**DATA VISUALIZATION: LAB 2**

**Name: Anushareddy Ramachandra Reddy**

**Module 4:**

Q1:What differences do discount percentages show when diverse factors like floors, buildings, rent or types of rooms are taken into account?

Q2:In what ways do discount percentages change when other variables are taken into account, such as different types of rooms in different buildings or on different floors?

Q3:Exist any contradictory or synergistic relationships between the variables that influence the given discount percentage?

A screenshot of a computer

Description automatically generated

1: **Discount Percentage by Building:** I examined each building's discount percentage in this visualization. We saw that Beach Breeze has a larger discount than Asbury Atoll.  
  
2: **Discount Percentage by Floor:** I looked at the discount percentage for each floor in this graphic. For instance, Beach Breeze's first level offers the most discount of 10%, while its second story offers the lowest discount of 4%. For this image, a stacked bar chart was utilized.  
  
3: **Visualization by Rental:** To determine the maximum discount available, I used the following variables: building, floor, room, complete name, start date, and finish date. Dwight Pentecost once benefited from the biggest discount of 20% for a seven-day stay.

4: **Discount Percentage by Room:** The discount percentage for each room is displayed in this graphic. For example, the Beach Breeze building's room number 115 had the biggest discount of 15.19%. A densely packed bubble chart was utilized to visually portray the data.

**Discount % Dashboard:** This dashboard shows the total % discount across several parameters, such as building, room, floor, and length of renting. It makes the analyzing process easier to find the best rental strategy. For example, it helps determine whether renting the entire building offers better savings than renting individual rooms, or whether larger savings are obtained with longer rental terms. According to this dashboard, renting a room numbered 155 on the first floor of Beach Breeze offers the highest discount compared to all other options."

**Module 5:**

**a:** **Are there any relationships, accounting for the year-by-year information, between the size of the reference bands (minimum and maximum) and the total number of orders placed by clients within each state?**

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Orders by states with minimum and maximum reference band: Graphic investigates the relationship, taking into consideration year-by-year data, between the size of reference bands (minimum and maximum) and the total number of orders placed by clients within each state. With a total of 10 orders, the graphic makes it clear that Oklahoma state had the most orders from clients called George in 2018. On the other hand, Wilma from Texas state placed the fewest orders in 2018 just four. Based on this, it may be deduced that the order quantity reference band falls between 4 and 10.

**Reference:**

<https://www.tableau.com/learn/articles/how-to/gantt-chart>

<https://community.tableau.com/s/topic/0TO4T000000QFAzWAO/reference-lines-bands>

**b1:** **Using a combination of member location and loan balance, credit score, and number of loans outstanding, is it possible to identify discrete member clusters using cluster analysis?**

A map of the united states

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The purpose of the visualization I have created is to investigate if member location, loan balance, credit score, and the total number of outstanding loans can be used to identify distinct member clusters. Each data point is a single member, and each member's position is based on their location as well as their loan balance, credit score, and total number of outstanding loans.

Based on the location and loan characteristics of similar individuals, I have used clustering methods like K-means. The visualization makes it possible to investigate the ways in which geographic location and loan characteristics combine to form unique member groupings. Decision-making procedures, such as focused marketing campaigns or risk assessment techniques customized for various member groups, might benefit from the visualization's insights. All things considered, my visualization helps distinguish distinct member clusters using cluster analysis by offering a visual depiction of the connection between member location and loan attributes.

Hierarchical Clustering: Hierarchical clustering creates a tree of clusters, where each node represents a cluster, and the leaves are individual data points. It's useful for exploring hierarchical relationships in the data.

**b2:** **Are there any obvious trends or outliers within each cluster, and how does the distribution of loans per member vary throughout different loan types?**

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Prepared visualization seeks to understand how the distribution of loans per member differs across different loan kinds, as well as to identify trends and outliers within each cluster.

Viewers can discern any clear patterns within each cluster by closely inspecting the visualization. There is a relationship between the two variables such as loan balance and credit scores, for instance, clusters with greater loan balances are linked to clusters with higher credit scores.

Three clusters have been formed in the above visualization according to the quantity of loans everyone has received. After examination, it was determined that Cluster 1 consists of borrowers whose total loan amounts range from 207 to 614. Cluster 2 comprises individuals whose total loan amount per person falls between 778 and 1064, and Cluster 3 comprises individuals whose total loan amount per person falls between 1706 and 2013.

Information about member behavior and preferences can be gleaned from the distribution of loans per member among various loan kinds. For instance, some clusters might exhibit a greater concentration of mortgage loans, whilst other clusters would exhibit a larger concentration of personal or vehicle loans.