**Customer Churn Analysis Report**

Introduction

This report analyses customer churn data from a telecommunications company. The dataset contains information about customers, including demographics, service subscriptions, and whether they churned (left the service). The goal is to identify patterns and factors that influence customer churn.

Key Findings

1. Data Overview

* The dataset contains 7,043 customer records with 21 features including:
  + Demographic information (gender, senior citizen status)
  + Service details (internet service, phone service, contract type)
  + Billing information (monthly charges, total charges)
  + Target variable: Churn (Yes/No)

2. Churn Distribution

* The dataset shows significant class imbalance:
  + 5,174 customers did not churn (73.4%)
  + 1,869 customers churned (26.6%)

3. Key Factors Influencing Churn

a) Contract Type

* Month-to-month contracts have the highest churn rate (42.7% of churners)
* One-year contracts show moderate churn (11.2%)
* Two-year contracts have the lowest churn (2.7%)

b) Internet Service

* Fiber optic customers churn at the highest rate (41.9%)
* DSL customers show moderate churn (19.1%)
* Customers without internet service have the lowest churn (7.6%)

c) Demographics

* Gender shows minimal difference in churn rates
* Senior citizens have a slightly higher churn rate (41.7%) compared to non-seniors (23.6%)

4. Billing Patterns

* Churned customers tend to have:
  + Higher monthly charges (average 74.44vs74.44*vs*61.27 for non-churners)
  + Lower tenure (average 17.8 months vs 37.6 months for non-churners)

Recommendations

1. **Retention Strategies for High-Risk Groups**:
   * Focus on customers with fiber optic service and month-to-month contracts
   * Consider loyalty programs or discounts for long-term contracts
2. **Service Improvements**:
   * Investigate why fiber optic customers churn at higher rates
   * Improve service quality or offer competitive pricing
3. **Customer Engagement**:
   * Implement proactive outreach to customers with 12-24 months tenure
   * Develop targeted retention offers before customers reach average churn tenure
4. **Further Analysis**:
   * Explore additional features like payment method and additional services
   * Build predictive models to identify at-risk customers earlier

Conclusion

The analysis reveals clear patterns in customer churn, particularly related to contract type, internet service, and tenure. By focusing retention efforts on the highest-risk segments, the company can potentially reduce churn rates and improve customer retention.