

Telco Customer Churn & Revenue Analysis

Predictive Insights for Customer Retention & Revenue Optimization



Agenda & Presentation Structure

1. Introduction
2. Problem Statement
3. Objectives
4. Data Collection
5. Data Preprocessing
6. Model Training
7. Model Evaluation
8. Results
9. Recommendations
10. Conclusion

	Objectives Outline the primary goals and purpose to align audience expectations.		Dataset Explain dataset preparation and processing for quality and relevance.		Metrics Showcase key performance indicators of the churn model for accuracy .
	Profiles Identify customer segments with varying churn risks for targeted retention.		Features Discuss influential factors driving churn based on model insights .		Revenue Quantify customer churn's impact on revenue to prioritize actions.
	Recommendations Offer strategies to reduce churn and improve retention .		Roadmap Present timeline and steps for deploying recommendations to achieve results.		

Analysis Objectives & Expected Impact

Aligning technical and business goals to reduce churn and maximize revenue

Technical Objective

Predict customer churn using advanced ML models and identify key drivers influencing churn.

Expected Impact

Enable proactive retention strategies targeting high LTV customers and maximize revenue through early intervention.



Business Objective

Reduce churn rates and protect as well as optimize revenue streams.

Dataset Processing & Preparation

Overview of data flow, dataset metrics, and key preprocessing steps for churn analysis



Raw data flows through **Cleaning, Encoding, and Feature Engineering** to become model-ready.



Dataset has 7,043 customers, 20 features including demographics and services; churn rate is **26.6%**.



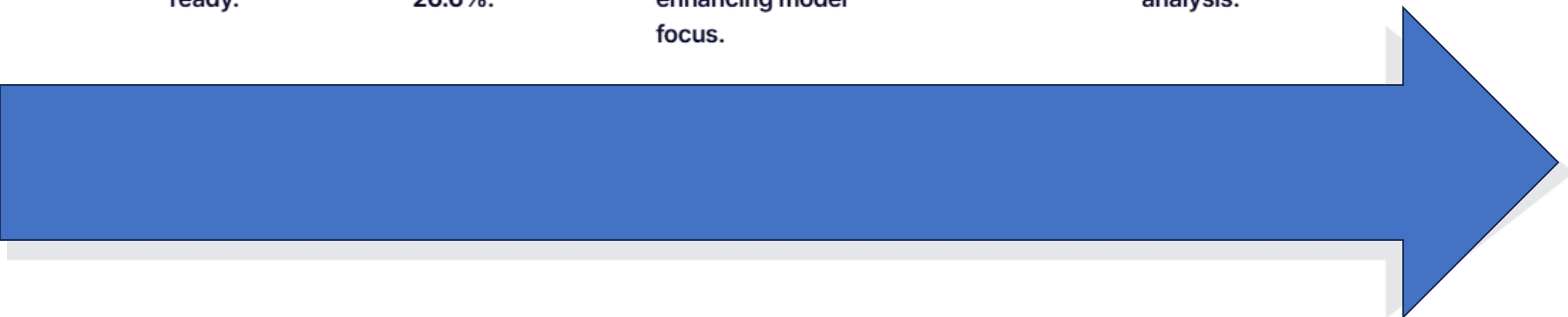
Excluded **CustomerID** to remove non-informative identifiers from the dataset, enhancing model focus.



Converted **TotalCharges** to numeric and imputed missing values to ensure data consistency.



Excluded 11 customers with zero tenure to improve dataset quality and reliability for analysis.



Model Performance & Comparison

Evaluation of multiple ML models for churn prediction with key performance metrics and recommendations

Model	Accuracy	Precision	Recall	F1-Score	Notes
KNN	77.6%	0.59	0.52	0.55	Baseline, low recall
SVM	80.8%	0.69	0.50	0.58	Good overall, recall needs improvement
Logistic Regression	80.9%	0.66	0.58	0.62	Interpretable, moderate recall
Decision Tree	72.4%	0.48	0.52	0.50	Overfitting issues
Random Forest	81.4%	0.71	0.51	0.59	Balanced, strong overall
AdaBoost	81.3%	0.68	0.56	0.62	Robust ensemble
Gradient Boosting	80.8%	0.67	0.55	0.60	Similar to RF
Voting Ensemble	81.6%	0.68	0.57	0.62	Best overall model

High Risk vs Low Risk Customer Profiles

Contract type and service usage strongly influence churn risk

High-Risk Customer Attributes

Month-to-month contracts with 75% churn rate, fiber optic users, high monthly charges, new customers with low tenure, no tech support or online security

Service Usage Influence

Internet technology type and additional services like tech support and online security affect churn likelihood



Low-Risk Customer Attributes

Long-term contracts (1-2 years), DSL internet users, automated payment methods, customers with partners

Contract Type Impact

Month-to-month contracts correlate with high churn; long-term contracts reduce churn risk

Identify Top Features Driving Customer Churn

Explore the key factors impacting churn to optimize retention strategies effectively.



Short-term

Customers with **short-term contracts** have highest churn risk, showing contract length matters.



High Charges

Higher monthly fees lead to dissatisfaction and increased churn rates.



New Users

New customers with short tenure are more likely to churn, needing early support.



Fiber Optic

Fiber optic users have higher churn, showing service quality impacts retention.



E-Check

Paying via **electronic check** links to higher churn, possibly due to convenience issues.



No Support

Lack of **tech support** increases churn, highlighting support's importance.



No Security

Missing **online security** features drives customers away, impacting trust.



Paperless

Paperless billing affects churn, reflecting convenience and eco preferences.



Seniors

Senior customers show unique churn patterns needing tailored retention.



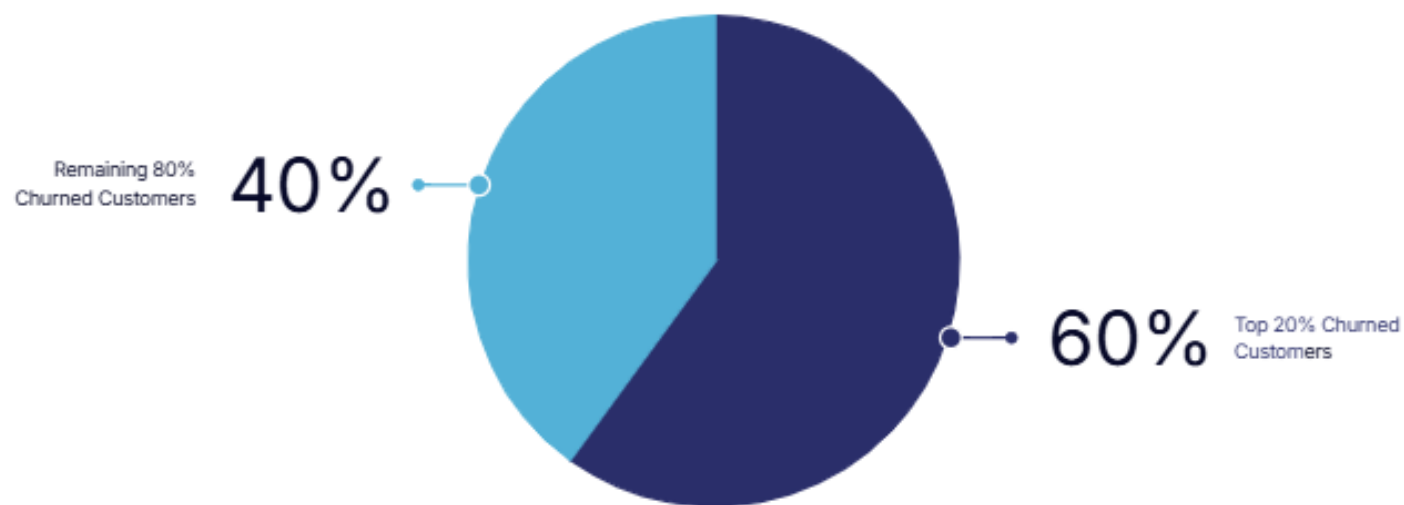
Partner

Partner status relates to churn rates, useful for personalized strategies.

Revenue Impact of Customer Churn

Breakdown of revenue loss by churn segment and retention focus on high-LTV customers

Annual Revenue Loss By Churn Segment



Strategic Recommendations for Churn Reduction

Data-driven approaches to reduce churn and enhance customer retention

1 Convert month-to-month contracts to longer terms

Shift customers from month-to-month plans to 1–2 year contracts to reduce churn by 15–20%.

2 Enhance fiber optic service quality and support

Improve fiber optic quality and add technical support and security features to increase customer satisfaction and Net Promoter Score (NPS).

3 Deploy machine learning to identify at-risk customers

Use predictive ML models to detect customers likely to churn, enabling retention efforts that can save 60% of at-risk revenue.

4 Personalize retention campaigns with predictive monitoring

Leverage predictive monitoring to tailor retention campaigns for higher effectiveness.

5 Bundle services to increase perceived value

Combine multiple services to enhance overall value perception and reduce customer churn.

6 Offer contract incentives and onboarding support

Provide incentives and onboarding assistance for new customers to boost retention and satisfaction.

Implementation Roadmap

Strategic phases to reduce churn and protect revenue effectively

Phase 1

Deploy Real-Time Churn Scoring

Launch a live churn scoring system to enable immediate identification of at-risk customers, facilitating timely retention actions.

Phase 2

Reduce Churn by 15-20%

Achieve a significant 15–20% reduction in churn through targeted retention efforts focused on high-risk customers, improving customer lifetime value.

Phase 3

Optimize Retention Strategy

Refine retention tactics with data-driven insights to maximize revenue protection and ensure measurable business impact over time.