Project Report

Project Title: Churn Analytics for Vertex Mobile

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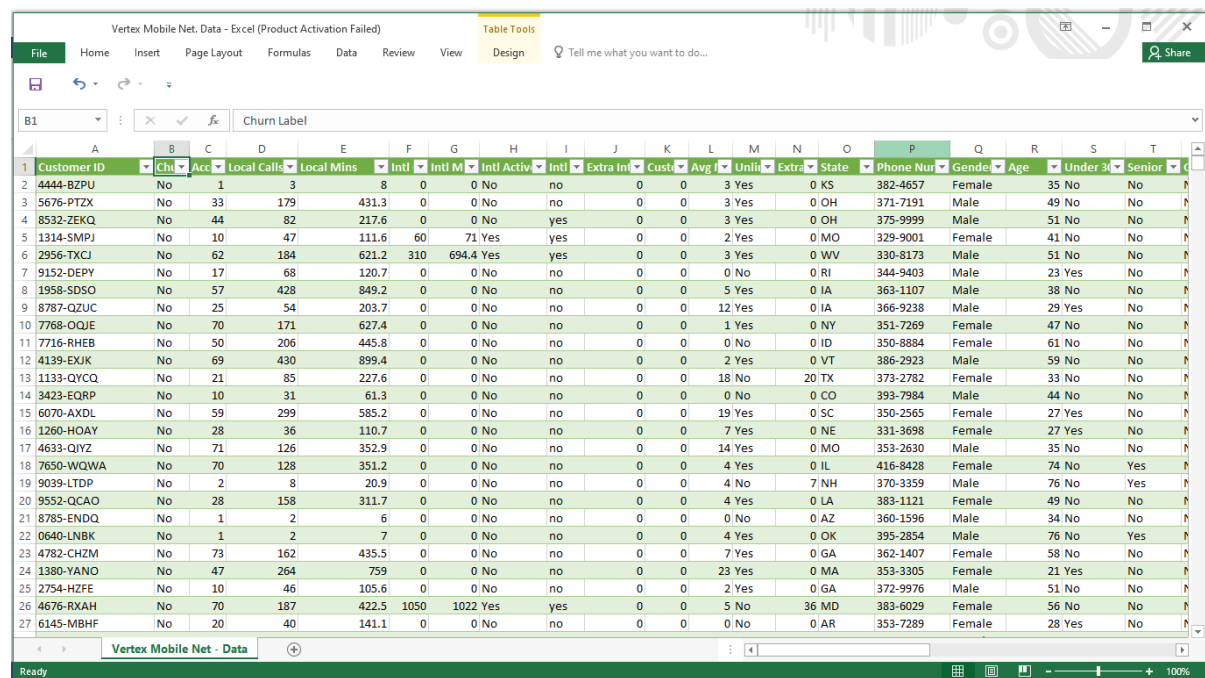
Introduction

Project Objective:

The objective of this project is to develop a telecom churn analytics dashboard for Vertex Mobile Net. This dashboard aims to identify patterns and factors contributing to customer churn, enabling the company to implement targeted strategies to enhance customer retention and satisfaction.

Scope

The dashboard covers customer demographics, service usage patterns, contract types, and international activity. It provides visualizations that highlight churn trends, demographic insights, and potential churn factors. The key deliverables include actionable insights and strategic recommendations based on the analysis of customer data.

Data Preparation

Data Source: The data for this project was obtained from Vertex Mobile Net's internal systems, containing customer information, service usage, and contract details.

|	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
1	Customer ID	Chu	Acc	Local Calls	Local Mins	Intl	Intl M	Intl Activ	Intl	Extra Int	Cust	Avg I	Unli	Extra	State	Phone Nun	Gende	Age	Under 3(	Senior
2	4444-BZPU	No	1	3	8	0	0	No	no	0	0	3	Yes	0	KS	382-4657	Female	35	No	No
3	5676-PTZX	No	33	179	431.3	0	0	No	no	0	0	3	Yes	0	OH	371-7191	Male	49	No	No
4	8532-ZEKQ	No	44	82	217.6	0	0	No	yes	0	0	3	Yes	0	OH	375-9999	Male	51	No	No
5	1314-SMPJ	No	10	47	111.6	60	71	Yes	yes	0	0	2	Yes	0	MO	329-9001	Female	41	No	No
6	2956-TXCJ	No	62	184	621.2	310	694.4	Yes	yes	0	0	3	Yes	0	WV	330-8173	Male	51	No	No
7	9152-DEPY	No	17	68	120.7	0	0	No	no	0	0	0	No	0	RI	344-9403	Male	23	Yes	No
8	1958-SDSO	No	57	428	849.2	0	0	No	no	0	0	5	Yes	0	IA	363-1107	Male	38	No	No
9	8787-QZUC	No	25	54	203.7	0	0	No	no	0	0	12	Yes	0	IA	366-9238	Male	29	Yes	No
10	7768-OQJE	No	70	171	627.4	0	0	No	no	0	0	1	Yes	0	NY	351-7269	Female	47	No	No
11	7716-RHEB	No	50	206	445.8	0	0	No	no	0	0	0	No	0	ID	350-8884	Female	61	No	No
12	4139-EXJK	No	69	430	899.4	0	0	No	no	0	0	2	Yes	0	VT	386-2923	Male	59	No	No
13	1133-QYCQ	No	21	85	227.6	0	0	No	no	0	0	18	No	20	TX	373-2782	Male	33	No	No
14	3423-EQRP	No	10	31	61.3	0	0	No	no	0	0	0	No	0	CO	393-7984	Male	44	No	No
15	6070-AXDL	No	59	299	585.2	0	0	No	no	0	0	19	Yes	0	SC	350-2565	Female	27	Yes	No
16	1260-HOAY	No	28	36	110.7	0	0	No	no	0	0	7	Yes	0	NE	331-3698	Female	27	Yes	No
17	4633-QIYZ	No	71	126	352.9	0	0	No	no	0	0	14	Yes	0	MO	353-2630	Male	35	No	No
18	7650-WQWA	No	70	128	351.2	0	0	No	no	0	0	4	Yes	0	IL	416-8428	Female	74	No	Yes
19	9039-LTDP	No	2	8	20.9	0	0	No	no	0	0	4	No	7	NH	370-3359	Male	76	No	Yes
20	9552-QCAO	No	28	158	311.7	0	0	No	no	0	0	4	Yes	0	LA	383-1121	Female	49	No	No
21	8785-ENDQ	No	1	2	6	0	0	No	no	0	0	4	Yes	0	AZ	360-1596	Male	34	No	No
22	0640-LNBK	No	1	2	7	0	0	No	no	0	0	4	Yes	0	OK	395-2854	Male	76	No	Yes
23	4782-CHZM	No	73	162	435.5	0	0	No	no	0	0	7	Yes	0	GA	362-1407	Female	58	No	No
24	1380-YANO	No	47	264	759	0	0	No	no	0	0	23	Yes	0	MA	353-3305	Female	21	Yes	No
25	2754-HZFE	No	10	46	105.6	0	0	No	no	0	0	2	Yes	0	GA	372-9976	Male	51	No	No
26	4676-RXAH	No	70	187	422.5	1050	1022	Yes	yes	0	0	5	No	36	MD	383-6029	Female	56	No	No
27	6145-MBHF	No	20	40	141.1	0	0	No	no	0	0	0	No	0	AR	353-7289	Female	28	Yes	No

Vertex Mobile Net - Data

Data Cleaning: Data cleaning involved handling missing values, correcting inaccuracies, and standardizing formats. Outliers were examined, and erroneous data points were corrected or removed to ensure data quality.

Data Preparation: Transformations included creating new columns to facilitate visualizations, such as age brackets for customers and contract

categories. Additional derived fields included churn rates by demographic segments and contract types. I also created a new table for measures to make it more presentable.

Dashboard Design and Features

Overview: The dashboard is designed to provide a comprehensive view of customer churn at Vertex Mobile Net. It features interactive visualizations to explore customer data across different dimensions.
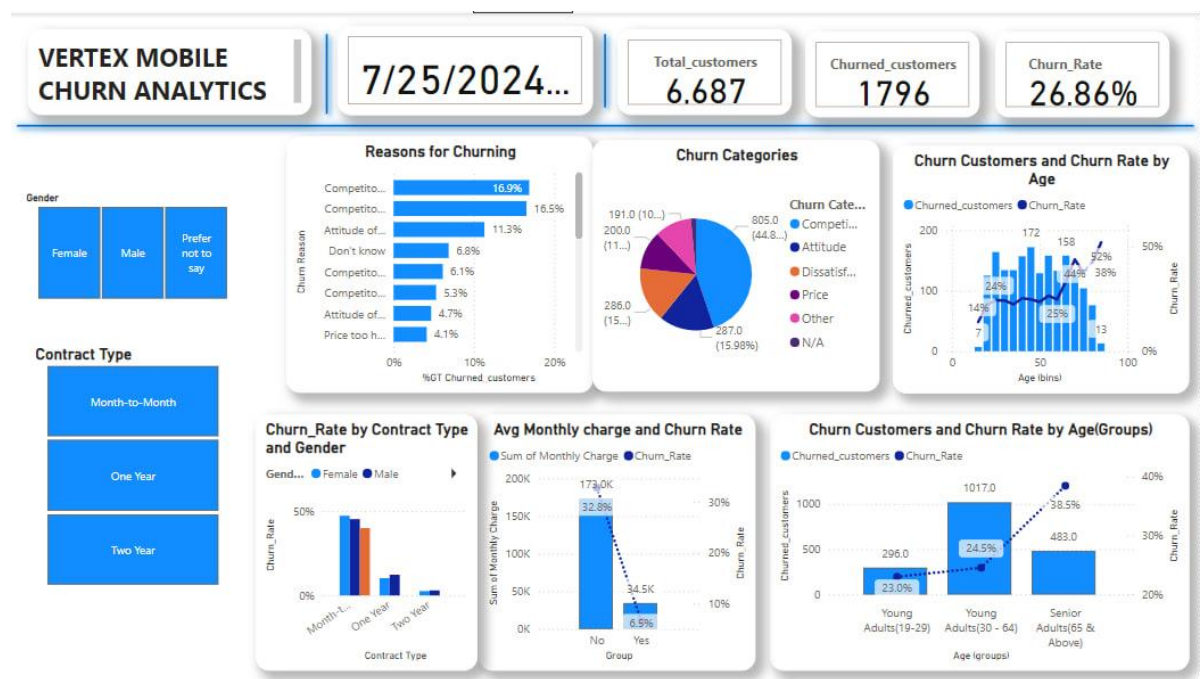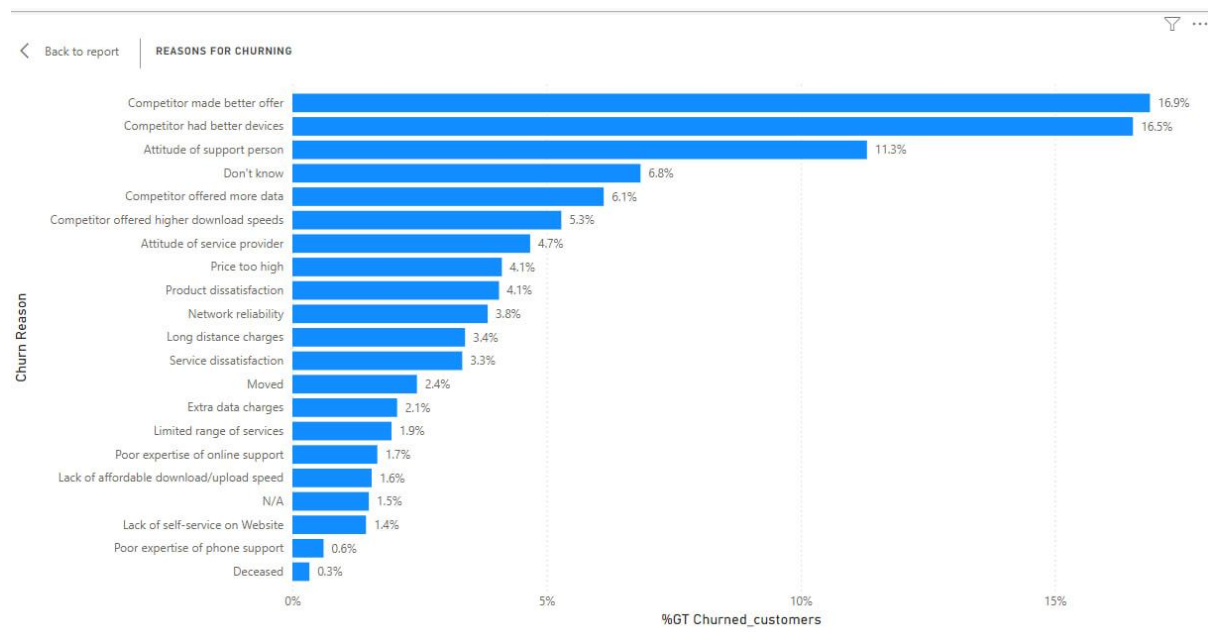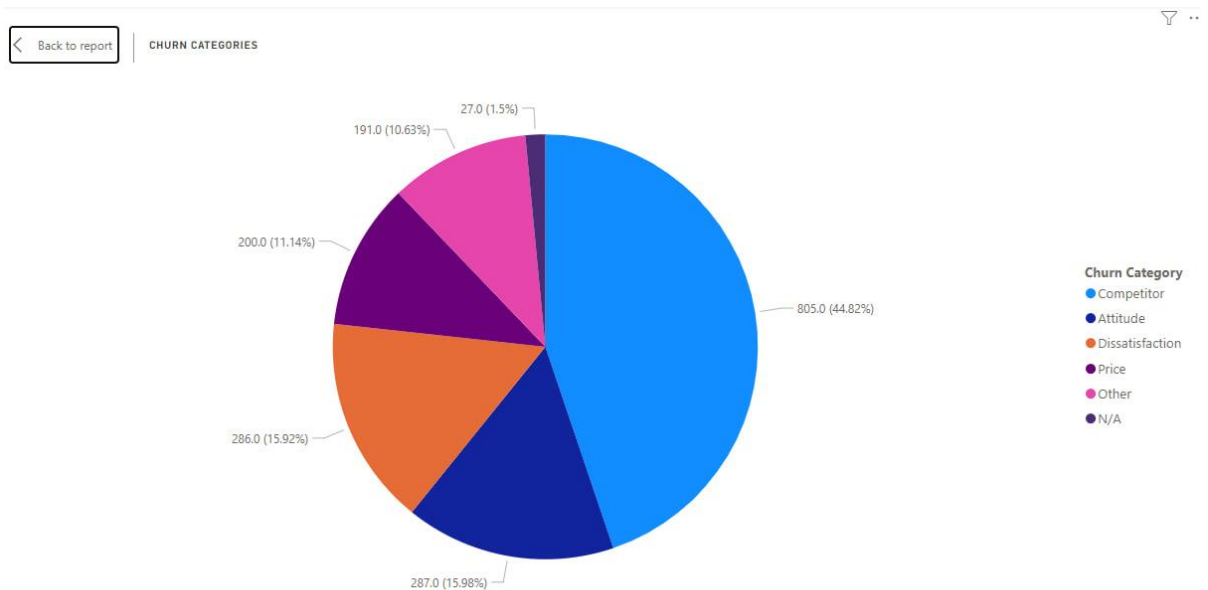
Describe Your Visualizations:

Total Customers and Churned Customers: This section displays the total number of customers (6,687) and the number of customers who have churned (1,796). The churn rate is calculated as 26.86%.
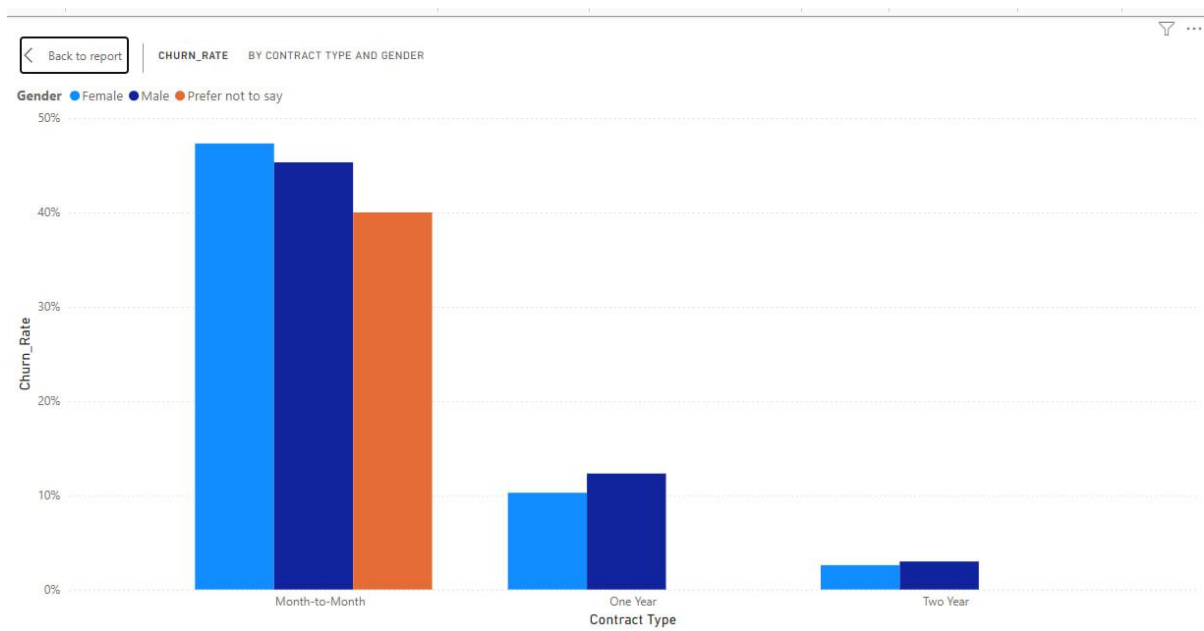
Total_customers	Churned_customers	Churn_Rate
6.687	1796	26.86%

Reasons for Churning:

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**Churn Categories:** This pie chart shows the distribution of churn categories

Churn Customers and Churn Rate by Age: This bar chart shows the number of churned customers and churn rate by age group (Young Adults, Adults, Seniors). The highest churn rate is among the "Young Adults" age group.
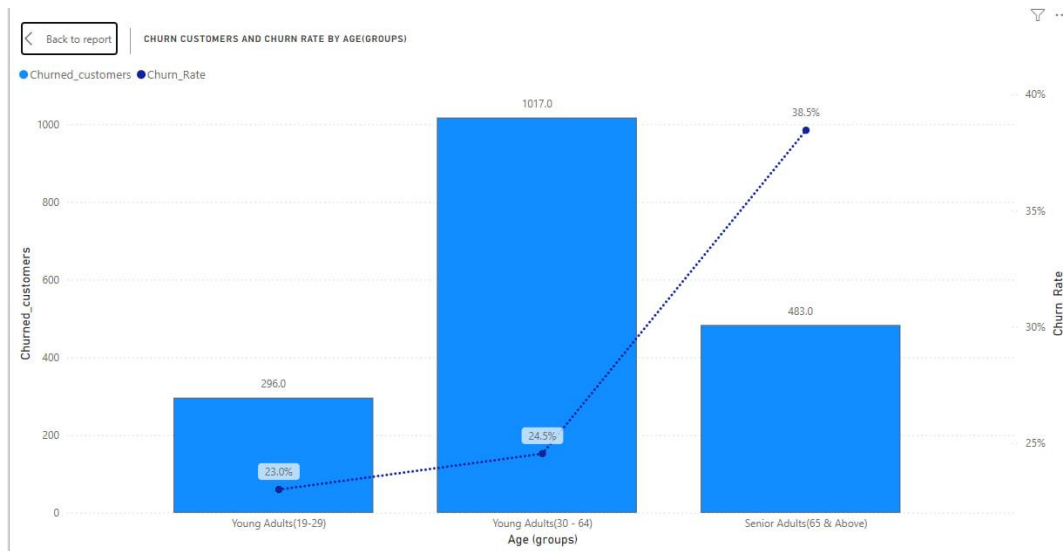
Churn Rate by Contract Type and Gender: This bar chart shows the churn rate by contract type (Month-to-Month, One Year, Two Year) and gender (Male, Female). The highest churn rate is for Month-to-Month contracts for both males and females.

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Average Monthly Charge and Churn Rate: This bar chart shows the average monthly charge and churn rate. The higher the average monthly charge, the lower the churn rate.
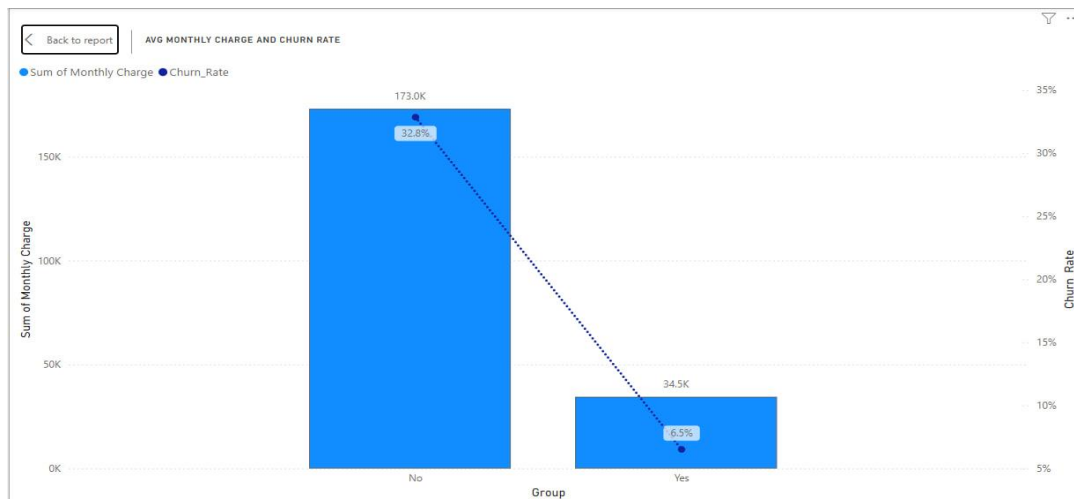

Churn Rate by Unlimited Data Plan: This bar chart shows the churn rate for customers with and without unlimited data plans. The churn rate for

customers with unlimited data plans is lower than those without
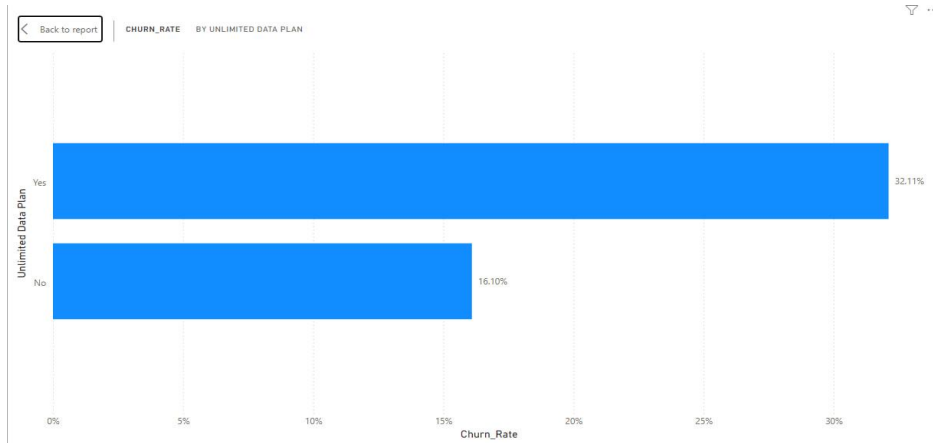
Churn Rate by Account Length (in months): This line chart shows how churn rate changes over time (account length). The churn rate is highest for new customers and decreases as account length increases.
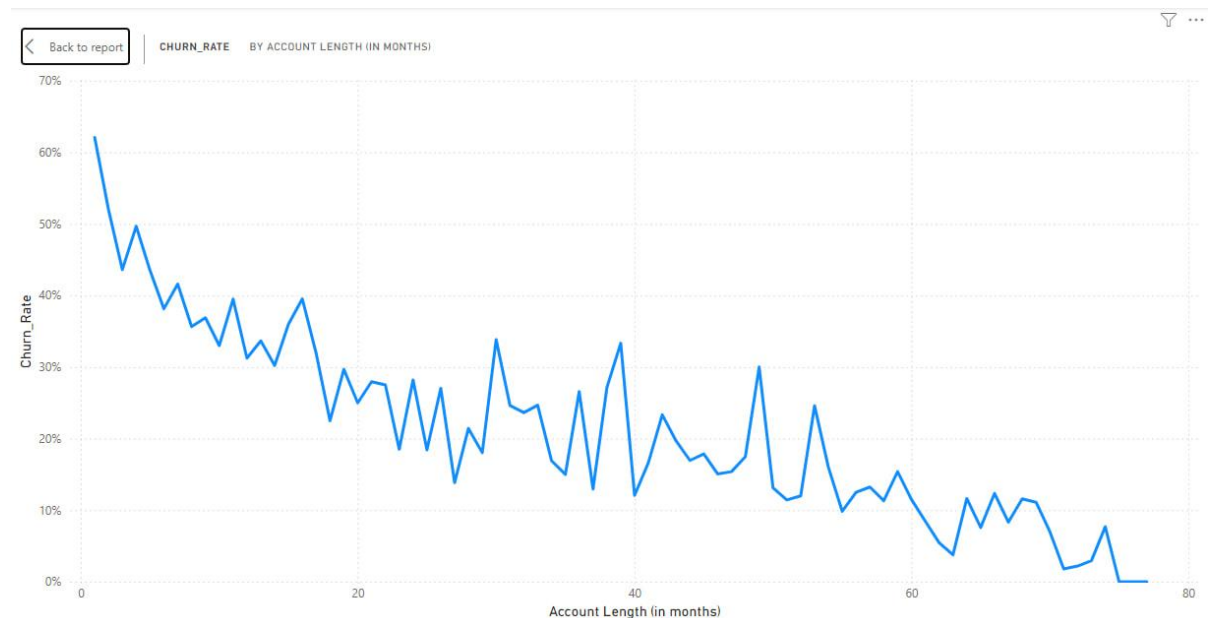
Key Insights

Analysis:

Unlimited Data Plans: Customers with unlimited data plans have a significantly lower churn rate compared to those without.

Account Length: Customer loyalty increases with account length, as evidenced by the decreasing churn rate over time.

Customer Service: A higher number of customer service calls is correlated with a higher churn rate, indicating potential service quality issues.

Geographic Variation: Churn rates vary significantly across different states, with CA having the highest and DE the lowest.

Churn Categories: Contract-related issues are the primary reason for churn, followed by price and customer service.

Trends:

Positive Correlation: There's a clear positive correlation between unlimited data plans and customer retention.

Negative Correlation: A negative correlation exists between the number of customer service calls and customer retention.

Geographic Disparity: The significant difference in churn rates across states suggests underlying regional factors influencing customer satisfaction.

Implications:

Unlimited Data Plans: Offering unlimited data plans can be a powerful tool for reducing churn.

Customer Service: Improving customer service quality can significantly impact churn rates.

Contractual Issues: Re-evaluating contract terms and conditions might be necessary to address the leading churn category.

Geographic Analysis: A deeper dive into state-specific factors contributing to churn is warranted to develop targeted retention strategies.

Recommendations

Strategies:

Enhance Unlimited Data Plans: Consider expanding the availability of unlimited data plans or introducing tiered plans with more data options.

Invest in Customer Service: Implement measures to improve customer service quality, such as additional training, increased staffing, or advanced customer service tools.

Contract Optimization: Review contract terms and conditions to identify potential areas for improvement, such as clearer language, more flexible options, or early termination fees.

Targeted Marketing: Develop region-specific marketing campaigns to address the unique needs and preferences of customers in different states.

Customer Retention Programs: Implement loyalty programs or retention incentives to reward long-term customers and reduce churn.

Improvements:

Data Granularity: Collect more detailed customer data, such as demographics, usage patterns, and specific reasons for churn.

Customer Feedback: Conduct regular customer surveys to gather feedback on product satisfaction, service quality, and areas for improvement.

Competitive Analysis: Monitor competitors' offerings and pricing to identify potential areas for differentiation and improvement.

Churn Prediction Modeling: Develop predictive models to identify customers at risk of churning and implement proactive retention strategies.

Conclusion

Summary: The dashboard provides a valuable overview of customer churn within Vertex Mobile. Key findings indicate that unlimited data plans significantly influence customer retention, while customer service quality and contract-related issues are primary drivers of churn. Geographic disparities in churn rates highlight the need for region-specific strategies. By leveraging these insights, Vertex Mobile can implement targeted initiatives to improve customer satisfaction and reduce churn.

Future Work:

Customer Segmentation: Analyze churn rates based on customer segments (e.g., age, income, device type) to identify specific customer groups at higher risk of churn.

Revenue Impact: Quantify the financial impact of churn to assess the return on investment for retention strategies.