

Data Analysis Project

*What is the problem ?

Databel, a telecommunications company, is experiencing a decline in user numbers and struggling with customer retention. They seek insights into potential anomalies in their marketing activities and areas they may have overlooked. The Marketing Manager (Ryan) and Sophia (Customer Retention Specialist) have returned from a meeting and have been given a Customer dataset.

*What are the goals ?

Ryan, the Marketing Manager, and Sophia, the Customer Retention Specialist, have tasked you with creating a report based on the Customer dataset. The objectives are to analyze the churn rate, identify anomalies in churn rate trends, and provide actionable recommendations. The report should include visualizations accompanied by detailed explanations for Ryan and Sophia's understanding.

*Metadata

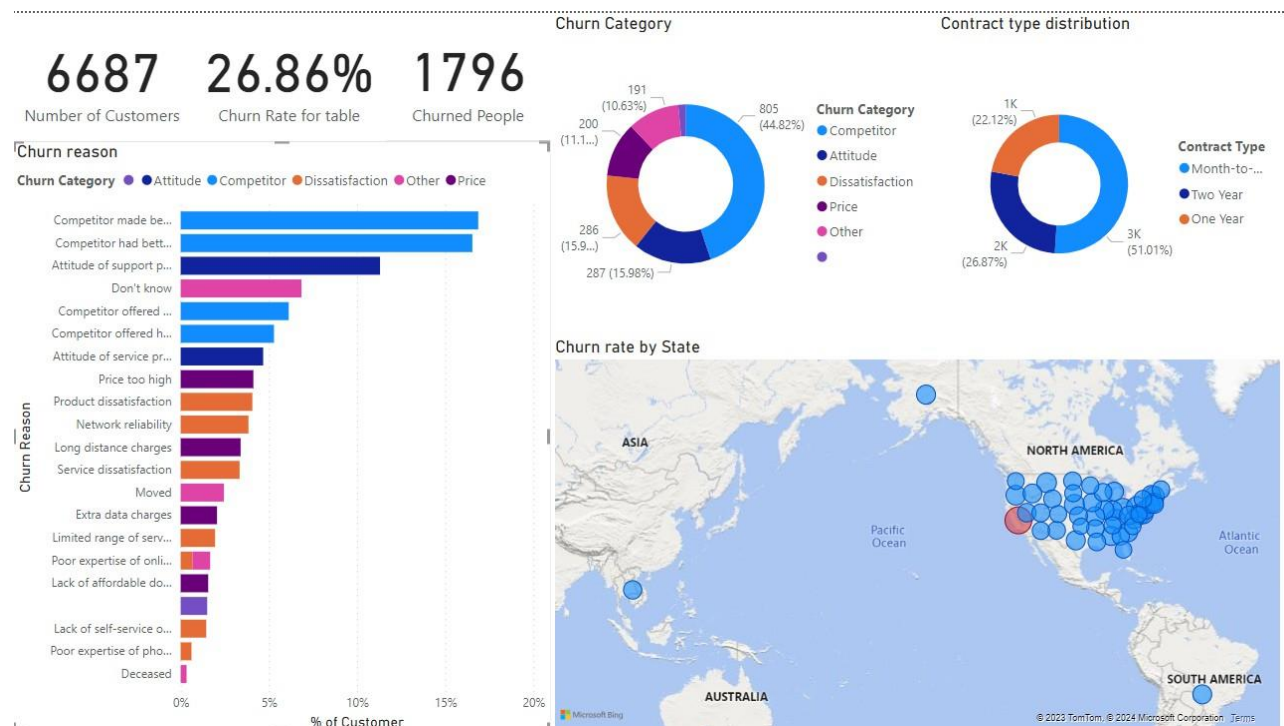
This dataset has 29 columns.

Column names: ['Customer ID', 'Churn Label', 'Account Length (in months)', 'Local Calls', 'Local Mins', 'Intl Calls', 'Intl Mins', 'Intl Active', 'Intl Plan', 'Extra International Charges', 'Customer Service Calls', 'Avg Monthly GB Download', 'Unlimited Data Plan', 'Extra Data Charges', 'State', 'Phone Number', 'Gender', 'Age', 'Under 30', 'Senior', 'Group', 'Number of Customers in Group', 'Device Protection & Online Backup', 'Contract Type', 'Payment Method', 'Monthly Charge', 'Total Charges', 'Churn Category', 'Churn Reason']

I. Data Report

*Note : This report does not contain Data Cleaning and Data Processing steps as they have been previously completed by the Data Engineer, I only create measure and new column in Power BI and will use Power Bi to visualize the data mining process.

1. Overview

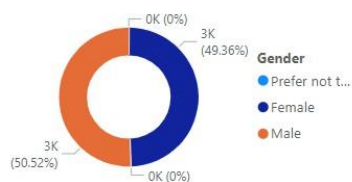


- The total number of customers is 6687, with a **Churn rate** of **26.68%**, equivalent to 1796 customers.
- The primary customer base is located in the United States, with the state of **California (CA)** exhibiting the **highest Churn rate at 63.24%**.
- **Month-to-Month contract type is preferred by 51% of customers**, while One Year and Two Year contracts are chosen by 26.87% and 22.12% of customers, respectively. This suggests that **a significant portion of churned customers may terminate their contracts shortly after signing up, possibly after a trial period of 1-2 months**.
- Analysis of Churn Categories reveals that approximately **45% of churned customers opt for a competitor**, making it the primary reason for churn. Other reasons include Attitude (15.98%), Dissatisfaction (15.92%), Price (11.14%), and Other (1.5%).
- Further examination of the **Competitor Category** in the Churn Reason graph indicates that churned customers prefer competitors due to reasons such as better offers, superior devices, more data (for non-unlimited data plan customers), and higher download speeds.

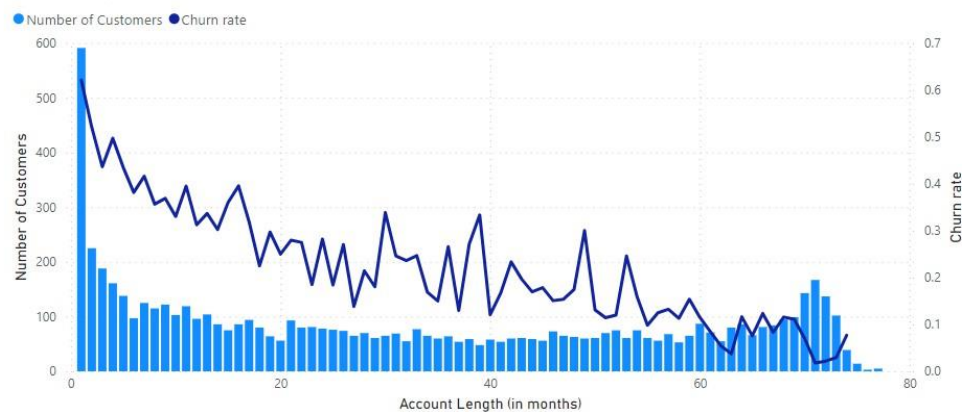
- Attitude-related churn reasons are predominantly associated with interactions with **support personnel and service providers**.
- Dissatisfaction-related churn reasons typically pertain to **product and network performance**.
- **Other churn reasons are categorized as un-actionable** and include factors such as customers' decease, relocation, and lack of awareness regarding the reason for churn.

2. Churn rate overall

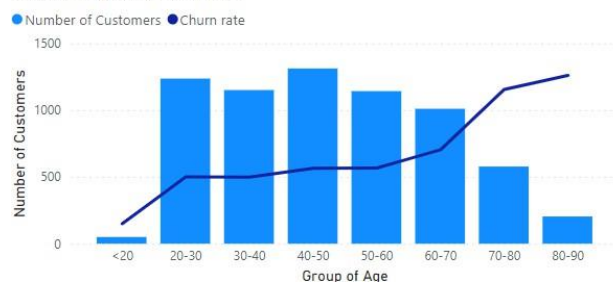
Churn Rate between Male and Female



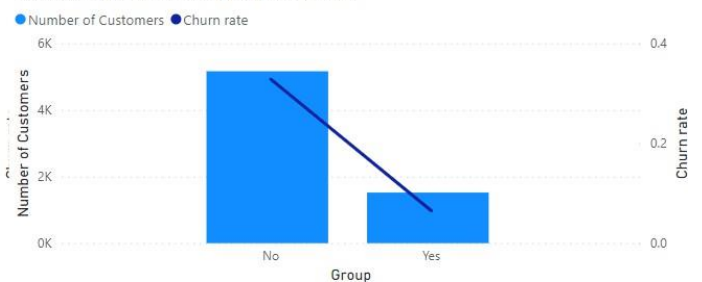
Account length and Churn Rate



Customer age and Churn Rate



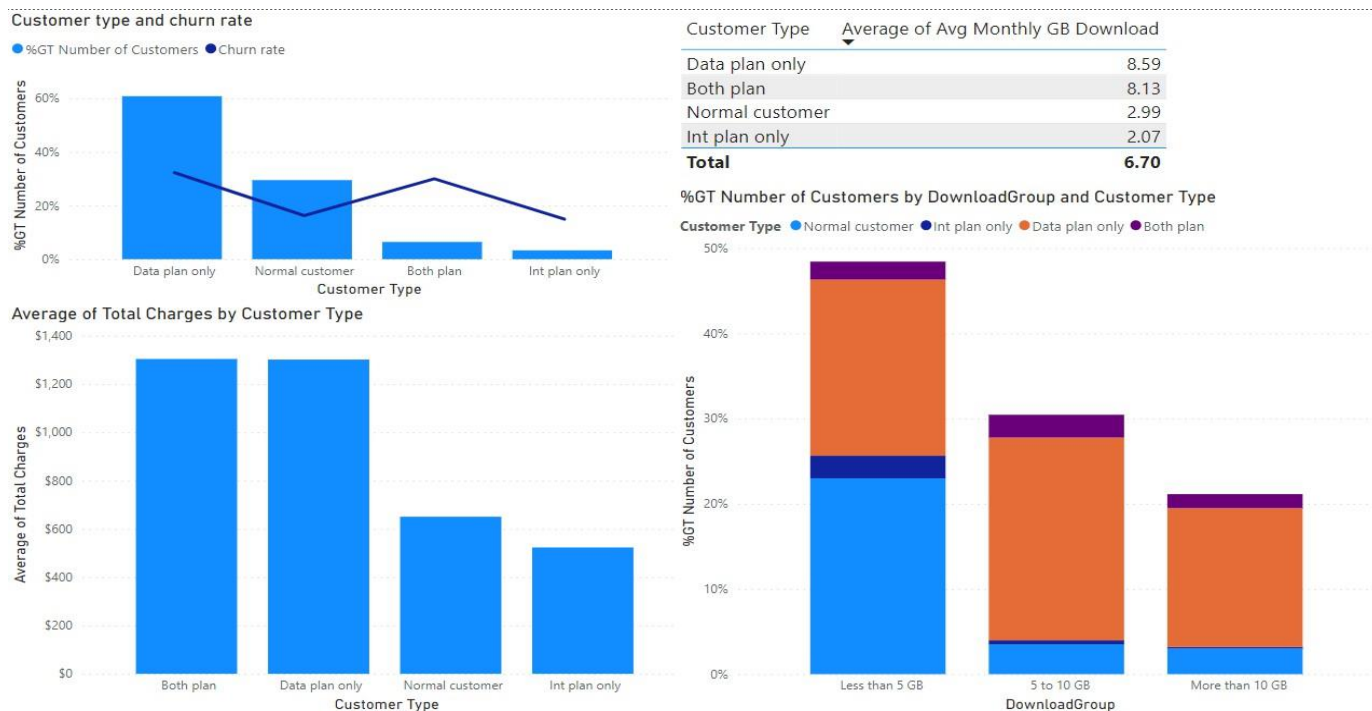
Churn Rate between Group/Single Customer



- The churn rates between Male and Female customers are nearly equal, with males at 49.36% and females at 50.52%. This suggests that gender isn't a significant factor in influencing churn rate.
- Account Length significantly impacts churn rate, as demonstrated by the bar chart. Longer account lengths correspond to lower churn rates. Notably, One-Month users, likely on Month-to-Month contracts, constitute approximately 9% of our user base and exhibit a high churn rate of 62%, significantly higher than the overall churn rate of 26.86%.

- Customer age is also a notable factor affecting churn rate. The trend indicates that older customers have higher churn rates. Specifically, the churn rate for the 60-70 years old group rises significantly from 29% to 41%. Further investigation is warranted to determine specific reasons behind this trend.
- The bar chart comparing churn rates between Group and Single plan customers reveals that customers opting for the Group plan (2 - 6 users) exhibit a significantly lower churn rate (7%) compared to those on Single plans (33%). Given the disproportionately low number of Group plan users (22.75%) compared to Single plan users (77.25%), acquiring more customers on Group plans could substantially reduce the average churn rate.

3. Customer type

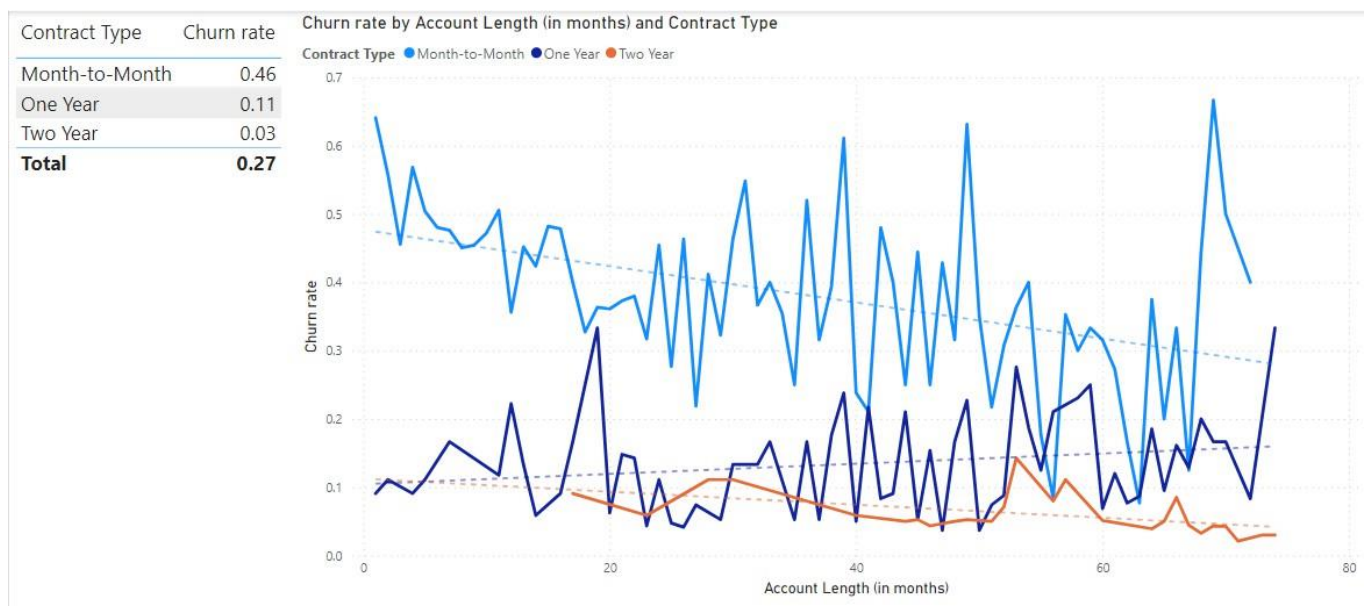


- The customer type and churn rate chart reveals that the majority of our customers prefer the unlimited data plan only (60%), while the International call plan has the lowest adoption rate at 3.3%. Non-plan customers account for 30% of our customer base, and those utilizing both plans constitute only 6.43%. Notably, customers with data- plan only exhibit the highest churn rate at 32%.
- Customers with data plan only and those utilizing both plans download an average of 8-8.6 GB monthly, while non-plan customers download an average of 3 GB.

Interestingly, despite paying for both plans simultaneously, customers utilizing both plans still incur total charges equivalent to those with data plan only.

- Analysis of monthly data usage indicates that 50% of our customers download less than 5GB monthly, with a significant portion comprising non-plan customers (23%) and data-plan only customers (20.68%).
- Among non-plan customers, those downloading less than 5GB monthly exhibit a lower churn rate at 12%, compared to those downloading 5-10 GB (32%) and 10GB+ (27%). To reduce churn rate among non-plan customers in the 5-10 GB and 10GB+ categories, increasing the data limit for non-plan users should be considered.
=> **Investigating whether competitors offer higher data limits for non-plan users and assessing the potential impact on charges/profit is crucial in this regard.**

4. Contract type



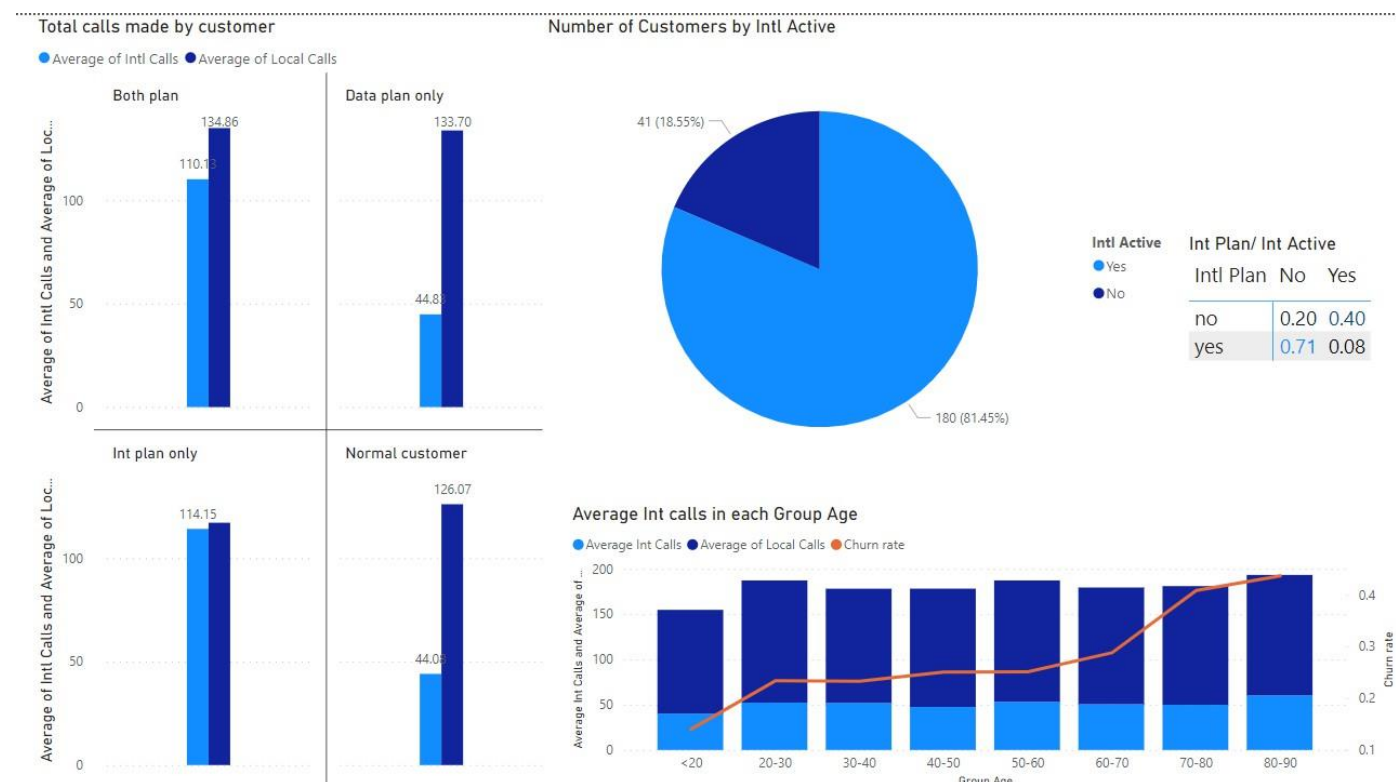
- Churn rates vary significantly across different contract types. Month-to-Month contracts have the highest churn rate at 46%, while One-year and Two-year contracts exhibit much lower rates of 11% and 3% respectively.
-> **Generally, customers opting for long-term contracts are more likely to stay with us.**
- Within the churn category, "Long distance charges" account for 3.41%. This suggests that our current contract options may be limiting choices for some users. There might be customers willing to pay more than Month-to-Month but less than One-Year/Two-Year contracts.

-> Introducing shorter-term contracts like Three-month or Six-Month plans could attract more customers and potentially reduce churn rate.

- Although the overall churn rates for each contract type remain consistent, the churn rate trend by Account Length indicates that customers using Month-to-Month and Two-year contracts are less likely to churn over time. In contrast, the churn rate for One-year contracts tends to increase over time.

-> This highlights the potential ineffectiveness of One-year contracts in retaining customers.

5. Calls



- Calls Overview:
- The total average volume of local calls significantly surpasses that of international calls.

Intl-Plan Utilization:

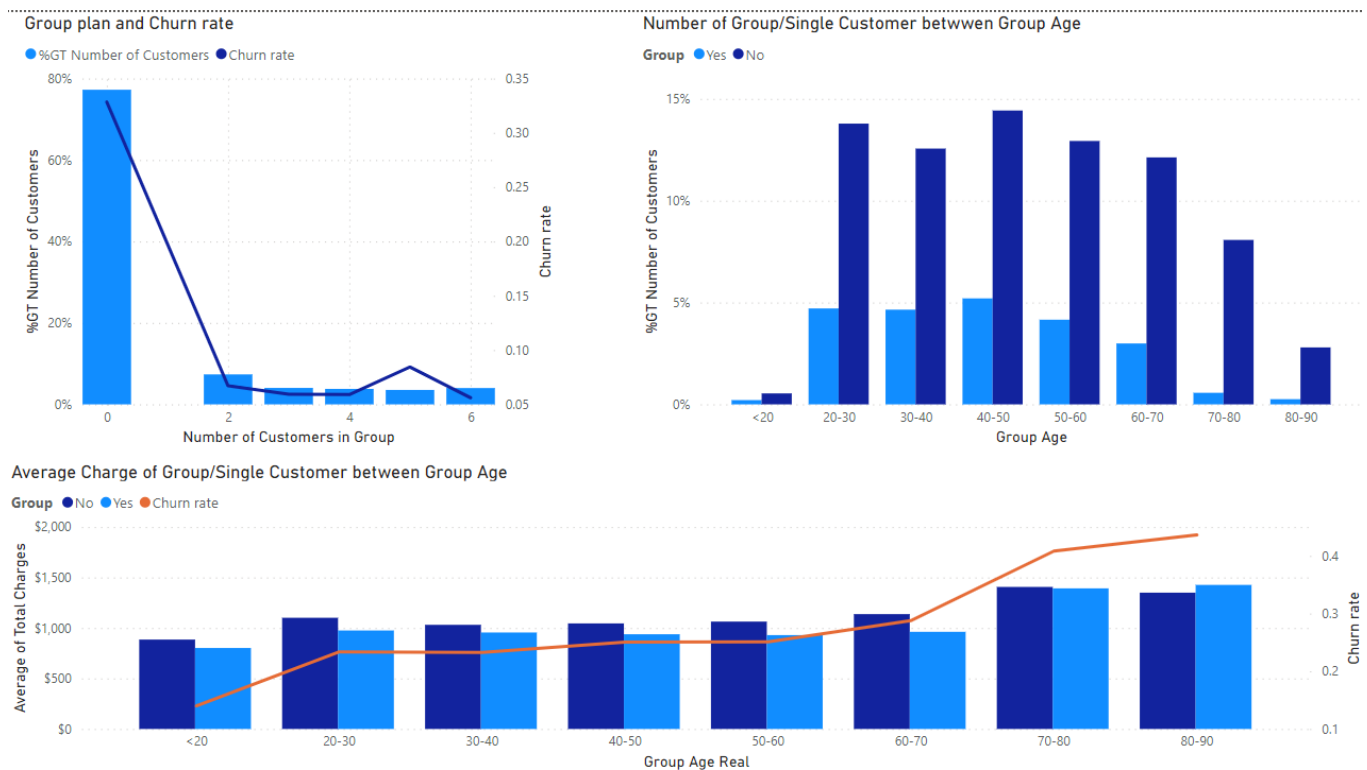
- The pie chart reveals that nearly 19% of Intl-plan users maintain an active plan but do not make any international calls, leading to unnecessary expenses. Additionally, data from the matrix indicates that customers with an active Intl-plan but no international call activity exhibit a remarkably high churn rate of 71%.

-> It's crucial to identify these individuals and offer them the option to downgrade their plan to reduce charges.

Churn Rate Trends by Age Group:

- The line and stacked column chart depict the trend in churn rates and average call volume across different age groups. Notably, older age groups tend to have higher average call volumes, corresponding to higher churn rates.

6. Group/Single plan



Group/Single Plan Analysis:

- The data once again confirms that opting for a Group plan results in a significant drop in churn rate compared to choosing a Single plan.

Age Distribution in Group/Single Plan:

- Examining the age distribution within the group/single plan categories reveals that the highest percentages of customers in the 20-30 and 40-50 age groups opt for Single plans, each at nearly 15%. Conversely, the combined percentage of 70-80 and 80-90 years old customers choosing Group plans is remarkably low at 0.82%, while for Single plans, it's 11%.

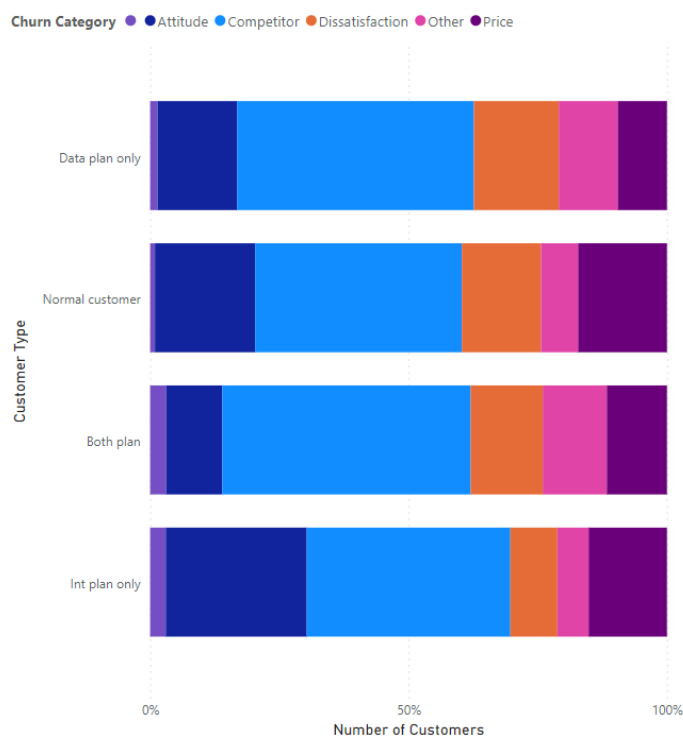
-> There's an opportunity to reduce churn rate by assisting older customers in forming Group plan groups.

Average Charges Comparison:

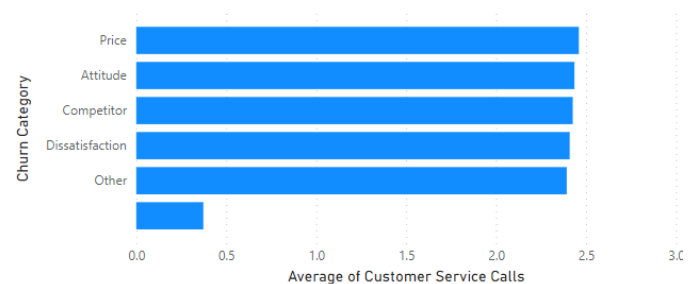
- Comparing the average charges across Group and Single plan users highlights an interesting trend. In most age groups, customers using Group plans pay less than those on Single plans. However, the 70-80 age group pays an equal amount for both plans, while the 80-90 age group pays more for Group plans than Single plans.
-> This discrepancy might be due to similar charges leading to fewer incentives for the 80-90 age group to choose Group plans, potentially contributing to a higher churn rate. Adjusting charges for these customers could help in retention efforts.

7. Attitude

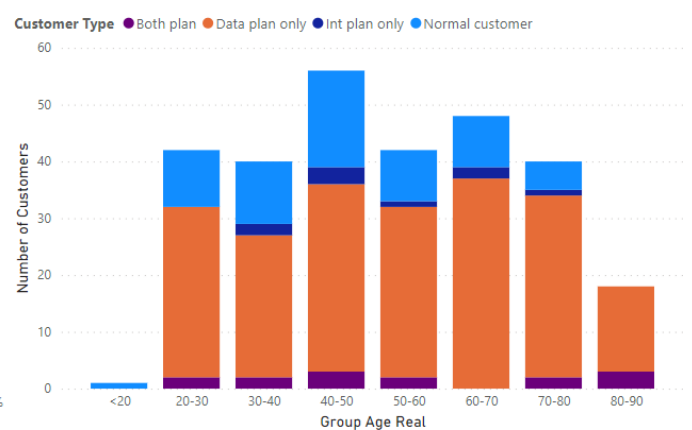
Number of Customers by Customer Type and Churn Category



Average of Customer Service Calls by Churn Category



Customer churn because of Attitude



Attitude Analysis:

- The top reasons for customer churn in the Attitude category, specifically related to service provider and support service, are predominantly among Intl-plan users at 27.27% and non-plan customers at 19.38%.

Customer Service Call Averages:

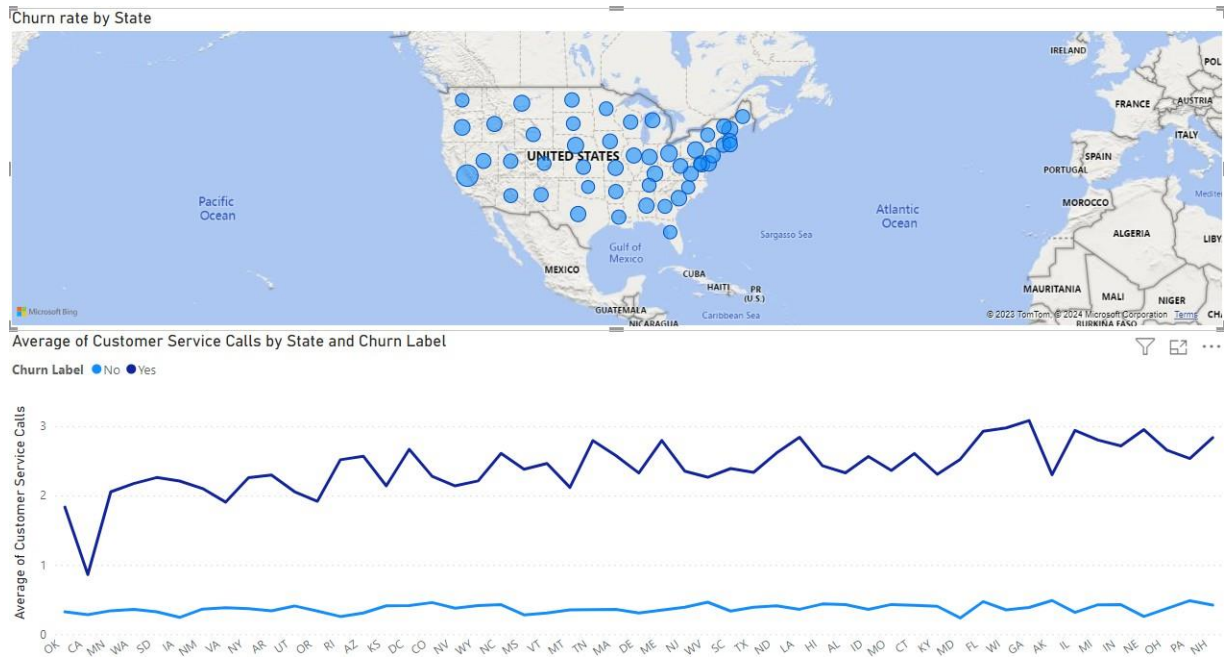
- Attitude-related issues also rank second-highest in terms of average customer service calls across all churn categories, with an average of 2.44 calls.

Age Group Analysis:

- Within every age group, individuals aged 40-50 and 60-70 exhibit the highest churn rates due to attitude-related concerns.

-> Improving our service employee training, particularly in handling older customers and addressing issues related to Intl-plan usage, especially customer calls, this could help mitigate churn rates associated with attitude-related issues.

8. Customer services call



- Based on the State and customer service call above, we can see that most non-churn customer call very little compared to churn customer in every state
- The States that received the most calls are NH, PA, NE, IL, The stakeholder can look at the churn rate of that state in the map above.

End of the report. Thank you for reading!