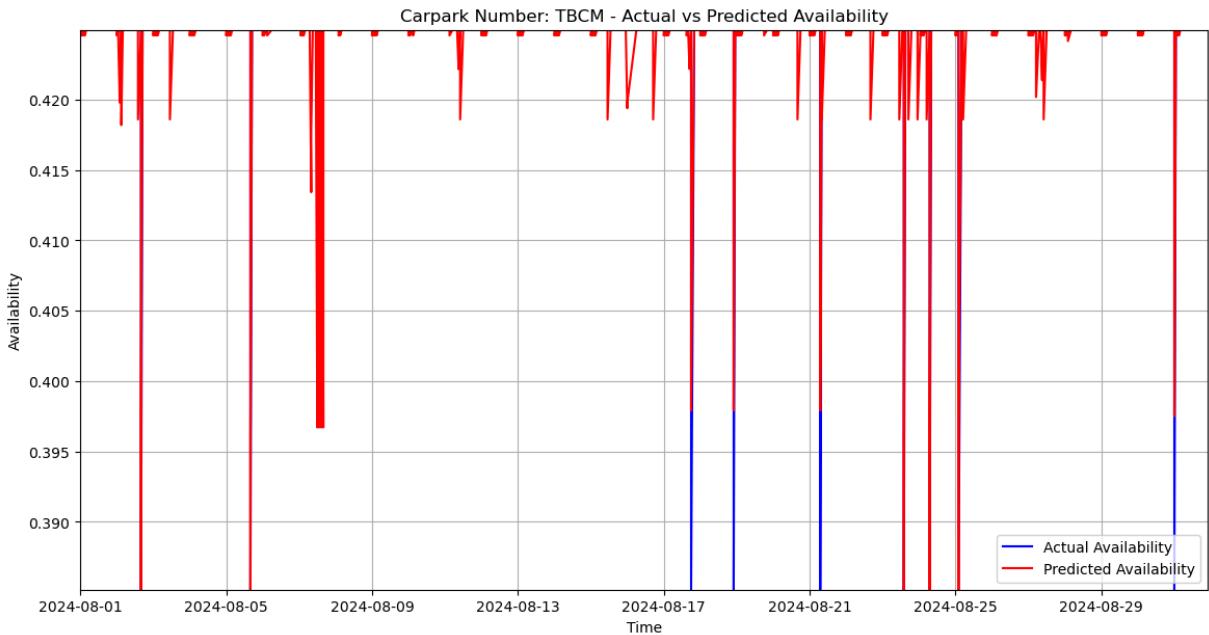


```
Model saved as model_TBC3.sav
Training model for carpark_number: TBCM
Testing MSE: 8.566650421694633e-06
R-squared: 0.6555328950016761
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



```
Model saved as model_TBCM.sav
```

```
Training model for carpark_number: TBL
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.
```

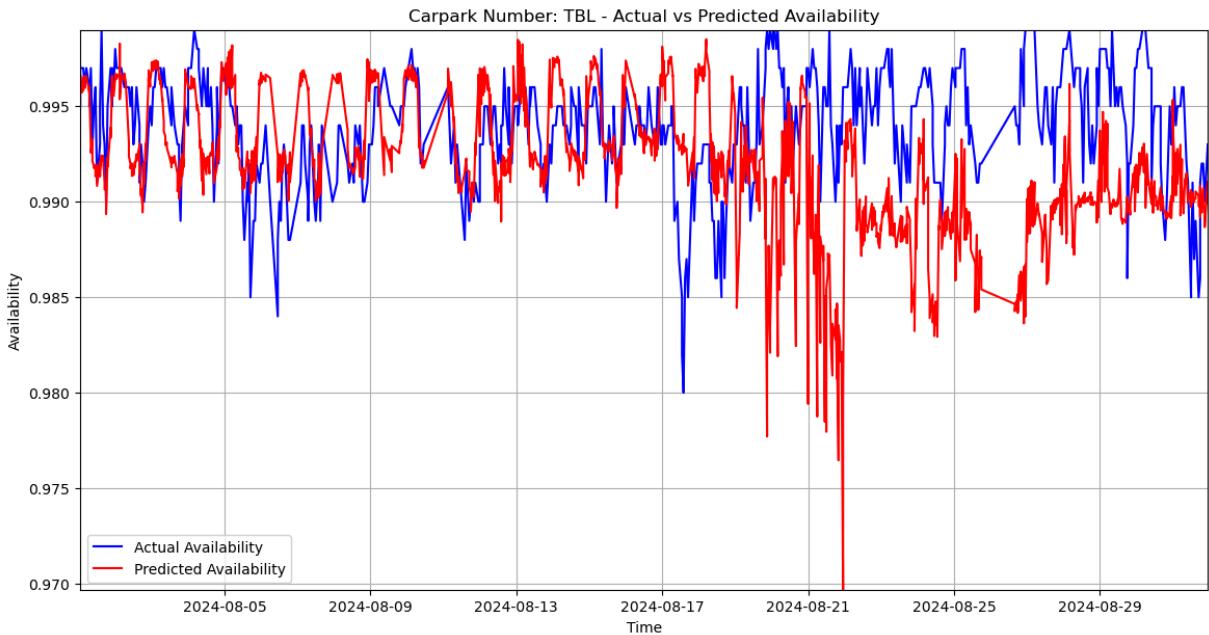
```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

```
Testing MSE: 2.482149457589574e-05
```

```
R-squared: -1.8257964368468689
```



```
Model saved as model_TBL.sav
```

```
Training model for carpark_number: TBM
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.
```

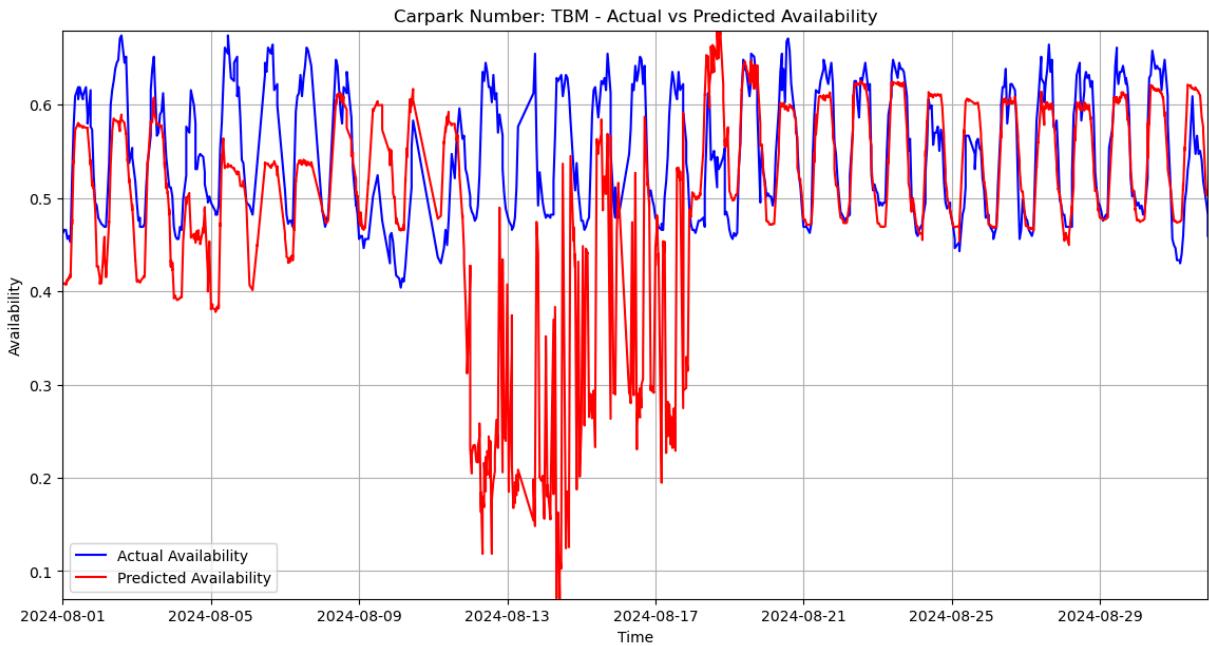
```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

```
Testing MSE: 0.017204642822105837
```

```
R-squared: -2.668899037513409
```

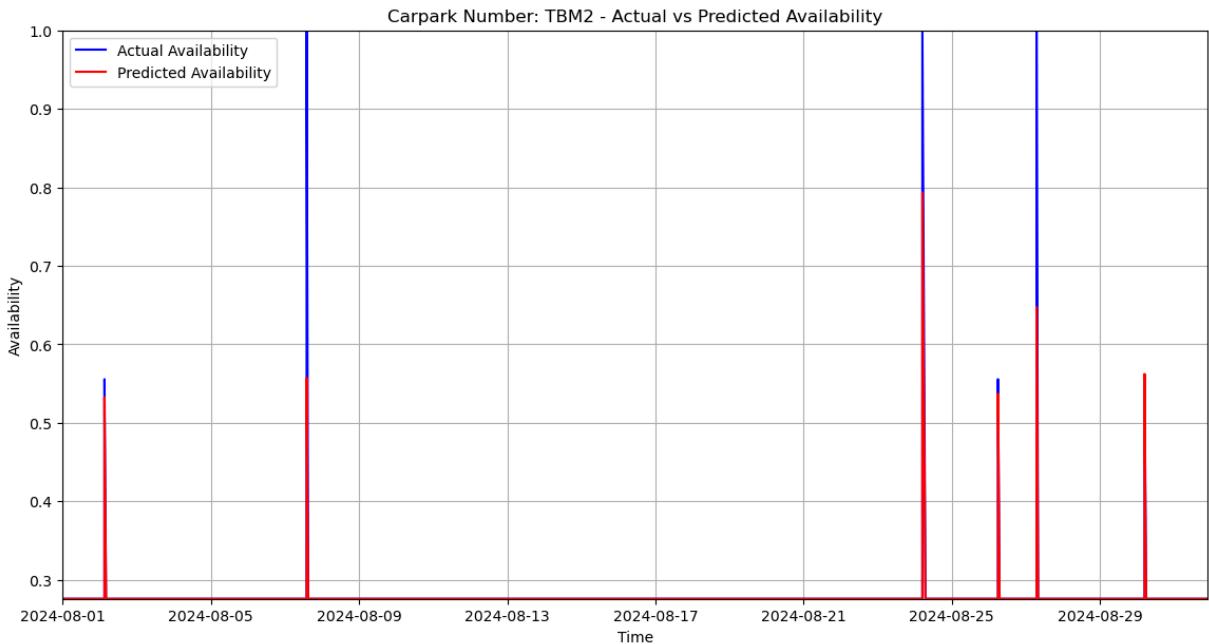


```
Model saved as model_TBM.sav
Training model for carpark_number: TBM2
Testing MSE: 0.0012694706741167535
R-squared: 0.6403261686706153
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

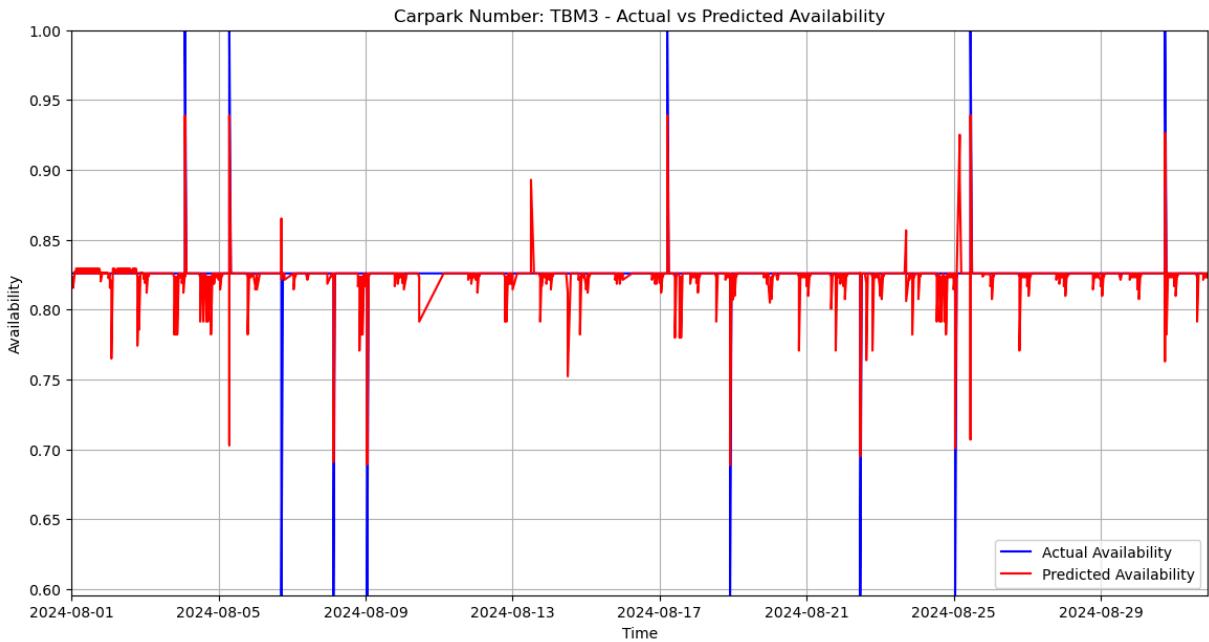


```
Model saved as model_TBM2.sav
Training model for carpark_number: TBM3
Testing MSE: 0.0006360751671370573
R-squared: 0.06774273842519041
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

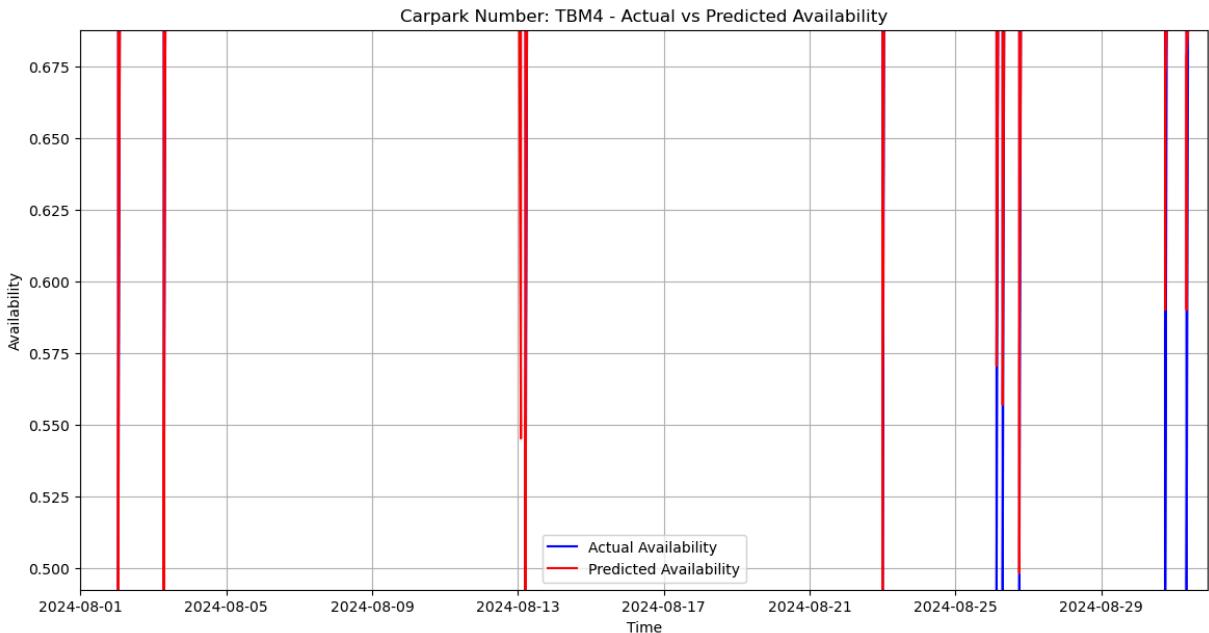


```
Model saved as model_TBM3.sav
Training model for carpark_number: TBM4
Testing MSE: 0.00014418664882059572
R-squared: 0.7079264780647807
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['day'] = test_data['day'].clip(lower=1, upper=31)
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
    test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```



```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

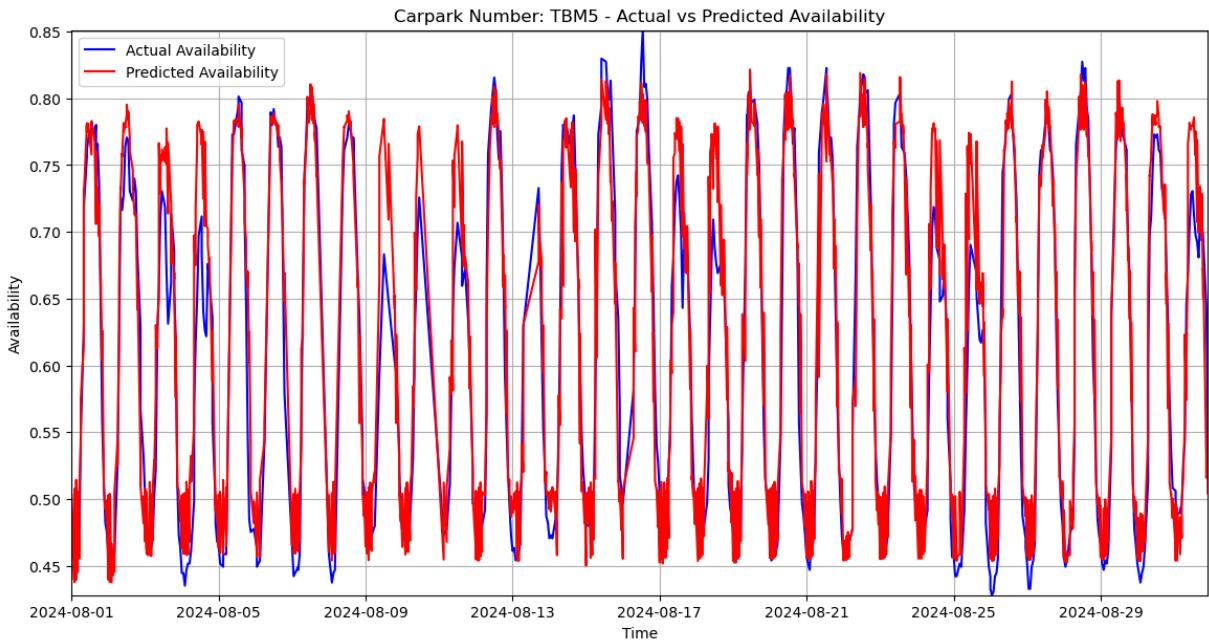
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Model saved as model_TBM4.sav
 Training model for carpark_number: TBM5
 Testing MSE: 0.0017861998043749588
 R-squared: 0.8924179920883448



```
Model saved as model_TBM5.sav
```

```
Training model for carpark_number: TBM6
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

```
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

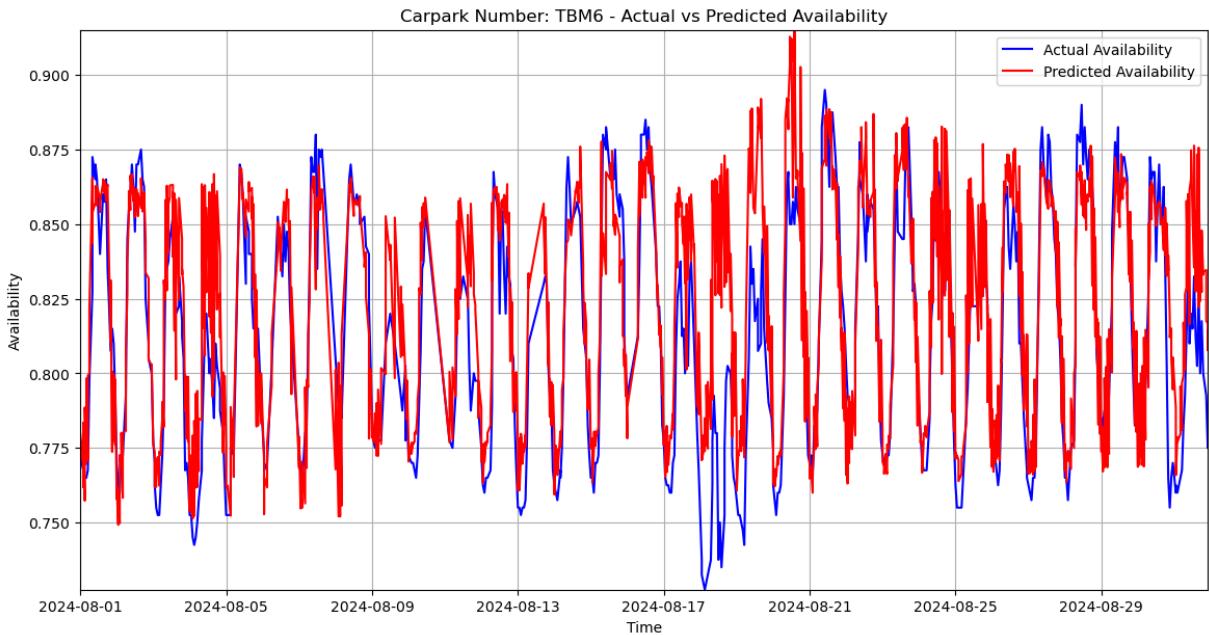
```
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

```
Testing MSE: 0.0006263856963446599
```

```
R-squared: 0.6156960378196983
```



```
Model saved as model_TBM6.sav
```

```
Training model for carpark_number: TBM7
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.
```

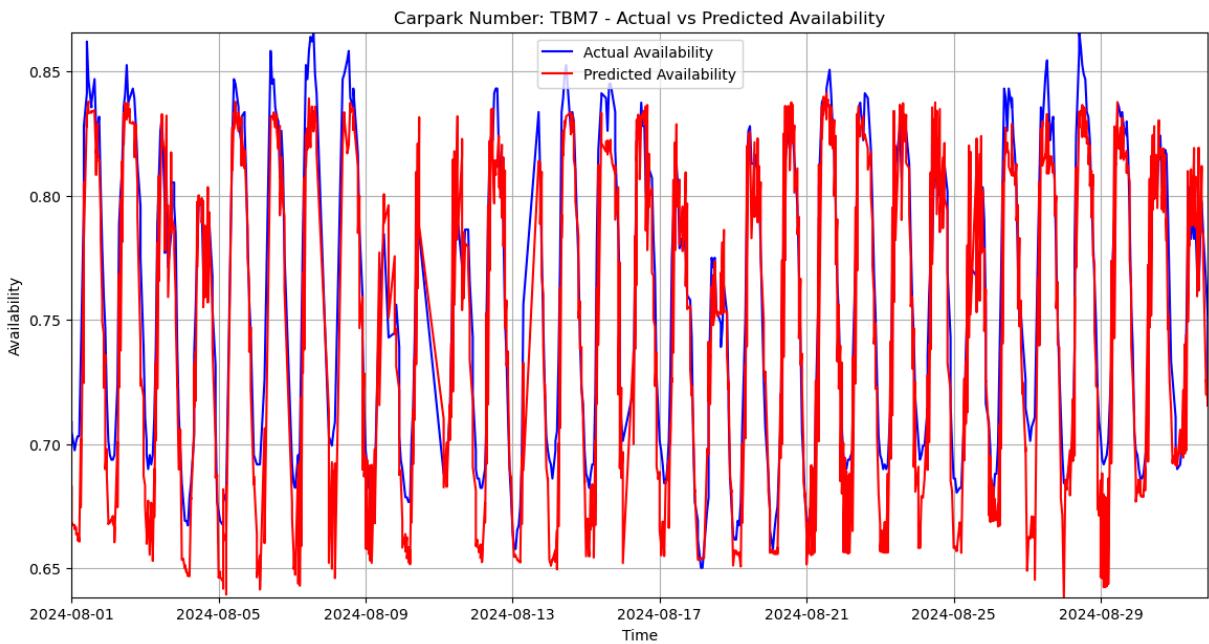
```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

```
Testing MSE: 0.000643397770025662
```

```
R-squared: 0.8183200563012617
```



```
Model saved as model_TBM7.sav
```

```
Training model for carpark_number: TBM8
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame.
```

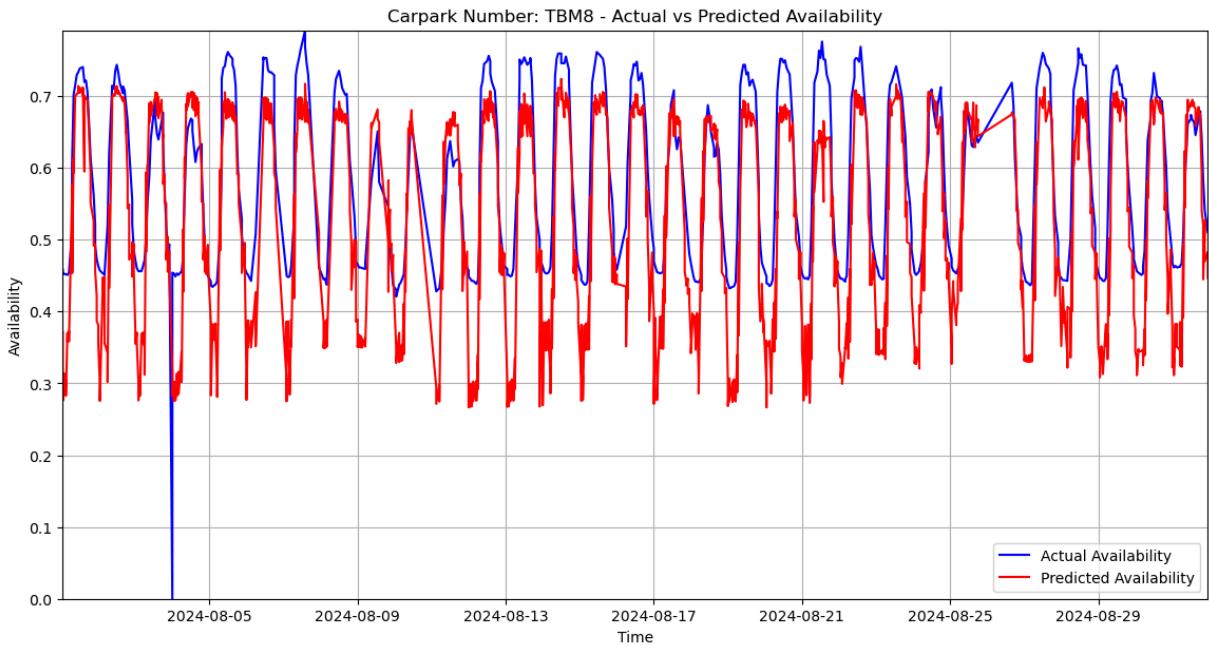
```
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy
```

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

```
Testing MSE: 0.007210988055943632
```

```
R-squared: 0.49198176178006925
```



Model saved as model_TBM8.sav

Training model for carpark_number: TBMT

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:32: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
```

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['day'] = test_data['day'].clip(lower=1, upper=31)
```

```
/var/folders/vb/2t5cf9ls6hv9z6b_n21gdsr80000gn/T/ipykernel_98419/144481318.py:33: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
```

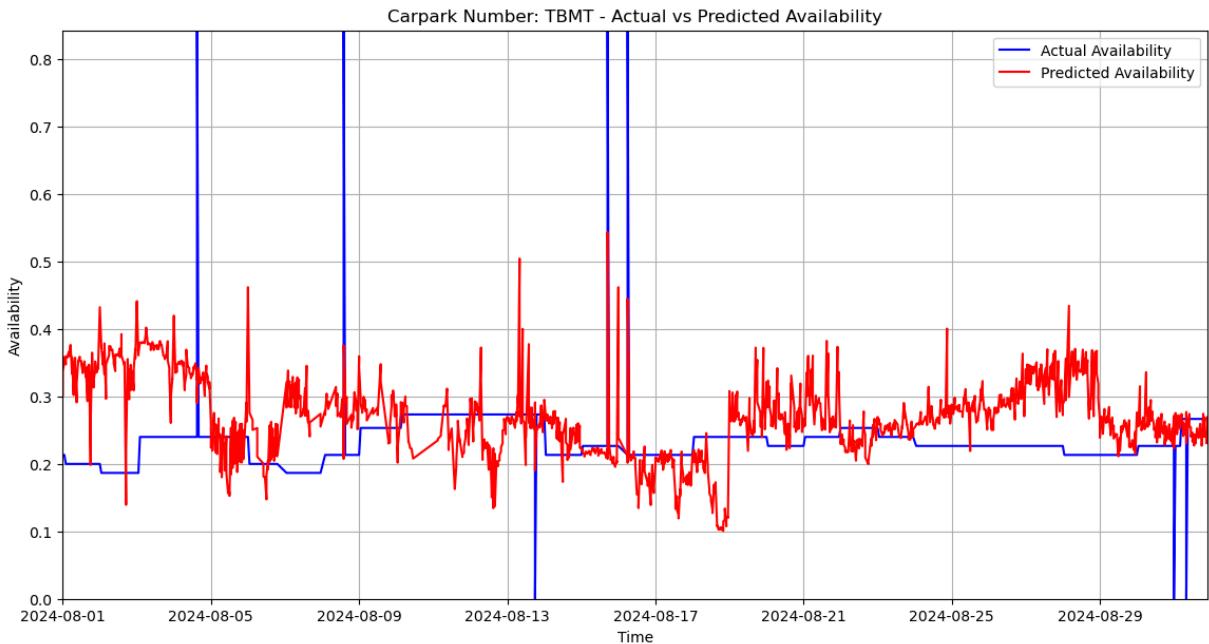
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
test_data['hour'] = test_data['hour'].clip(lower=0, upper=23)
```

Testing MSE: 0.007584602020534356

R-squared: -1.5921216522849142



Model saved as model_TBMT.sav

Summary of results:

	carpark_number	test_mse	r2
0	AR1L	0.009984	-0.202543
1	AR1M	0.002779	0.158955
2	AR2L	0.037250	-0.093277
3	AR2M	0.008477	0.388181
4	AR5M	0.000176	-1.607882
..
168	TBM5	0.001786	0.892418
169	TBM6	0.000626	0.615696
170	TBM7	0.000643	0.818320
171	TBM8	0.007211	0.491982
172	TBMT	0.007585	-1.592122

[173 rows x 3 columns]

Part II Recommendation System Algorithm

```
In [94]: from datetime import datetime
import numpy as np
import pandas as pd
import requests
```

1. Helper Functions

Function 1: Check Time input is correct

```
In [95]: def checkValidTimeInput():
    start_date = datetime(2024, 8, 1, 0, 0)
    end_date = datetime(2024, 8, 31, 23, 59)
```

```

for i in range(3):
    departure_time = input("Enter a Departure Time 'day:hour:min' (e.g.,

        if not departure_time:
            return "Now"

    try:
        day, hour, minute = map(int, departure_time.split(":"))
        user_time = datetime(2024, 8, day, hour, minute)

        # Validate the datetime object is within the range
        if start_date <= user_time <= end_date:
            # print(f"Valid time: {user_time.strftime('%Y-%m-%d %H:%M')}")
            return user_time
        else:
            print("The time is out of the valid range (2024-08-01 00:00)
    except ValueError:
        print("Invalid input format. Make sure you use 'day:hour:min' ar
    except Exception as e:
        print(f"An error occurred: {e}. Try again.")

```

Function 2: Check and Get address information

In [96]:

```

def getAddress(current_destination):
    for i in range(3):
        current_address = input(f"YOUR {current_destination} ADDRESS (postco
        result = requestAddress(current_address)
        if result:
            return result

url = "https://www.onemap.gov.sg/api/common/elasticsearch"
access_token = "eyJ0eXAiOiJKV1QiLCJhbGciOiJIUzI1NiJ9.eyJzdWIiOiIyMjhiMTg4Y2U
def requestAddress(postal_code):
    params = {
        "searchVal": postal_code,           # The search query (e.g., a postal co
        "returnGeom": "Y",                  # Return geometry (latitude, longitude)
        "getAddrDetails": "Y",              # Do not return address details
        "pageNum": "1",                    # Page number for paginated results
        "token": access_token             # Your access token
    }

    response = requests.get(url, params=params)
    data = response.json()

    if response.status_code == 200:
        # print(response.json())
        # print(response.text)
        if data.get("found", 0) > 0:
            # Extract the first result
            first_result = data["results"][0]

            address_info = {}

            address_info["address"] = first_result.get("ADDRESS")
            address_info["x"] = first_result.get("X")

```

```

        address_info["y"] = first_result.get("Y")
        address_info["latitude"] = first_result.get("LATITUDE")
        address_info["longitude"] = first_result.get("LONGITUDE")
        return address_info
    else:
        print("No results found.")
        return
else:
    print(f"Error: {response.status_code}, {response.text}")
    return

```

Function 3: Calculate the route and time taken from current position to destination

```
In [97]: def calculateTimeTaken(start, end):
    url = "https://www.onemap.gov.sg/api/public/routingsvc/route"

    headers = {"Authorization": access_token}

    params = {
        "start": start,      # Starting coordinates (latitude,longitude)
        "end": end,          # Ending coordinates (latitude,longitude)
        "routeType": "drive"           # Type of route (e.g., walk
    }

    response = requests.request("GET", url, headers=headers, params=params)

    if response.status_code == 200:
        response_data = response.json()
        route_info = {}
        if "route_summary" in response_data:
            route_summary = response_data["route_summary"]
            route_info["start_point"] = route_summary.get("start_point")
            route_info["end_point"] = route_summary.get("end_point")
            route_info["total_time"] = route_summary.get("total_time")
            route_info["total_distance"] = route_summary.get("total_distance")
        return route_info
    else:
        print(f"Error: {response.status_code}")
        return
```

Function 4:Check weather input

```
In [98]: def checkWeather():
    for i in range(3):
        valid_weather_conditions = ["Cloudy", "Fair", "HeavyRain", "LightRain"]
        weather = input(f"Enter the weather condition ({', '.join(valid_weather_conditions)}: ")
        if weather in valid_weather_conditions:
            return weather
```

Function 5: Collect all the input from user

```
In [99]: def getUserInput():
    address_current = getAddress("CURRENT")
    current_latitude, current_longitude = address_current["latitude"], address_current["longitude"]
    start = f'{current_latitude},{current_longitude}'
    address_destination = getAddress("DESTINATION")
    destination_latitude, destination_longitude = address_destination["latitude"], address_destination["longitude"]
    end = f'{destination_latitude},{destination_longitude}'

    route_info = calculateTimeTaken(start=start, end=end)

    departure_time = checkValidTimeInput()

    weather = checkWeather()

    print(f"Start: {address_current['address']}\nEnd: {address_destination['address']}")
    print(f"Total Time: {route_info['total_time']}s, Total Distance: {route_info['total_distance']}km")
    return departure_time, route_info["total_time"], address_destination["x"]
```

Function 6: Request Previous data for prediction

```
In [100...]:
import requests
import json
import pandas as pd
import os
from datetime import datetime, timedelta
from sklearn.preprocessing import MinMaxScaler

# Change these values for different dates
def requestCarparkInfo(year, month, day, hour, minute="0", second="29", target_carpark_number=1):
    site = f'https://api.data.gov.sg/v1/transport/carpark-availability?date={year}-{month}-{day}&hour={hour}&minute={minute}&second={second}&target_carpark_number={target_carpark_number}'
    print(site)
    response_API = requests.get(site)

    if response_API.status_code != 200:
        print(f"Failed to fetch data for {site}", response_API.status_code)

    data = response_API.text
    data = json.loads(data)
    timestamp = data["items"][0]["timestamp"]
    print(timestamp)
    data = data["items"][0]["carpark_data"]
    filtered_carpark_data = [
        {
            "carpark_number": carpark["carpark_number"],
            "lots_available": int(carpark["carpark_info"][0]["lots_available"]),
            "total_lots": int(carpark["carpark_info"][0]["total_lots"])
        }
        for carpark in data if carpark["carpark_number"] in target_carpark_numbers
    ]

    # Print the filtered carpark data
```

```

# for carpark in filtered_carpark_data:
#     print(f"Carpark Number: {carpark['carpark_number']}, "
#           f"Lots Available: {carpark['lots_available']}, "
#           f"Total Lots: {carpark['total_lots']}")
return filtered_carpark_data

def combineTime(departure_time, estimate_duration):
    duration_seconds = int(estimate_duration)
    duration_timedelta = timedelta(seconds=duration_seconds)
    arrival_time = departure_time + duration_timedelta
    # print(arrival_time)

    day = arrival_time.day

    # Extract the hour as a floating-point value
    hour = arrival_time.hour + arrival_time.minute / 60

    return arrival_time, day, hour

    # Print the results
    # print(f"Day: {day}")
    # print(f"Hour: {hour:.2f}") # Format to 2 decimal places for clarity

def constructModelInput(departure_time, estimate_duration, target_carpark_numbers):
    forecast_Cloudy = False
    forecast_Fair = False
    forecast_HeavyRain = False
    forecast_LightRain = False

    if weather == "Cloudy":
        forecast_Cloudy = True
    if weather == "Fair":
        forecast_Fair = True
    if weather == "HeavyRain":
        forecast_HeavyRain = True
    if weather == "LightRain":
        forecast_LightRain = True

    year = "2024"
    arrival_time, day_feature, hour_feature = combineTime(departure_time, estimate_duration)
    day, hour, minute = str(arrival_time.day), str(arrival_time.hour), str(arrival_time.minute)

    one_hour_ago = arrival_time - timedelta(hours=1)
    one_day_ago = arrival_time - timedelta(days=1)
    one_week_ago = arrival_time - timedelta(weeks=1)

    carpark_df_pred = pd.DataFrame(target_carpark_numbers, columns=["carpark_number"])
    carpark_df_pred["day"] = day_feature / 30
    carpark_df_pred["hour"] = hour_feature / 24

    # lag_1
    month_lag_1, day_lag_1, hour_lag_1 = str(one_hour_ago.month), str(one_hour_ago.day), str(one_hour_ago.hour)
    carpark_lag1 = requestCarparkInfo(year, month_lag_1, day_lag_1, hour_lag_1)
    carpark_lag1 = pd.DataFrame(carpark_lag1)
    carpark_df_pred["lag_1"] = (carpark_lag1["lots_available"] / carpark_lag1["total_lots"])

```

```

# lag_24
month_lag_24, day_lag_24, hour_lag_24 = str(one_day_ago.month), str(one_
carpark_lag24 = requestCarparkInfo(year, month_lag_24, day_lag_24, hour_
carpark_lag24 = pd.DataFrame(carpark_lag24)
carpark_df_pred["lag_24"] = (carpark_lag24["lots_available"] / carpark_l

# lag_128
month_lag_128, day_lag_128, hour_lag_128 = str(one_week_ago.month), str(
carpark_lag128 = requestCarparkInfo(year, month_lag_128, day_lag_128, hour_
carpark_lag128 = pd.DataFrame(carpark_lag128)
carpark_df_pred["lag_128"] = (carpark_lag128["lots_available"] / carpark_l

carpark_df_pred["forecast_Cloudy"] = forecast_Cloudy
carpark_df_pred["forecast_Fair"] = forecast_Fair
carpark_df_pred["forecast_HeavyRain"] = forecast_HeavyRain
carpark_df_pred["forecast_LightRain"] = forecast_LightRain

carpark_df_pred = carpark_df_pred.dropna()

return carpark_df_pred

```

Function 7: Load Model and availability prediction

```

In [101]: import pickle
def modelPredict(carpark_df_pred, model_type="RF_models"):

    ## Store all the results in predictions
    predictions = {}

    for _, row in carpark_df_pred.iterrows():
        carpark_number = row["carpark_number"]
        model_filename = f"data/{model_type}/model_{carpark_number}.sav" #

        try:
            # Load the model
            with open(model_filename, 'rb') as model_file:
                model = pickle.load(model_file)

            # Prepare the features for prediction (adjust column names as needed)
            features = row[["day", "hour", "lag_1", "lag_24", "lag_128", "fc"]
            # Make a prediction
            prediction = model.predict(features)[0]

            prediction = max(0, prediction)
            prediction = min(1, prediction)
            predictions[carpark_number] = prediction
        except FileNotFoundError:
            print(f"Model file for carpark {carpark_number} not found.")
            predictions[carpark_number] = None # Append None if the model is not found
        except Exception as e:
            print(f"Error loading model for {carpark_number}: {e}")

```

```
predictions[carpark_number] = None
```

```
return predictions
```

Filter out Non-Open carpark

```
In [102...]: def time_filter(filtered_carpark, arrival_time):
    open_time_slot = ['7AM-10.30PM', '7AM-7PM', 'NO', 'WHOLE DAY']
    if (arrival_time.hour < 7) or (arrival_time.hour > 22 and arrival_time.minute == 0):
        open_time_slot = ['WHOLE DAY']
    elif arrival_time.hour > 19:
        open_time_slot = ['7AM-10.30PM', 'WHOLE DAY']
    else:
        open_time_slot = ['7AM-10.30PM', '7AM-7PM', 'WHOLE DAY']

    filtered_carpark = filtered_carpark[filtered_carpark["short_term_parking"] == open_time_slot]
    return filtered_carpark
```

Function 8: Sort top 10 nearest carpark

```
In [103...]: def sortTop10Carpark(filtered_carpark, destination_x, destination_y, Euclidean):
    filtered_carpark = filtered_carpark.reset_index(drop=True)
    destination_x, destination_y = float(destination_x), float(destination_y)

    top_10_nearest_carparks = pd.DataFrame()

    if Euclidean:
        ## Rank based on Euclidean distance
        top_10_nearest_carparks = filtered_carpark.loc[
            np.argsort(abs(filtered_carpark["x_coord"] - destination_x) + abs(filtered_carpark["y_coord"] - destination_y))]
        top_10_nearest_carparks["distance"] = abs(filtered_carpark["x_coord"] - destination_x) + abs(filtered_carpark["y_coord"] - destination_y)
    else:
        # Rank based on straight line distance
        top_10_nearest_carparks = filtered_carpark.loc[
            np.argsort(np.sqrt((filtered_carpark["x_coord"] - destination_x)**2 + (filtered_carpark["y_coord"] - destination_y)**2))]
        top_10_nearest_carparks["distance"] = np.sqrt((filtered_carpark["x_coord"] - destination_x)**2 + (filtered_carpark["y_coord"] - destination_y)**2)

    top_10_nearest_carparks_drop = top_10_nearest_carparks.drop(columns=["garage_type"])
    # Drop rows with NaN values from the DataFrame
    top_10_nearest_carparks_drop = top_10_nearest_carparks_drop.dropna()

    target_carpark_numbers = top_10_nearest_carparks_drop["car_park_no"].tolist()
    top_10_nearest_carparks_drop["predicted availability"] = top_10_nearest_carparks_drop["predicted availability"]
    target_carpark_numbers = [int(x) for x in target_carpark_numbers]

    return top_10_nearest_carparks, top_10_nearest_carparks_drop, target_carpark_numbers
```

Function 9: Create Output for user in last step

```
In [104...]: def outputForUser(top_10_nearest_carparks, predictions):
    top_10_nearest_carparks['predicted availability'] = top_10_nearest_carparks['predicted availability']
```

```

columns = list(top_10_nearest_carparks.columns)
columns.insert(2, columns.pop(8))
columns.insert(3, columns.pop(8))
top_10_nearest_carparks = top_10_nearest_carparks[columns]
return top_10_nearest_carparks

```

Function 10: Plot interactive graph (HTML file)

```

In [105]: import pandas as pd
import folium
from pyproj import Transformer

def interactiveMap(filtered_carpark, destination_x, destination_y):
    df = filtered_carpark

    # Convert x_coord, y_coord (SVY21) to lat/lon (WGS84)
    transformer = Transformer.from_crs("EPSG:3414", "EPSG:4326", always_xy=True)
    df["lon"], df["lat"] = zip(*df.apply(lambda row: transformer.transform(row['x_coord'], row['y_coord']), axis=1))

    destination_coords = transformer.transform(destination_x, destination_y)
    destination_lat, destination_lon = destination_coords[1], destination_coords[0]

    map_center = [destination_lat, destination_lon]
    m = folium.Map(location=map_center, zoom_start=15)

    # Add the destination marker
    folium.Marker(
        location=[destination_lat, destination_lon],
        popup="Destination",
        icon=folium.Icon(color="red", icon="flag")
    ).add_to(m)

    # Add markers for each car park
    for _, row in df.iterrows():
        popup_info = f"<b>Car Park:</b> {row['car_park_no']}<br><b>Address:</b> {row['address']}"
        folium.Marker(
            location=[row["lat"], row["lon"]],
            popup=folium.Popup(popup_info, max_width=300),
            icon=folium.Icon(color="blue", icon="info-sign")
        ).add_to(m)

    m.save("carpark_map_with_destination.html")
    print("Map saved as 'carpark_map_with_destination.html'")

```

2. Main Algorithm (separated)

User input

```

In [106]: departure_time, duration_time, destination_x, destination_y, weather = getUs

```

```
Start: 374 CLEMENTI AVENUE 4 SINGAPORE 120374
End: 36 COLLEGE AVENUE EAST UNIVERSITY TOWN (UTOWN RESIDENCE NORTH TOWER) SI
NGAPORE 138600
Departure Time: 2024-08-19 12:08:00
Total Time: 410s, Total Distance: 2693m
```

Calculate Arrival Time

```
In [107...]: arrival_time, day_feature, hour_feature = combineTime(departure_time, durat
```

Filter out Non-Open carpark

```
In [109...]: filtered_carpark = pd.read_csv("data/filtered_carparks.csv") # 214 rows of data
carpark_with_models = pd.read_csv("data/unique_carpark_list.csv")
carpark_list = carpark_with_models["CarPark_No"].tolist()
filtered_carpark = filtered_carpark[filtered_carpark["car_park_no"].isin(carpark_list)]
filtered_carpark
```

Out[109...]

	car_park_no	address	x_coord	y_coord	car_park_type	type_of_p...
0	AR1L	3 AND 5 DOVER ROAD	22359.0217	31801.6379	SURFACE CAR PARK	ELECT
1	AR1M	BLK 2A DOVER ROAD	22474.2050	31687.9608	MULTI-STORY CAR PARK	ELECT
2	AR2L	BLK 26 AND 27 DOVER CRESCENT	22194.6359	32026.8288	SURFACE CAR PARK	ELECT
3	AR2M	BLK 28 DOVER CRESCENT	22252.4860	31896.9749	MULTI-STORY CAR PARK	ELECT
4	AR5M	BLK 19A DOVER CRESCENT	22562.8641	32184.9758	MULTI-STORY CAR PARK	ELECT
...
206	TB23	DEPOT ROAD LORRY PARK	25985.6543	29309.8340	SURFACE CAR PARK	ELECT
208	TB28	BLK 45 TELOK BLANGAH DRIVE	25306.0000	28279.5996	SURFACE CAR PARK	ELECT
210	TB3	BLK 12/22 TELOK BLANGAH CRESCENT	26458.5039	28811.9141	SURFACE CAR PARK	ELECT
211	TB7	BLK 29/32 TELOK BLANGAH RISE	26673.4648	28437.3189	SURFACE CAR PARK	ELECT
212	TB8	BLK 30/31 TELOK BLANGAH RISE	26601.7550	28348.0370	SURFACE CAR PARK	ELECT

173 rows × 12 columns

In [110...]

```
filtered_carpark = time_filter(filtered_carpark, arrival_time)
filtered_carpark
```

Out[110...]

	car_park_no	address	x_coord	y_coord	car_park_type	type_of_p...
1	AR1M	BLK 2A DOVER ROAD	22474.2050	31687.9608	MULTI-STORY CAR PARK	ELECT
3	AR2M	BLK 28 DOVER CRESCENT	22252.4860	31896.9749	MULTI-STORY CAR PARK	ELECT
4	AR5M	BLK 19A DOVER CRESCENT	22562.8641	32184.9758	MULTI-STORY CAR PARK	ELECT
6	AR7M	BLK 12A DOVER CLOSE EAST	22643.9533	31900.5591	MULTI-STORY CAR PARK	ELECT
7	AR9	BLK 20/22/23 DOVER CRESCENT	22448.9368	32178.4360	SURFACE CAR PARK	ELECT
...
206	TB23	DEPOT ROAD LORRY PARK	25985.6543	29309.8340	SURFACE CAR PARK	ELECT
208	TB28	BLK 45 TELOK BLANGAH DRIVE	25306.0000	28279.5996	SURFACE CAR PARK	ELECT
210	TB3	BLK 12/22 TELOK BLANGAH CRESCENT	26458.5039	28811.9141	SURFACE CAR PARK	ELECT
211	TB7	BLK 29/32 TELOK BLANGAH RISE	26673.4648	28437.3189	SURFACE CAR PARK	ELECT
212	TB8	BLK 30/31 TELOK BLANGAH RISE	26601.7550	28348.0370	SURFACE CAR PARK	ELECT

164 rows × 12 columns

Sort top 10 nearest carpark

In [111...]

original_top_10, top_10_nearest_carparks, target_carpark_numbers = sortTop10

Prepare data for availability prediction

```
In [112... ## Prepare the Dataframe to do model prediction
carpark_df_pred = constructModelInput(departure_time, duration_time, target_
carpark_df_pred
```

```
https://api.data.gov.sg/v1/transport/carpark-availability?date_time=2024-08-
19T11%3A14%3A29
2024-08-19T11:14:26+08:00
https://api.data.gov.sg/v1/transport/carpark-availability?date_time=2024-08-
18T12%3A14%3A29
2024-08-18T12:14:26+08:00
https://api.data.gov.sg/v1/transport/carpark-availability?date_time=2024-08-
12T12%3A14%3A29
2024-08-12T12:14:27+08:00
```

```
Out[112...   carpark_number      day      hour    lag_1    lag_24   lag_128  forecast
0            C33  0.633333  0.509722  0.000000  0.000000  0.093750
1            C3M  0.633333  0.509722  0.008310  0.008310  0.008310
2           AR2M  0.633333  0.509722  0.664399  0.664399  0.664399
3           C4M  0.633333  0.509722  0.471939  0.492347  0.484694
4            C36  0.633333  0.509722  0.389368  0.359195  0.364943
5            AR9  0.633333  0.509722  0.674576  0.552542  0.681356
6            C2M  0.633333  0.509722  0.657143  0.212422  0.602484
7            C37  0.633333  0.509722  0.430233  0.093023  0.232558
8           AR7M  0.633333  0.509722  0.255319  0.000000  0.028369
9            C5  0.633333  0.509722  0.752941  0.661438  0.749020
```

```
In [115... predictions = modelPredict(carpark_df_pred, model_type="RF_models")
```

User Output: Recommended Carpark

```
In [116... output = outputForUser(top_10_nearest_carparks, predictions)
output
```

Out[116...]

	car_park_no	address	predicted availability	distance	car_park_type	typ
57	C33	BLK 601-613 CLEMENTI WEST STREET 1	0.305373	873.444293	SURFACE CAR PARK	
53	C3M	BLK 416A CLEMENTI AVENUE 1	0.303147	921.610075	MULTI-STOREY CAR PARK	
1	AR2M	BLK 28 DOVER CRESCENT	0.323428	924.220325	MULTI-STOREY CAR PARK	
62	C4M	BLK 413A COMMONWEALTH AVENUE WEST	0.317642	1064.537775	MULTI-STOREY CAR PARK	
59	C36	BLK 728/729 CLEMENTI WEST STREET 2	0.314537	1157.756593	SURFACE CAR PARK	
4	AR9	BLK 20/22/23 DOVER CRESCENT	0.324965	1273.255307	SURFACE CAR PARK	
41	C2M	BLK 463 CLEMENTI AVENUE 1	0.325557	1295.315975	MULTI-STOREY CAR PARK	
60	C37	BLK 720-727,730-731 CLEMENTI WEST STREET 2	0.313836	1307.525793	SURFACE CAR PARK	
3	AR7M	BLK 12A DOVER CLOSE EAST	0.306954	1312.103425	MULTI-STOREY CAR PARK	
64	C5	BLK 358-360,362-363,366-367 CLEMENTI AVENUE 2	0.326844	1347.289675	SURFACE CAR PARK	

3. Combine all the algorithm

In [118...]

```
def RecommendationSystemRun():
    departure_time, duration_time, destination_x, destination_y, weather = getInputs()
    arrival_time, day_feature, hour_feature = combineTime(departure_time, duration_time)
    filtered_carpark = pd.read_csv("data/filtered_carparks.csv") # 214 rows
    carpark_with_models = pd.read_csv("data/unique_carpark_list.csv")
    carpark_list = carpark_with_models["CarPark_No"].tolist()
    filtered_carpark = filtered_carpark[filtered_carpark["car_park_no"].isin(carpark_list)]
    filtered_carpark = time_filter(filtered_carpark, arrival_time)
    original_top_10, top_10_nearest_carparks, target_carpark_numbers = sortCarparks(filtered_carpark)
    carpark_df_pred = constructModelInput(departure_time, duration_time, target_carpark_numbers)
    predictions = modelPredict(carpark_df_pred)
    output = outputForUser(top_10_nearest_carparks, predictions)
    interactiveMap(original_top_10, destination_x, destination_y)
```

```
return output  
  
user_output = RecommendationSystemRun()
```

Start: 374 CLEMENTI AVENUE 4 SINGAPORE 120374
End: 36 COLLEGE AVENUE EAST UNIVERSITY TOWN (UTOWN RESIDENCE NORTH TOWER) SI
NGAPORE 138600
Departure Time: 2024-08-19 12:10:00
Total Time: 410s, Total Distance: 2693m
https://api.data.gov.sg/v1/transport/carpark-availability?date_time=2024-08-19T11%3A16%3A29
2024-08-19T11:16:27+08:00
https://api.data.gov.sg/v1/transport/carpark-availability?date_time=2024-08-18T12%3A16%3A29
2024-08-18T12:16:27+08:00
https://api.data.gov.sg/v1/transport/carpark-availability?date_time=2024-08-12T12%3A16%3A29
2024-08-12T12:16:26+08:00
Map saved as 'carpark_map_with_destination.html'

In []: user_output

Out[]:	car_park_no	address	predicted availability	distance	car_park_type	typ
	57	BLK 601-613 CLEMENTI WEST STREET 1 C33	0.305400	873.444293	SURFACE CAR PARK	
	53	BLK 416A CLEMENTI AVENUE 1 C3M	0.303174	921.610075	MULTI-STOREY CAR PARK	
	1	BLK 28 DOVER CRESCENT AR2M	0.323456	924.220325	MULTI-STOREY CAR PARK	
	62	BLK 413A COMMONWEALTH AVENUE WEST C4M	0.317670	1064.537775	MULTI-STOREY CAR PARK	
	59	BLK 728/729 CLEMENTI WEST STREET 2 C36	0.314870	1157.756593	SURFACE CAR PARK	
	4	BLK 20/22/23 DOVER CRESCENT AR9	0.324949	1273.255307	SURFACE CAR PARK	
	41	BLK 463 CLEMENTI AVENUE 1 C2M	0.326303	1295.315975	MULTI-STOREY CAR PARK	
	60	BLK 720-727,730-731 CLEMENTI WEST STREET 2 C37	0.314037	1307.525793	SURFACE CAR PARK	
	3	BLK 12A DOVER CLOSE EAST AR7M	0.308414	1312.103425	MULTI-STOREY CAR PARK	
	64	BLK 358-360,362-363,366-367 CLEMENTI AVENUE 2 C5	0.326932	1347.289675	SURFACE CAR PARK	

Alt Text

3.2

Based on the insights derived from the analysis, suggest a practical action that can be taken in approximately 200 words (i.e., an action that can be taken to benefit society. Do not suggest actions such as hyperparameter tuning here). You do not need to carry out the action. A simple example is, if the team had made models to predict carpark availability of individual carparks in Q3.1, then these models can be used to develop an application to the public that forecasts carpark availability to reduce congestion in carparks during peak hours.

ANS: Parking in Singapore's west region presents significant challenges for drivers due to unpredictable availability, unclear costs, and limited navigation support. These problems are especially severe during peak hours, leading to wasted time, higher fuel consumption, increased stress, and traffic congestion. The lack of real-time parking guidance further exacerbates inefficiencies and environmental impacts in this densely populated area.

By training the carpark availability in individual carpark in a certain area, and the machine learning analysis, our model, based on the Random Forest algorithm, demonstrated high predictive accuracy for certain car parks, showing that availability often follows predictable trends influenced by time of day, day of the week, and weather conditions. For example, some car parks exhibit consistent patterns of higher availability during off-peak hours or predictable fluctuations aligned with nearby events or residential usage. These insights highlight the feasibility of reliably forecasting car park availability in real-time.

Building on this analysis, we propose an AI-driven parking recommendation application to address these challenges. Using machine learning (Random Forest) and real-time data, the app identifies the 10 nearest car parks based on a user's current location, destination, and arrival time. Users input their current and destination postal codes, which are converted into geographic coordinates for precise calculations. The system factors in real-time API data, such as traffic and weather, to deliver ranked recommendations with details on availability, parking costs, ETA, and car park types.

The solution enhances efficiency by reducing search times, improves convenience with informed choices, and benefits the environment by minimizing unnecessary driving, cutting fuel consumption and emissions. It dynamically adapts to real-time changes, offering up-to-date guidance. By streamlining the parking process and offering a personalized user experience, this application optimizes urban mobility in Singapore's west region.

