Milwaukee Bucks Proposal

Salvin Chowdhury & Mathias Galvan

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1 Proposal Requirements

The requirements for the project proposal is that it must be 1 page long, and must be approved by the instructor. The limit is up to groups of three. The proposal must have the following detailed:

- Identificaiton of the dataset, including the details as well as what kinds of features are there
- Objectives for analyzing the dataset, such as identiying the research question
- Displaying the first ten records of the dataset demonstrating that the dataset can be loaded

2 Milwaukee Bucks Dataset

The dataset to be utilized is the one provided by the Milwaukee Bucks. There are three different datasets, which are named `AccountLevel.xlsx`, `GameLevel.xlsx` and `SeatLevel.xlsx`. Each dataset will be discussed in more detail below:

- `AccountLevel`: this dataset provides details about the accounts of the fans, and this contains information such as the account number, number of single game, partial plan or group tickets, as well as basketball propensity, number of games the fan has attended and other key information.
- `GameLevel`: this dataset provides details about the games that the Milwaukee Bucks have played in, and this contains information such as the the teams that were played against, and if any of those games had a giveaway event.
- `SeatLevel`: this dataset contains information about the level of the game that was attended by the fans, the season in which the game was played as well as the tier of the game.

3 Objectives for Analysis

Using this dataset, the Milwaukee Bucks are considering the introduction of four themed partial ticket plans for the upcoming season:

- **Value Plan**: focuses on affordable tickets for weekday games
- **Marquee Plan Opponent Plan**: featuring games against high-profile opponents
- **Weekend Plan**: highlighting weekend games for fans looking for weekend entertainment
- **Promotional Giveaway Inclusive Plan**: centered around games with promotional giveaways

These plans are aimed to cater to the diverse fan interests and purchase behaviors. The challenge is to leverage the historical ticketing data to predict the likelihood that a account will purchase one of the new partial plans and which plans the fans are most likely to purchase.

Research Question: How can historical ticketing data be used to predict the likelihood of an account purchasing a specific themed partial ticket plan, and which factors most influence fans' preferences for each plan?

4 Team Members

The team members working with the Bucks datasets will be Mathias Galvin & Salvin Chowdhury. Tasks include making the data card, performing data pre-processing, analysis, visualization, modeling & prediction.

5 The First Five Records

To prove that the dataset can be loaded and be used to extract useful information to answer the research question, we display the first five observations from each of the three datasets. The images of the datasets are being loaded up into a pandas dataframe, as well as using `.head(5)` to display the first five observations.
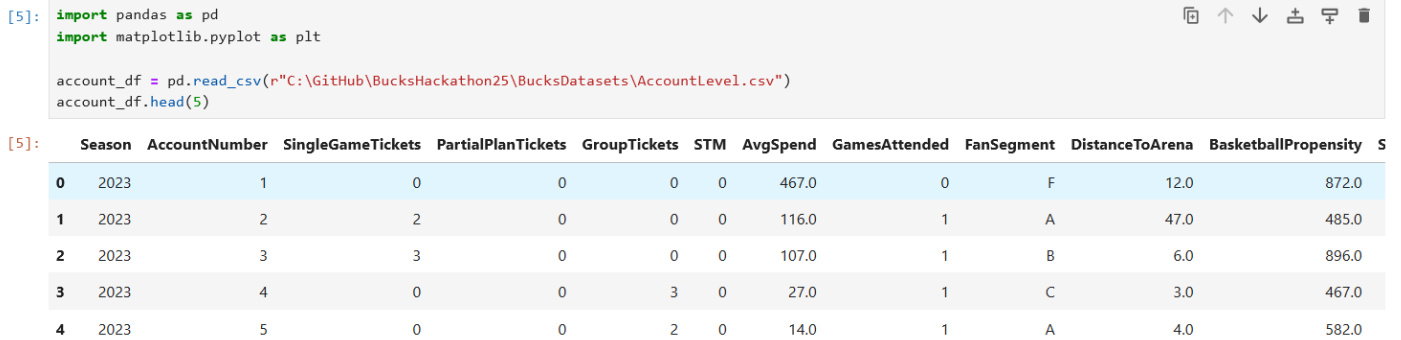
```python
import pandas as pd
import matplotlib.pyplot as plt

account_df = pd.read_csv(r"C:\GitHub\BucksHackathon25\BucksDatasets\AccountLevel.csv")
account_df.head(5)
```

	Season	AccountNumber	SingleGameTickets	PartialPlanTickets	GroupTickets	STM	AvgSpend	GamesAttended	FanSegment	DistanceToArena	BasketballPropensity	S
0	2023	1	0	0	0	0	467.0	0	F	12.0	872.0	
1	2023	2	2	0	0	0	116.0	1	A	47.0	485.0	
2	2023	3	3	0	0	0	107.0	1	B	6.0	896.0	
3	2023	4	0	0	3	0	27.0	1	C	3.0	467.0	
4	2023	5	0	0	2	0	14.0	1	A	4.0	582.0	

Figure 1: Loading Up `AccountLevel`

```python
game_df = pd.read_csv(r"C:\GitHub\BucksHackathon25\BucksDatasets\GameLevel.csv")
game_df.head(5)
```

	Game	Giveaway
0	2023-10-26 Philadelphia 76ers	NaN
1	2023-10-29 Atlanta Hawks	Cap
2	2023-10-30 Miami Heat	NaN
3	2023-11-03 New York Knicks	NaN
4	2023-11-08 Detroit Pistons	Lunch Bag

Figure 2: Loading Up `GameLevel`

```python
seat_df = pd.read_csv(r"C:\GitHub\BucksHackathon25\BucksDatasets\SeatLevel.csv")
seat_df
```

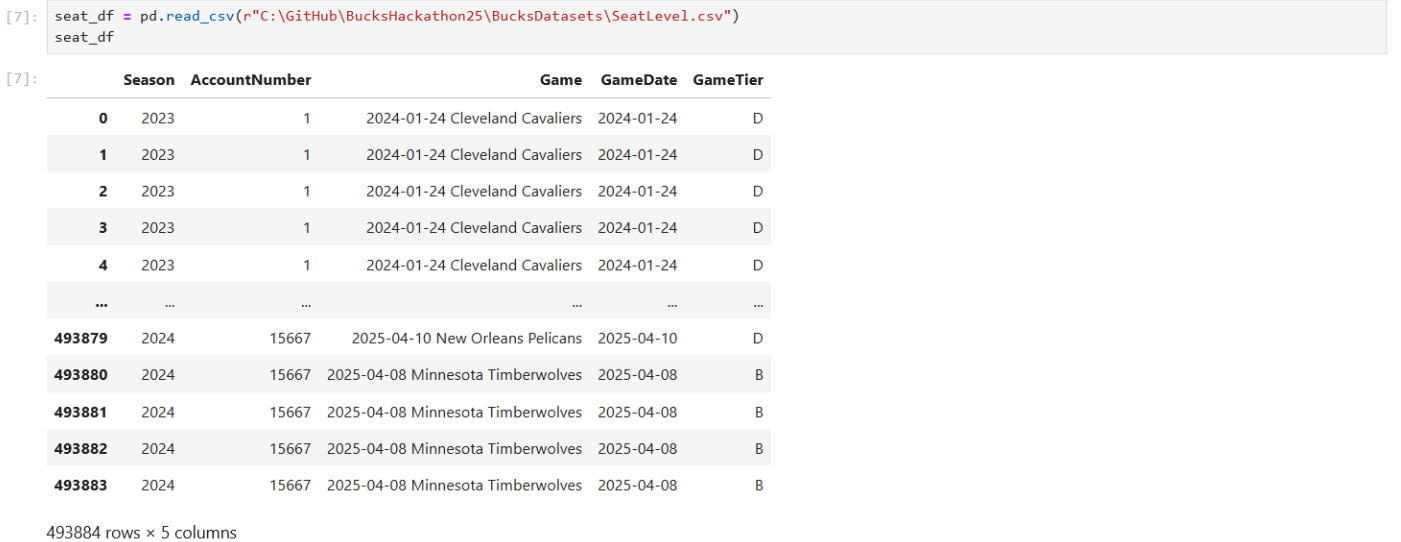|	Season	AccountNumber	Game	GameDate	GameTier
0	2023	1	2024-01-24 Cleveland Cavaliers	2024-01-24	D
1	2023	1	2024-01-24 Cleveland Cavaliers	2024-01-24	D
2	2023	1	2024-01-24 Cleveland Cavaliers	2024-01-24	D
3	2023	1	2024-01-24 Cleveland Cavaliers	2024-01-24	D
4	2023	1	2024-01-24 Cleveland Cavaliers	2024-01-24	D
...	...	...	...	...	...
493879	2024	15667	2025-04-10 New Orleans Pelicans	2025-04-10	D
493880	2024	15667	2025-04-08 Minnesota Timberwolves	2025-04-08	B
493881	2024	15667	2025-04-08 Minnesota Timberwolves	2025-04-08	B
493882	2024	15667	2025-04-08 Minnesota Timberwolves	2025-04-08	B
493883	2024	15667	2025-04-08 Minnesota Timberwolves	2025-04-08	B

493884 rows × 5 columns

Figure 3: Loading Up `SeatLevel`