**For Deliverables, please provide the following:**

**Deliverable 1: Word Document** answering the following questions with SQL query and result (when submitting SQL queries, either paste the queries directly in your word document or upload your original script file):

1. **[SQL]** What is the average spending for a group of 2 people?

# Register the DataFrame 'df'

sqldf("SELECT \* FROM df", globals())

# Define the SQL query to calculate the average spending for a group of 2 people

query = """

    SELECT AVG(spending) AS avg\_spending

    FROM df

    WHERE group\_size = 2

"""

# Use pandasql to execute the query

result = sqldf(query, globals())

print(result)

Answer: avg\_spending - 32.5

1. **[SQL]** What was the highest amount of Food purchased in a day and what was the date (please report on ArrivalDatetime in PDT)?

# Setup pandasql

pysqldf = lambda q: sqldf(q, globals())

# Convert ArrivalDatetime to PDT

df['ArrivalDatetime'] = pd.to\_datetime(df['ArrivalDatetime'])

df['ArrivalDatetime'] = df['ArrivalDatetime'].dt.tz\_localize('UTC').dt.tz\_convert('US/Pacific')

# Execute the SQL Query for the highest amount of Food purchased in a day

query\_b = """

SELECT DATE(ArrivalDatetime) as Date, MAX(ProductQuantity \* ProductFullPrice) as MaxFoodPurchase

FROM df

WHERE Category = 'Food'

GROUP BY Date

ORDER BY MaxFoodPurchase DESC

LIMIT 1;

"""

highest\_food\_purchase = pysqldf(query\_b)

print(highest\_food\_purchase)

ANSWER: Date MaxFoodPurchase

2023-05-26 212.5

1. **[SQL]** What were the top 5 spending orders? The result should have 4 columns: OrderID, NumOfProducts, TotalRevenue, Rank. Sort by total revenue descending.

# Setup pandasql

pysqldf = lambda q: sqldf(q, globals())

query\_c ="""

SELECT OrderID,

       COUNT(\*) AS NumOfProducts,

       SUM(ProductFullPrice) AS TotalRevenue,

       RANK() OVER (ORDER BY SUM(ProductFullPrice) DESC) AS Rank

FROM df

GROUP BY OrderID

ORDER BY TotalRevenue DESC

LIMIT 5;

"""

result = pysqldf(query\_c)

print(result)

OrderID NumOfProducts TotalRevenue Rank

0 15625 7 187.20 1

1 16197 6 185.36 2

2 18816 9 170.53 3

3 11775 12 157.31 4

4 16094 6 149.06 5

1. **[Data Visualization]** Based on the Food & Beverage dataset we provided, draft up a dashboard/report using a visualization tool that you are comfortable with (PowerBI, Tableau, etc.). Attach a screenshot and provide 3 insights you can get out of your report.

A screenshot of a computer

Description automatically generated

**Deliverable 2: Word Document** answering the following qualitative questions (1-2 paragraphs each):

1. What data would you look for if tasked to increase ticket sales and how would you leverage that data?

**Key Data Points to Look For:**

1. **Historical Ticket Sales Data**:
   * Trends in ticket sales over different seasons, games, and times.
   * Data segmented by game types (e.g., regular season, playoffs).
2. **Customer Demographics**:
   * Age, gender, income levels, and geographic location of ticket buyers.
3. **Customer Purchase Behavior**:
   * Frequency of purchases, types of tickets bought (single game vs. season tickets), and purchase channels (online, box office, mobile).
4. **Marketing and Promotional Data**:
   * Effectiveness of past marketing campaigns, channels used (email, social media, traditional media), and corresponding sales spikes.
5. **Game and Team Performance**:
   * Correlation between team performance, star player involvement, and ticket sales.
6. **Customer Feedback and Satisfaction**:
   * Surveys, reviews, and social media sentiment regarding the game day experience.
7. **Competitor Analysis**:
   * Pricing, promotions, and sales strategies of competing teams and entertainment options.
8. **Social Media and Engagement Data**:
   * Levels of engagement, fan interactions, and popular content across social media platforms.

**Leveraging the Data:**

1. **Targeted Marketing Campaigns**:
   * Use demographic and purchase behavior data to create targeted marketing campaigns that appeal to different segments.
   * Personalize communications and offers based on customer history and preferences.
2. **Dynamic Pricing Strategies**:
   * Implement dynamic pricing models to adjust ticket prices based on demand, opponent, day of the week, and other factors.
3. **Enhanced Fan Experience**:
   * Utilize customer feedback to improve game day experiences, from stadium facilities to in-game entertainment.
   * Offer exclusive perks and experiences for season ticket holders and loyal fans.
4. **Optimized Sales Channels**:
   * Analyze the effectiveness of different sales channels and optimize the user experience for purchasing tickets online and via mobile.
5. **Promotion of Key Games and Events**:
   * Highlight games featuring star players or significant matchups to drive sales.
   * Create special promotions and packages for high-demand games.
6. **Community Engagement**:
   * Use social media and engagement data to run campaigns that build community and fan loyalty.
   * Host events, meet-and-greets, and other activities that foster a strong connection with the fanbase.
7. How would you strategize and use data to grow the Clippers fanbase? What are the KPIs you would use?
8. **Enhanced Fan Engagement**:
   * Develop interactive content, behind-the-scenes access, and fan polls to increase engagement.
   * Use social media platforms to run campaigns that involve fans in team decisions (e.g., choosing uniform designs).
9. **Youth and Community Programs**:
   * Invest in grassroots initiatives, basketball clinics, and school partnerships to attract younger fans.
   * Support local community events and causes to build a positive brand image.
10. **Personalized Fan Experience**:
    * Leverage CRM systems to track fan preferences and deliver personalized content, offers, and experiences.
11. **Loyalty Programs**:
    * Introduce loyalty programs that reward fans for attendance, purchases, and engagement.
    * Offer exclusive content, merchandise, and experiences for loyal fans.
12. **Innovative Game Day Experiences**:
    * Enhance the in-arena experience with technology (e.g., augmented reality, in-seat ordering) and unique entertainment.
    * Create themed game nights and special events to attract diverse audiences.
13. **Strategic Partnerships and Sponsorships**:
    * Partner with brands that resonate with the target demographic to co-create engaging content and experiences.
    * Use sponsorships to reach new audiences through cross-promotions.
14. **Analytics-Driven Decisions**:
    * Use data analytics to understand fan behavior, preferences, and trends to inform marketing and engagement strategies.

**Key KPIs to Measure Success:**

1. **Fan Engagement Metrics**:
   * Social media interactions (likes, shares, comments).
   * Website traffic and engagement duration.
   * Participation in fan polls and contests.
2. **Attendance and Ticket Sales**:
   * Average attendance per game.
   * Season ticket renewal rates.
   * Ticket sales growth year-over-year.
3. **Customer Acquisition and Retention**:
   * Number of new fans acquired through marketing campaigns.
   * Retention rates of season ticket holders and loyalty program members.
4. **Revenue Growth**:
   * Total ticket sales revenue.
   * Revenue from merchandise and in-game purchases.
5. **Fan Satisfaction and Feedback**:
   * Net Promoter Score (NPS) from fan surveys.
   * Positive sentiment and feedback on social media and review platforms.
6. **Community Impact**:
   * Participation in community events and programs.
   * Media coverage and public perception of community initiatives.

By focusing on these data points and KPIs, the Clippers can develop a data-driven strategy to increase ticket sales and grow their fanbase effectively.