

Churn Analytics Report

The problem:

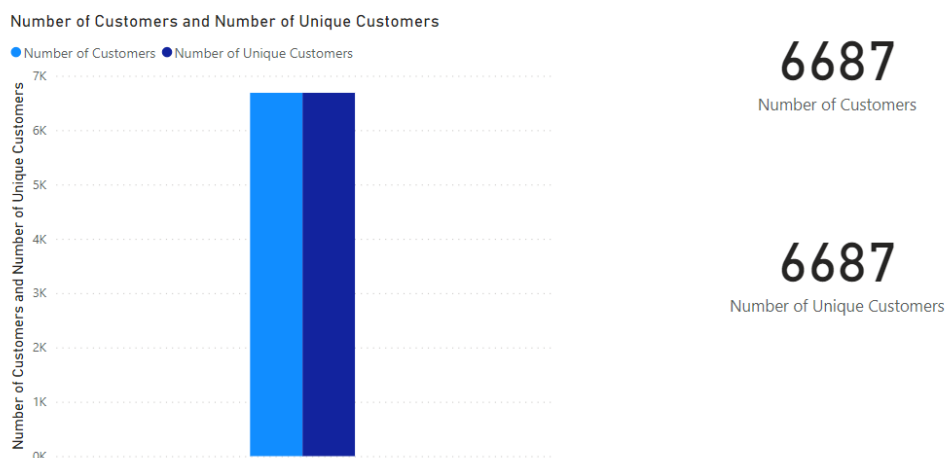
The problem you will be working on in this case study is customer churn. You'll be using a fictitious churn dataset from a Telecom provider called Databel. You are hired as a consultant, and your task is to analyse why customers are churning, or in other words, leaving Databel. "The churn rate, also known as the rate of attrition or customer churn, is the rate at which customers stop doing business with an entity. The simplified formula for churn is to divide customers lost by the total number of customers. If we have a total of 100 customers in a certain period, and 10 end up leaving, we have a churn rate of 10%. There are multiple methods to calculate churn, and depending on the industry, it might make sense for a company to slightly alter the formula. A traditional e-commerce platform might consider a certain customer a churner if he or she hasn't made a purchase in the last 12 months.

The Databel dataset consists of 29 different columns and has one row per customer. You'll be analysing a snapshot of the database at a specific moment in time, meaning there is no time dimension.

The dataset contains numerous dimensions, the first one being Customer_id. The Customer_id is a unique ID that identifies an individual customer. The second column is called Churn Label, and it indicates if a customer churned with "Yes" and "No" labels. The dataset contains various other dimensions, such as demographic fields and information about premium plans.

Analytical Approach:

The first step in any analysis is doing a data check. Created 2 measures to check if the count of customer ids is equal to count of unique customer ids.



So both the count of customers and unique customers matches.

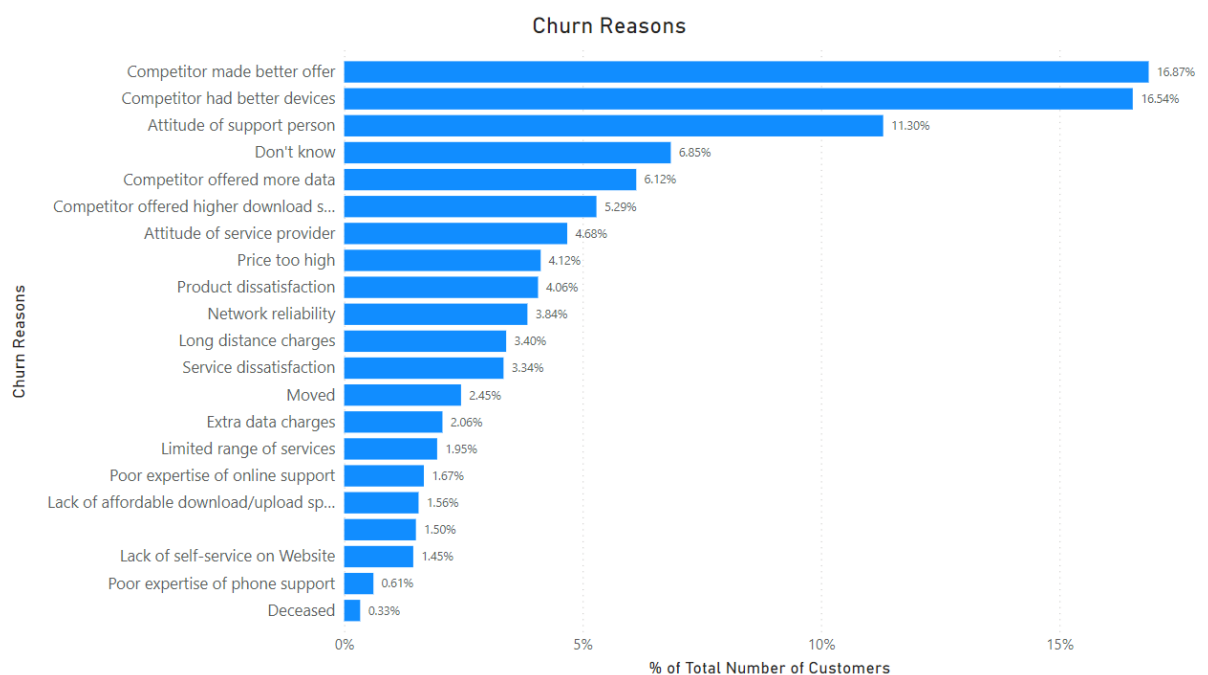
Calculating churn:

It will be useful to have a measure that calculates churn. There is a column called "Churn Label" that indicates Yes or No. we have created a measure that counts the number of churned customers just by counting 1 in churn label column. Now to get churn rate, divide the number of churned customers by the number of customers.

26.86 %
Churn Rate

Investigating the churn reasons:

So our task is to investigate different reasons why customers churned. Created a column chart listing the different reasons why customers churn in descending order.

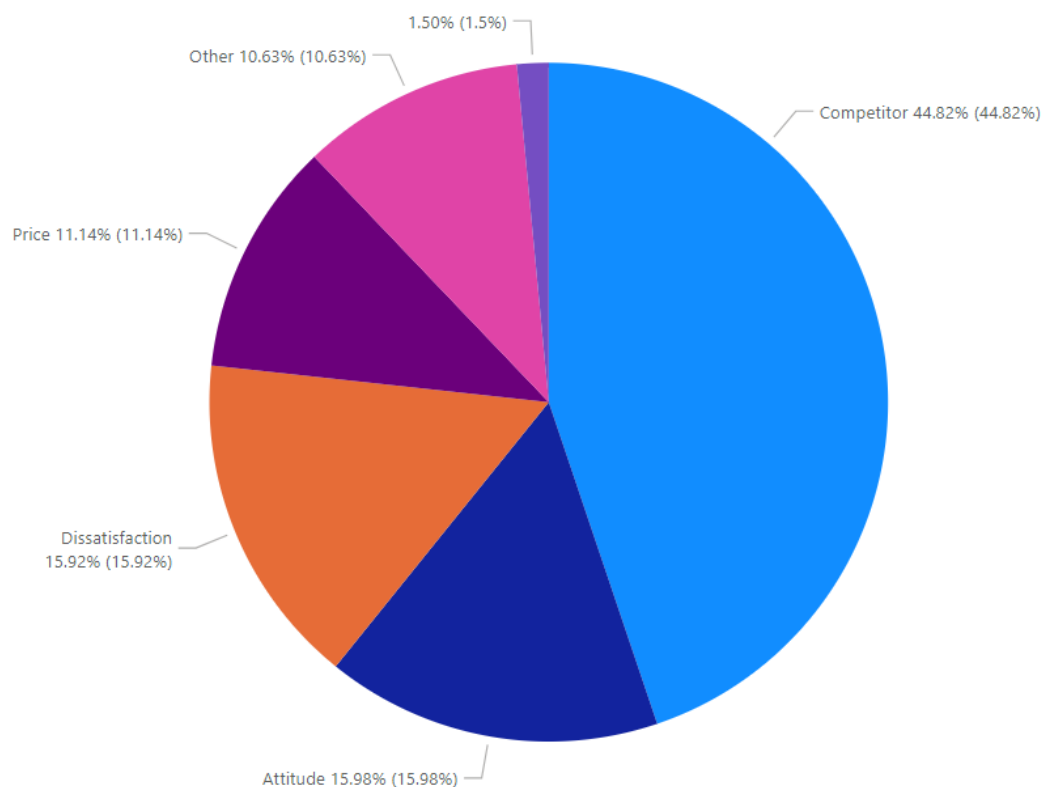


- 1. Competitive Factors Dominate Churn Reasons:** The top reasons for churn are related to competition, with "Competitor made better offer" and "Competitor had better devices" being the top two reasons. This suggests that customers are sensitive to offerings from competitors and are willing to switch providers for better deals or devices.

2. **Customer Service Plays a Significant Role:** Factors related to customer service, such as the "Attitude of support person" and "Attitude of service provider", contribute to a considerable percentage of churn. This highlights the importance of delivering exceptional customer service experiences to retain customers.
3. **Price Sensitivity is High:** "Price too high" is listed as a reason for churn, indicating that pricing strategies significantly influence customer retention. Providers may need to consider competitive pricing to maintain their customer base.
4. **Product and Service Dissatisfaction:** Dissatisfaction with the product ("Product dissatisfaction") and the overall service ("Service dissatisfaction") are also notable churn reasons. Addressing issues related to product quality and service delivery can help reduce churn rates.

Digging deeper into churn categories:

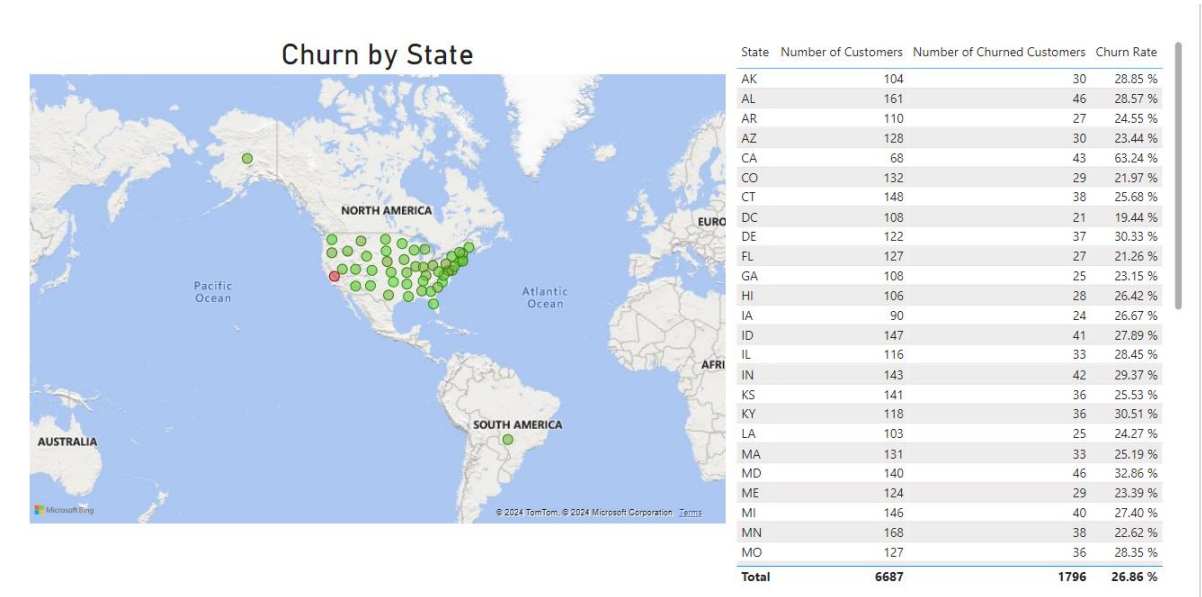
Churn reasons are grouped together in churn category column. So now we will analyse churn reason in terms of churn category.



Nearly half of the churn falls under the "Competitor" category, indicating intense competition in the market. Providers need to closely monitor competitor actions and differentiate themselves effectively to retain customers. The "Attitude" category, which includes factors like the attitude of support persons and service providers, contributes significantly to churn. This underscores the importance of fostering positive interactions and relationships with customers to enhance retention. A considerable portion of churn falls under the "Dissatisfaction" category, suggesting that dissatisfaction with various aspects of the service or product leads to customer attrition. Providers should identify and address these pain points to improve overall satisfaction and reduce churn.

Investigating churn rate by state:

The competitors have launched aggressive promos in certain states and Databel is wondering if it has impacted their customers. So our task is to investigate churn by state.



Top 5 most churned customers by state

State	Number of Customers	Number of Churned Customers	Churn Rate
CA	68	43	63.24 %
MD	140	46	32.86 %
NE	122	40	32.79 %
OH	158	55	34.81 %
PA	90	30	33.33 %
Total	578	214	37.02 %

- Regional Disparities in Churn Rates:** Churn rates vary significantly across different states. For example, California (CA) has the highest churn rate at 63.24%, while states like North Carolina (NC) and Oklahoma (OK) have relatively lower churn rates at 20.59% and 19.51% respectively. These regional disparities could be influenced by factors such as market competitiveness, service quality, and customer demographics.
- Population Centers vs. Rural Areas:** States with higher populations, such as California (CA), Texas (TX), and New York (NY), tend to have both higher numbers of customers and higher churn rates. This could be due to increased competition and more diverse customer preferences in urban areas compared to rural areas.
- Midwestern States Show Moderate Churn Rates:** States in the Midwest, such as Minnesota (MN), Iowa (IA), and Nebraska (NE), generally exhibit moderate churn rates. This suggests that while competition may not be as intense as in densely populated regions, providers still need to focus on retaining customers in these areas.
- Consistency in Churn Rates:** Some states show consistent churn rates across different customer counts. For instance, Wisconsin (WI), Virginia (VA), and Vermont (VT) have similar churn rates despite variations in the number of customers. This consistency may indicate underlying factors affecting churn within these states.
- Opportunities for Improvement:** States with higher churn rates present opportunities for providers to improve customer retention strategies. Analyzing the reasons for churn in these states and addressing issues such as customer service quality, pricing competitiveness, and network reliability can help reduce churn and improve customer satisfaction.
- Successful Retention Strategies:** Conversely, states with lower churn rates can serve as examples of successful retention strategies. Providers can study these states to identify best practices and apply them to regions with higher churn rates.

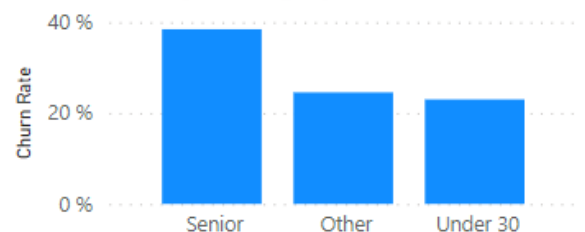
We already found some key insights. We know the average churn rate is around 27%, and that the main reason why customers churn is related to competitors. This could raise questions such as "Is Databel competitive enough?". We also discovered that the churn rate in California is abnormally high at 63.24%, but it does sound a bit too early to make any general conclusions. We don't have a clear explanation yet for the relatively high churn rate of 27%, and there are still so many columns we need to analyze.

Analysing demographics:

Our task is to analyse different demographic fields from the dataset.

Demographics	Churn Rate
Other	24.54 %
Senior	38.46 %
Under 30	23.00 %
Total	26.86 %

Churn Rate by Demographics



The churn rate among seniors is notably higher at 38.46% compared to younger age groups. Given the higher churn rate among seniors, providers may need to implement targeted retention strategies catering specifically to this demographic. This could include personalized customer service, discounted plans tailored to seniors' needs, and simplified billing processes.

The churn rate among individuals under 30 years old is comparatively lower at 23%. This age group may be more open to exploring different service providers, seeking better deals, or less financially constrained compared to seniors. Providers may need to focus on catering to the preferences and needs of this demographic to maintain their loyalty.

Creating age groups:

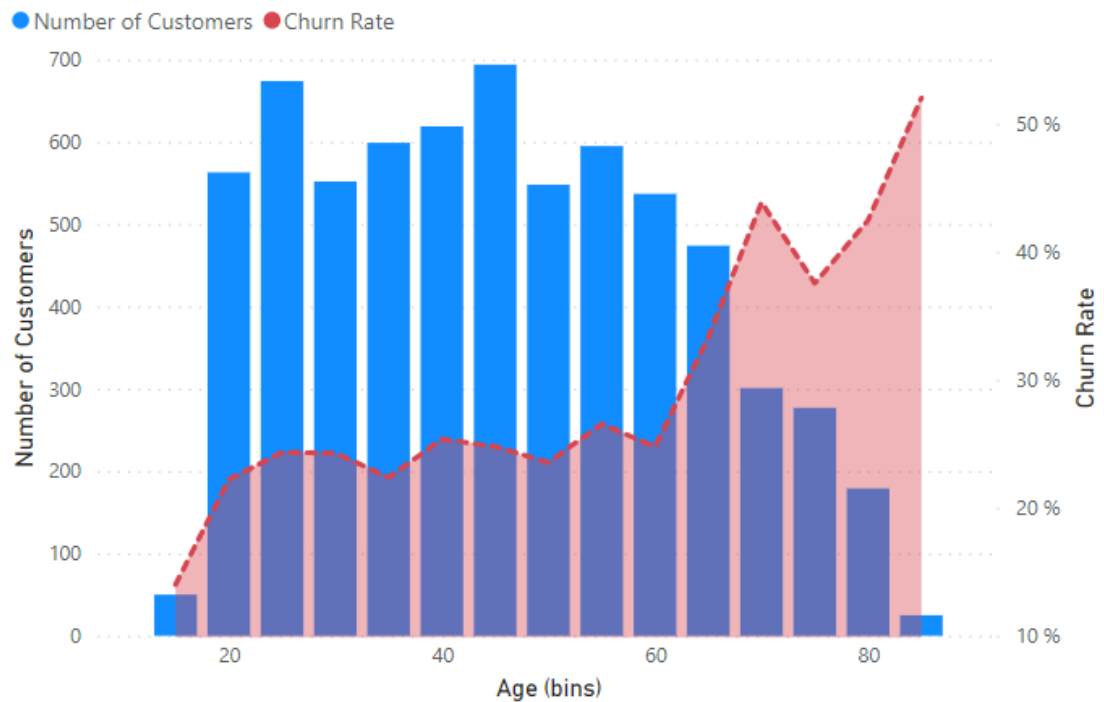
We found out that senior citizens churn more often. Now we will try to analyse churn by different age group. We created age bins of size 5.

1. **Churn Rate Increases with Age:** There is a clear trend of increasing churn rates with advancing age. Churn rates start relatively low among younger age

groups, gradually rise through middle age, and spike significantly among seniors. This indicates that older customers are more likely to churn compared to younger ones.

2. **Vulnerability of Senior Customers:** Seniors aged 65 and above exhibit the highest churn rates, with rates exceeding 30%. This age group may be more sensitive to factors such as service quality, pricing, and customer support. Providers need to pay particular attention to retaining senior customers through targeted retention strategies catering to their specific needs and preferences.
3. **Transition Periods Impact Churn:** Certain age milestones, such as turning 70 or 75, coincide with notable increases in churn rates. These transitions may represent significant life changes for individuals, such as retirement, changes in health status, or relocation, which can influence their decision to switch service providers. Providers should anticipate and address these transition periods to minimize churn.
4. **Stability in Middle Age Groups:** Age groups between 35 and 60 generally exhibit relatively stable churn rates, hovering around the mid-20s to mid-30s percentage range. While churn rates may not be as high as among seniors, providers should still prioritize customer retention efforts within these age groups to maintain overall stability and profitability.
5. **Opportunities for Customer Retention Initiatives:** Lower churn rates among younger age groups present opportunities for providers to implement customer retention initiatives early in the customer lifecycle. Building strong relationships and brand loyalty with younger customers can help mitigate churn as they age and potentially increase their lifetime value to the business.
6. **Tailored Solutions for Different Age Segments:** Recognizing the varying churn rates across different age groups underscores the importance of offering tailored solutions and experiences. Providers should segment their customer base by age and customize their offerings to address the unique needs, preferences, and life stages of each demographic segment.
7. **Importance of Customer Support and Engagement:** As churn rates tend to increase with age, providing exceptional customer support and engagement becomes increasingly critical. Offering personalized assistance, easy-to-use services, and proactive communication can enhance customer satisfaction and loyalty, ultimately reducing churn rates across all age groups.
8. **Continuous Monitoring and Adaptation:** Churn rates may evolve over time due to changes in market conditions, technology, and consumer behaviors. Providers should continuously monitor churn trends across different age groups and adapt their strategies accordingly to remain competitive and retain their customer base effectively.

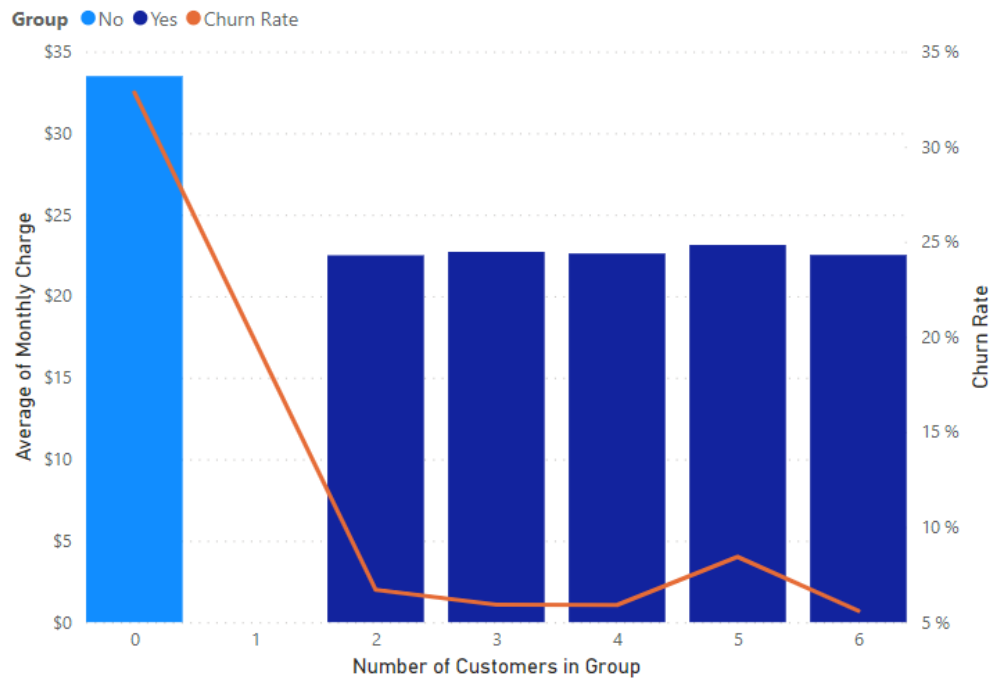
Number of Customers and Churn Rate by Age (bins)



Inspecting groups:

Databel offers group contracts to customers from same household. The advantage for the customer is a discounted rate, while it's a great way for Databel to grow its customer base. Our task is to analyze if customers that are part of a group indeed have a lower phone bill and if it has a impact on the churn rate.

Average of Monthly Charge and Churn Rate by Number of Customers in Group and Group

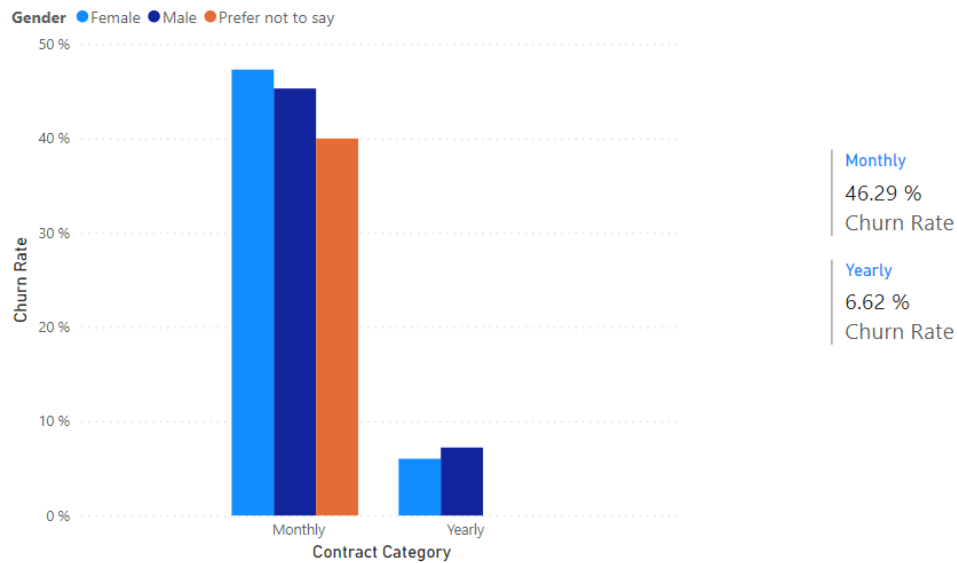


The group size 6 has the lowest churn rate of 5.6%.

Investigating multiple fields:

There are 3 different contract types One-year, Two year and Month to Month. It would be a good idea to gather the values of yearly contracts into one. In this way you can observe the difference between the customers who have yearly contracts and those having monthly contracts. So created a new column called contract category whose value is yearly for contract type = one year or two year and the value is monthly for contract type = month to month.

Churn Rate by Contract Category and Gender



We can infer that those who have monthly contracts churn more than those customers who have yearly based contracts.

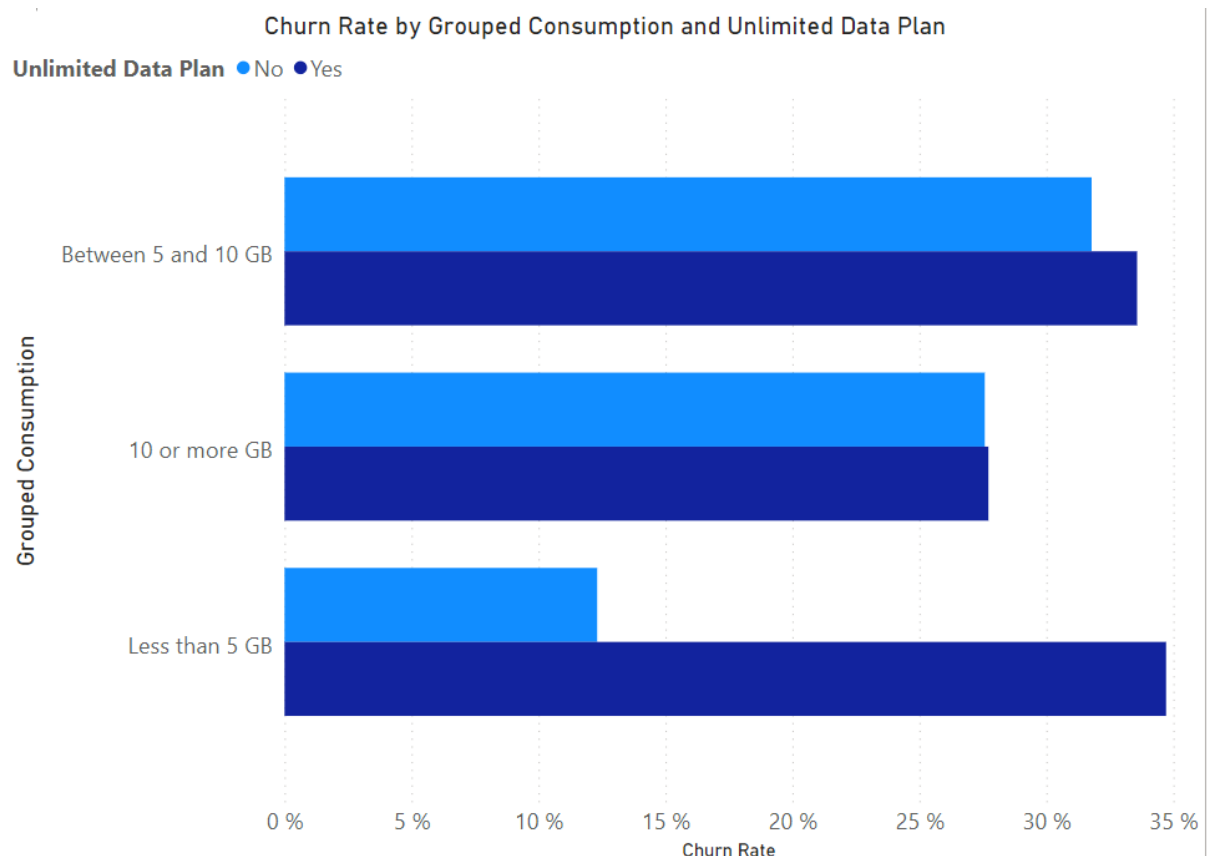
- Churn Rate Disparity between Monthly and Yearly Contracts:** There is a significant difference in churn rates between monthly and yearly contracts. Monthly contracts have much higher churn rates compared to yearly contracts. This suggests that customers with yearly contracts are more likely to stay with the service provider for a longer duration compared to those with monthly contracts.
- Gender Disparities in Churn Rates:** There seems to be a variation in churn rates based on gender. In the case of monthly contracts, females have a slightly higher churn rate (47.31%) compared to males (45.31%). However, for yearly contracts, males have a slightly higher churn rate (7.21%) compared to females (6.02%). Additionally, there is a lower churn rate among customers who prefer not to disclose their gender, especially for yearly contracts where the churn rate is 0.00%.
- Preference for Contract Type:** The data indicates a preference for yearly contracts among all genders, given the substantially lower churn rates associated with yearly contracts. This suggests that customers may value the stability and potentially cost-saving benefits of committing to a yearly contract over a monthly one.
- Gender and Contract Type Interaction:** While there are differences in churn rates based on gender, these differences are more pronounced in certain contract types. For example, while males generally have slightly higher churn rates than females, this difference becomes more significant in yearly contracts compared to monthly contracts. Understanding these nuances can help tailor marketing strategies and customer retention efforts to specific demographic groups and contract types.

Unlimited Plan:

Databel has a hypothesis that people who are not on an unlimited plan are more likely to churn. Our task is to investigate how the unlimited data plan influences the churn rate.

Churn Rate	Number of Customers	Unlimited Data Plan
16.10 %	2193	No
32.11 %	4494	Yes
26.86 %	6687	

It is observed that the customers who are on an unlimited plan are more likely to churn. To see if it is related to a certain amount of mobile data (GB), created a new column called Grouped consumption that classifies the average monthly GB download in the following groups – less than 5GB, between 5GB-10GB and 10 or more GB.



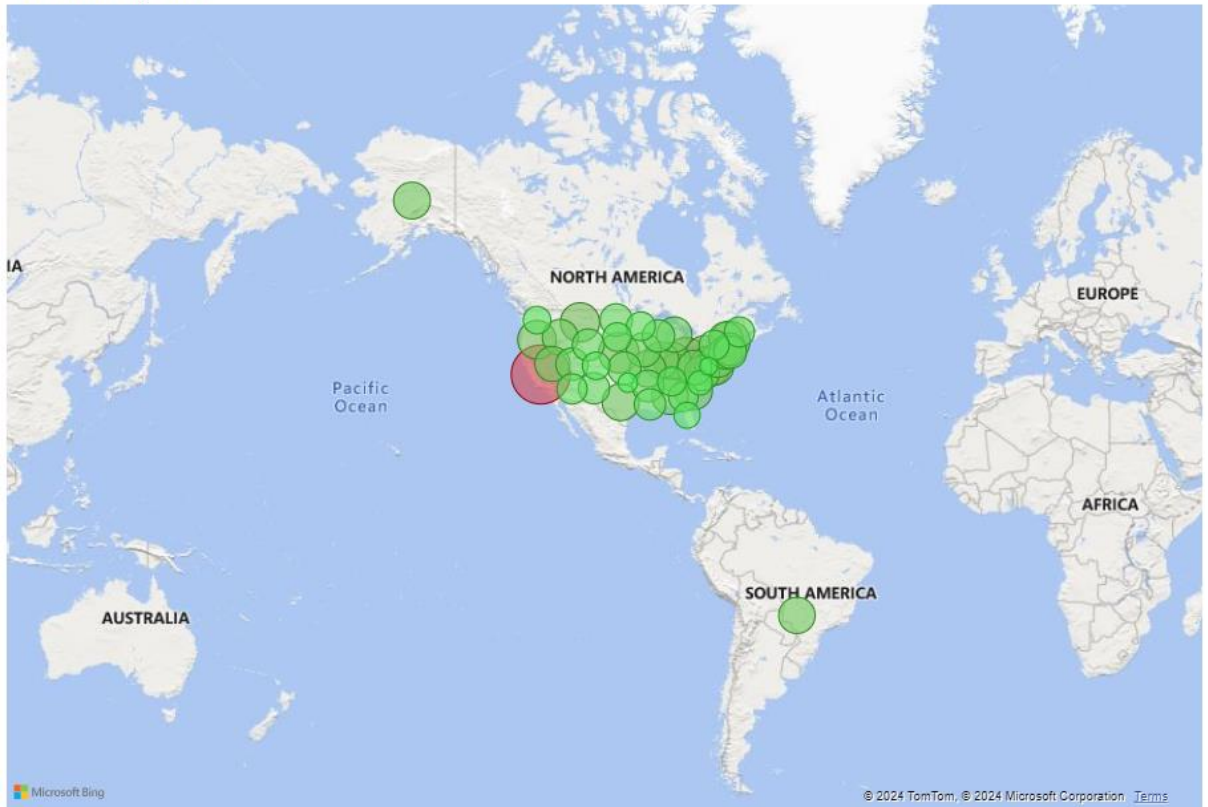
1. **Impact of Data Consumption on Churn Rate:** Contrary to the initial assessment, it appears that there isn't a consistent correlation between data consumption and churn rate. While the churn rates for customers with 10 GB or more data are indeed lower than those with less than 5 GB, the churn rates for customers consuming between 5 and 10 GB are not consistently lower.
2. **Influence of Unlimited Data Plans:** Customers with unlimited data plans seem to have varied churn rates depending on their data consumption. While customers with unlimited data plans have higher churn rates in the "Less than 5 GB" and "Between 5 and 10 GB" categories, they have a lower churn rate in the "10 or more GB" category compared to those without unlimited data plans. There is significant difference in churn rate between unlimited and limited data plans for Less than 5GB category.
3. **Effectiveness of Limited Data Plans:** Surprisingly, customers with limited data plans (labeled "No") in the "10 or more GB" category have a churn rate comparable to those with unlimited data plans, and lower than those in the "Less than 5 GB" and "Between 5 and 10 GB" categories.

International calls:

The analysis requirement given by Databel includes a request to analyze the international activity of customers and its relationship to churn. They are curious about the behaviour of customers who call internationally, and if paying for an international plan influences their loyalty.

Intl Active	no	yes	Total
No	20.01 %	71.19 %	22.21 %
Yes	40.34 %	7.59 %	34.31 %
Total	27.07 %	24.88 %	26.86 %

Churn Rate by State



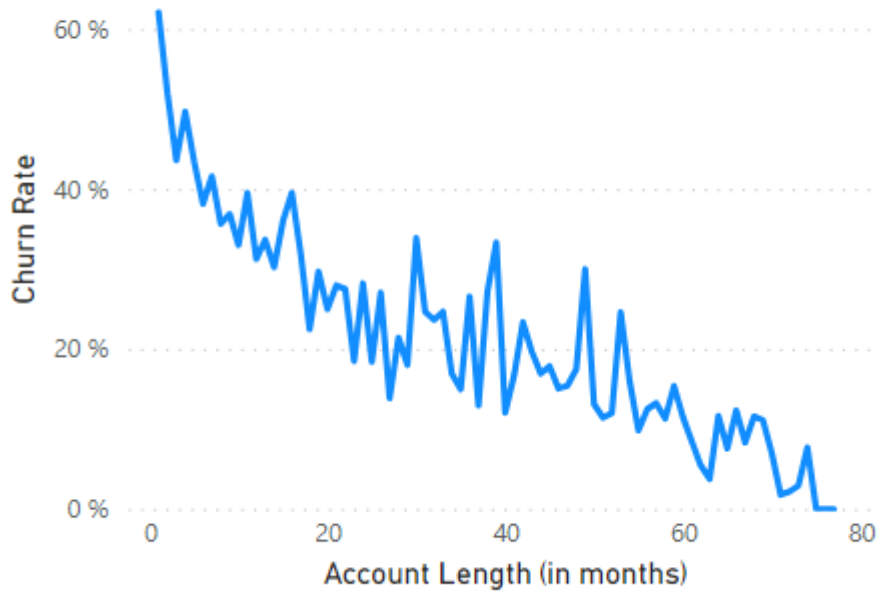
- Customers who are internationally active and have an international plan (Intl Active: Yes, Intl Plan: Yes) exhibit the lowest churn rate at 7.59%.
- Customers who are not internationally active but have an international plan (Intl Active: No, Intl Plan: Yes) show a significantly high churn rate at 71.19%.
- The churn rate for customers with an international plan (Intl Plan: Yes) varies significantly based on their international activity. While having an international plan seems to reduce churn for internationally active customers, it significantly increases churn for non-internationally active customers.
- Implement targeted retention strategies for customers who are not internationally active but have an international plan, as they exhibit the highest churn rate.
- Encourage customers to opt for international plans, especially if they are internationally active, as it correlates with lower churn rates.
- California is the state having highest percentage of churners.

Improving the customer service:

Databel wants to improve its customer service since there have been some reported issues. Our task is to investigate three topics related to customer-

the payment method, the contract type and how many months a person is a customer.

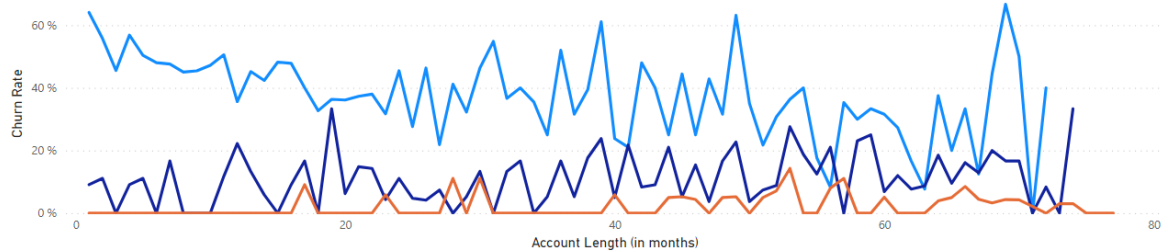
Churn Rate by Account Length (in months)



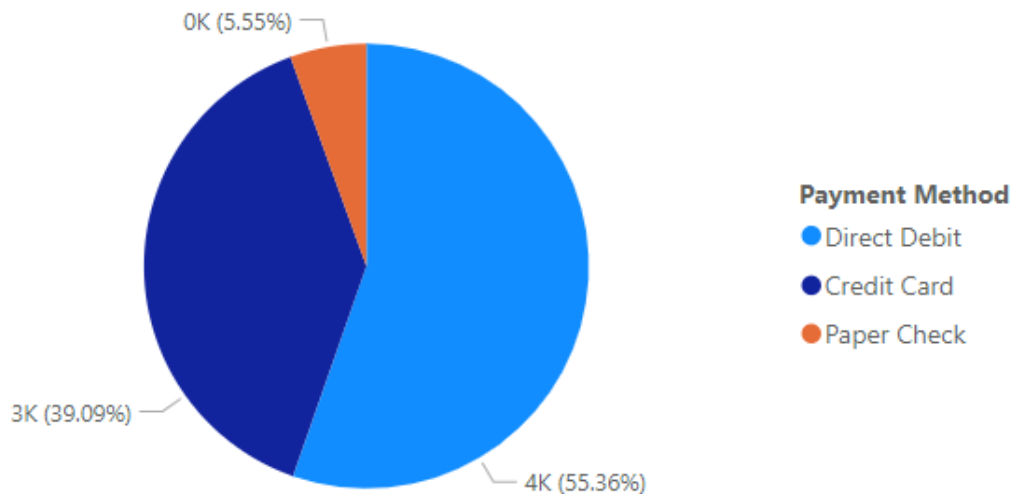
It seems that the churn rate decreases over time. Now investigate how this decrease behaves through different types of contracts.

Churn Rate by Account Length (in months) and Contract Type

Contract Type ● Month-to-Month ● One Year ● Two Year



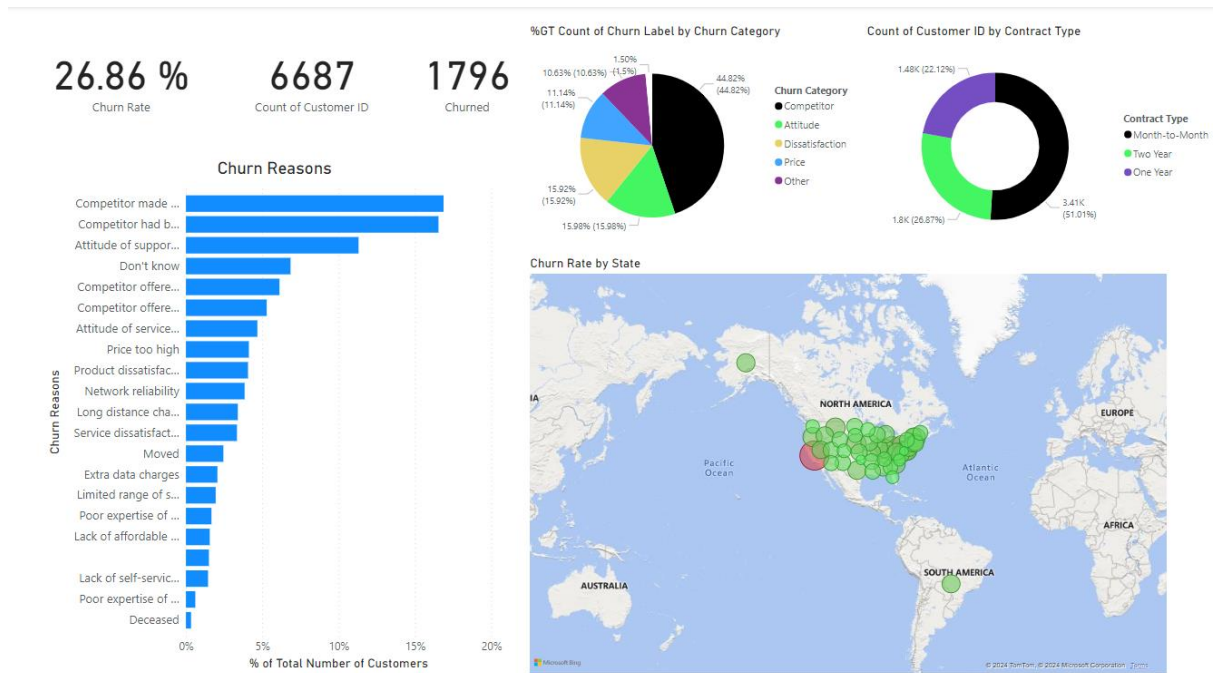
Number of Customers by Payment Method



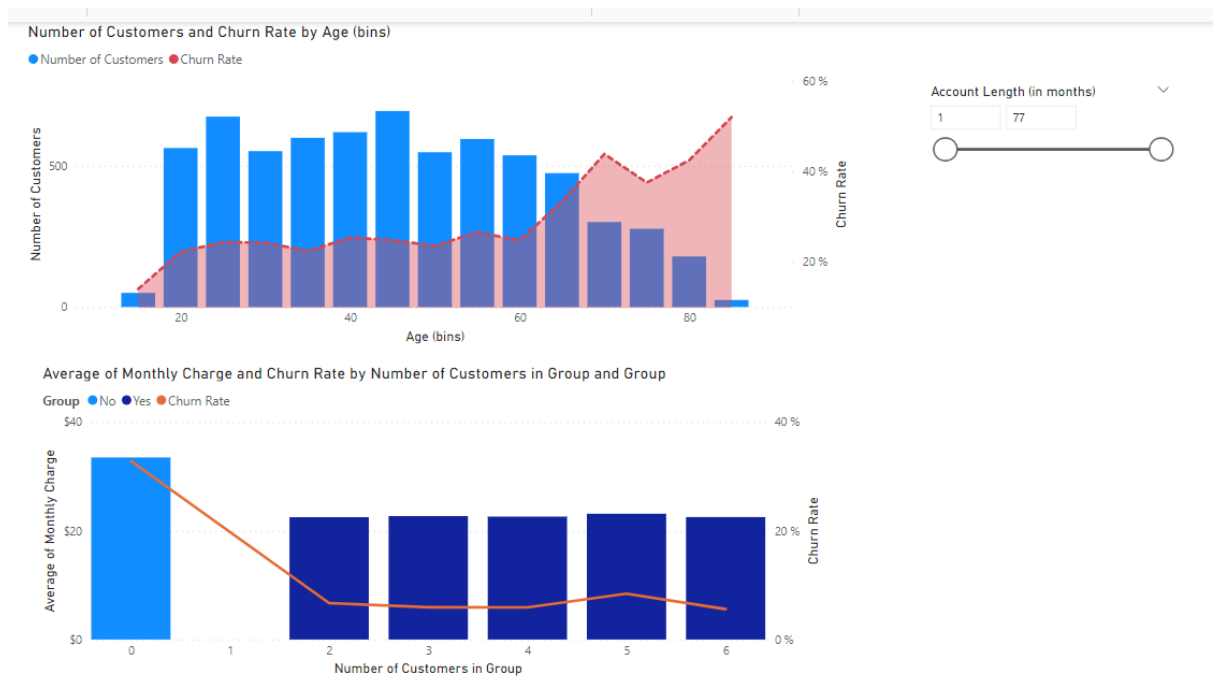
- Customers on month-to-month contracts generally exhibit higher churn rates compared to those on longer-term contracts (one year or two years). This suggests that contract type plays a significant role in customer retention.
- Month-to-month contracts consistently show the highest churn rates across different account lengths.
- Customers with account length 69 and having monthly contracts accounts for the highest churn rate. Month-to-Month had the highest average Churn Rate followed by One Year and then Two Year contracts.
- The number of customers who pay with paper checks is 371 and they represent only 5.5% of total customers.

Creating an overview page:

Next task is collate the information for best insights possible into Databel's key concerns. For this, we created a report to explain how the different churn categories, types of contracts, reasons and states can affect churn.



Created a second page in the report that portrays insights about the age brackets and groups.



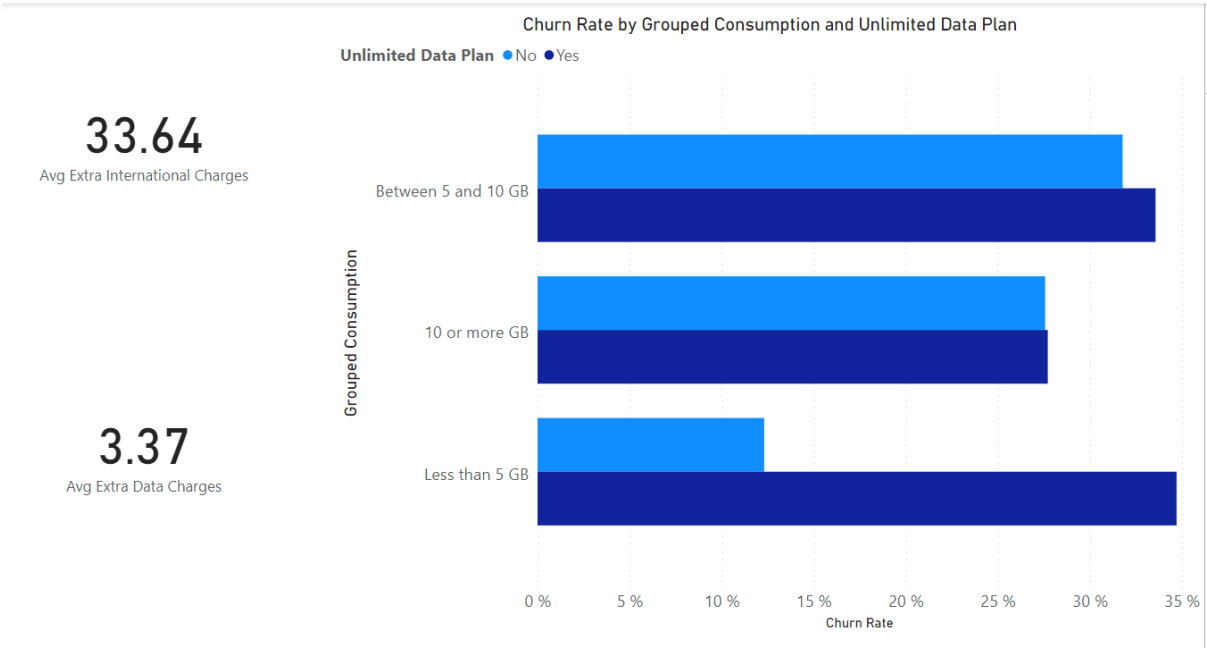
After the age of 50, we start to see the churn rate increase. The second graph suggests us to moving customers to one year or two year contracts could greatly reduce churn.

While going through all columns in the table, we notice we haven't investigated customer service calls. So created a measure that calculates average customer service calls per customer. Also included the visual showing the contract and payment type.

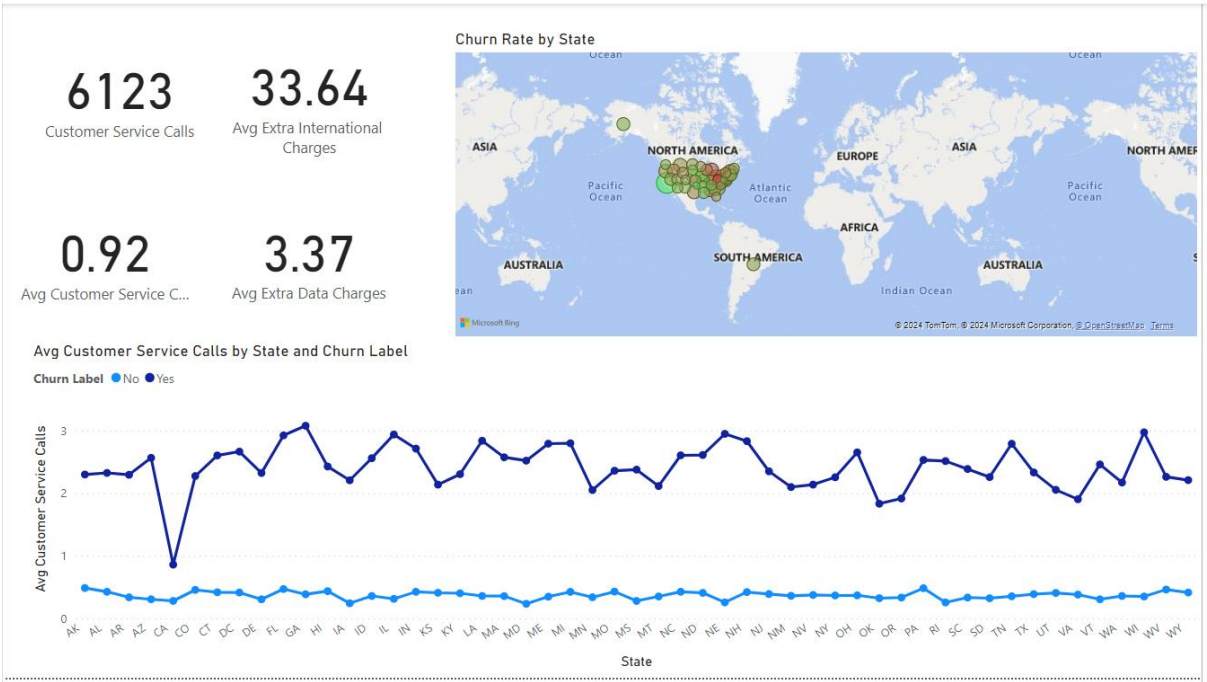


The average number of customer calls for customers who are on monthly contract and pay by direct debit is 1.47 and the churn rate for those customers is 53.90. So, the ones who calls customer service often are the ones who churn more than the average. In our case they are the customers who have monthly contracts and prefer direct debit as a payment method.

The final report should cover insights about the Data and any relevant charges. Created 2 new measures called average extra international charges and average extra data charges.



Now it's a good idea to look the data through a different lens to produce more interesting insights.



We see an interesting insight here. Even though we observe that the use of customer services is higher for churners, California is one of a kind. The customers there have the highest churn rate and yet the lowest number of customer service calls.