MGMT 59000 Visual Analytics, Fall 2024

Individual Assignment Set 1

Due Date: 11:59 pm on Aug. 30th, 2024

Notes: There are three sets of questions in this assignment. The deliverables will be an Excel file, titled "NBA," with all required visuals (for question sets 1 and 2) and a Tableau workbook, titled "Airbnb_listing," with all required visuals (for question set 3). For questions with no visuals related, please create a new worksheet and write your answers on it. For discussions about a chart, please include the discussions on the same worksheet as where the chart is located. **For all visualizations, please format the charts properly (including titles, axis names, etc.)**.

Question 1: Using data on the "NBA Salary" worksheet in the "NBA" Excel file:

1.1. Draw a bar (column) chart of salaries for the **top five players** in the data. For each player, you are expected to show their name, team, and salary.

1.2. Draw a bar (column) chart to show the **total salaries by team** and rank them in descending order (from highest to lowest). Use the color coding below: Green for the top five teams, orange for the bottom five, and grey for the rest.

1.3. Based on the information in Question 1.2, draw a treemap showing the **top five teams**.

1.4. Draw a box and whisker plot to show the **distributions of salaries by team**. (Hint: draw one chart that includes all teams and show the salary distribution for each team.)

1.5. Please highlight and discuss two insights from the data and support your reasoning with visuals generated above. (Note: Create a new worksheet in the Excel file and list your insights on the sheet)

Question 2. Using data on the "NBA Performance Stats" worksheet in the "NBA" file:

2.1. Draw a scatter plot to show the relationship between "Age" and "PTS" (points scored in the season). Please interpret the chart you generated. (Hint: As an example, you can discuss about whether the relationship is positive or negative using a trendline and its associated equation.)

2.2. Draw a dual-axis combo chart to show the relationship between average age and total PTS by team. Sort the teams **by average age** in descending order (from largest to smallest). Please use total PTS on the primary axis (represented by a bar chart) and average age on the secondary axis (represented by a line chart).

2.3. Draw a pie chart to show the percentages of points scored by each player position (Note: only five positions in the data, C, PF, PG, SF, and SG).

2.4. Draw a heatmap for the five teams shown below based on the total PTS for each combination of team and player position (Note: hide the numbers of PTS).

		Total Points Scored				
		Position				
		C	PF	PG	SF	SG
Teams	ATL					
	BOS					
	BRK					
	CHI					
	CHO					

2.5. Suppose you are the general manager (GM) of a team and would like to create a Gantt chart to track player recruitment activities with the data given below. Fill in the "Days Completed" and "Remaining Days" in the table and create a Gantt chart based on that.

Initiative	Start	End	Length	Completed %	Days Completed	Remaining Days
Hunt Potential Players	10-Feb-20	25-Feb-20	15	60%		
Contact Players	15-Feb-20	15-Mar-20	30	40%		
In-Talks	20-Feb-20	30-Mar-20	40	25%		
Salary Negotiations	25-Feb-20	25-Apr-20	60	10%		
Sign final contract	1-Mar-20	26-Apr-20	55	30%		

Question 3. Use data in the "Airbnb_listing.csv" file to complete the following case study:

Airbnb launched in 2009 by two friends who rented out their San Francisco apartment for a local convention, and it is now one of the largest hotel/rental businesses in the world. In Q3 of 2022, Airbnb has had nearly 100 million nights and experiences booked (Airbnb, 2023). Airbnb uses a commission-based platform that allows hosts to rent out a room or the entire dwelling of their home. The type of rental can vary from a single room in Austin, Texas to an entire penthouse in Manhattan, New York.

Airbnb has significantly disrupted the traditional hotel industry. This new sharing model goes against the traditional hotel model that is characterized by having an entry barrier, investments, and operating at a fixed cost. Because of the lower entry barrier, Airbnb and other shared rental services continue to grow. According to a study of 1,000 people by Clever in 2019, 82% said they would consider renting a portion of their place for extra income.

According to a survey conducted by Earnest, on average, Airbnb hosts make over $500 per month ($6,000 annually). As part of the rental process, Airbnb charges a flat 3% service fee to each host. This fee covers Airbnb services such as customer service, marketing, and insurance.

As part of this case study, you will take the role of a data analyst. Your job is to look at a data set of Airbnb rentals from New York City. Using this data, identify the profitability of hosts in the city. Along with identifying profits, use the data to identify which areas of the city have grown in popularity and which areas have not. The data used in this study is sourced from the public information on the Airbnb site. Information from this site is collected and aggregated by Inside Airbnb to help facilitate public discussion.

Create your own visualization based on your own exploration of the data:

3.1. Which borough has the most rentals?

3.2. Which borough offers the most affordable rentals?

3.3. What is the price breakdown for a particular borough?

3.4. What factors (besides location) can influence rental price? (Hint: Pick and analyze at least two extra factors)

3.5. Which host is the most profitable?

3.6. How much has Airbnb earned from NYC rentals?