Customer Churn Analysis

Dashboard *https://youtu.be/mjfSs-BJG94*

Business problem

A telecom provider was experiencing high customer churn and needed to understand which customer segments were leaving, why they were leaving, and where to focus retention efforts first. The objective of this Power BI project was to build an end-to-end churn analysis solution that turns raw customer data into clear actions for reducing churn and protecting recurring revenue.

Data quality risks and fixes

- Removed ~5 duplicate *customerID* rows so each customer is counted once; without this, churn and revenue KPIs would be overstated and any retention strategy would be based on incorrect volumes.
- Standardised inconsistent text values (e.g., "month to month", "month-to-month") into "Month-To-Month" and applied Trim/Clean on all text fields, ensuring that segment-level analysis is not fragmented by hidden spacing or spelling variations.
- Corrected data types for tenure, *MonthlyCharges*, and *TotalCharges* to numeric formats; this avoided aggregation errors and allowed reliable calculation of lifetime value and churn-related revenue.
- For *TotalCharges*, converted to decimal and replaced nulls with 0 only when *MonthlyCharges* had a value (indicating a very new customer). This prevented DAX errors while still signalling incomplete billing history for new customers.
- Fixed logical contradictions:
  1. If *PhoneService* = "No" then *MultipleLines* was forced to "No"; this prevented impossible service combinations from distorting cross-sell and bundle insights.
  2. If *InternetService* = "No" then *StreamingTV* was set to "No"; this eliminated cases where customers appeared to stream without an internet connection, which would mislead content strategy decisions.

These steps ensured that every metric on the dashboard is grounded in consistent, trustworthy data, so stakeholders can make decisions with confidence.

Modelling and DAX (focused on decisions)

The model uses the telco churn table as a clean, analysis-ready fact table. Core DAX measures were created for:

- Total Customers, Churn Customers, Retained Customers and Churn Rate %, enabling quick tracking of overall performance.
- Average Monthly Charges, plus separate averages for churned vs retained customers to understand the revenue profile of at-risk customers.
- Calculated columns for:

  1. Tenure Band (0–6, 6–12, 12+ months) to show how churn evolves over the customer lifecycle.
  2. Customer Type (New vs Existing) to separate early-life churn issues from long-term satisfaction problems.
  3. Risk Type (High Risk vs Normal) based on month-to-month contracts and low tenure, giving the business a simple way to target high-risk customers.

These modelling choices directly support questions like "Which segment should we call first this month?" rather than just listing fields.

Dashboard design choices

- Single-page,
  KPI-first layout: top-row KPIs answer "How big is the churn problem?";
  Middle visuals explain "Where is it coming from?" (contract, tenure, security/backup);
  Bottom visuals show "What proportion of our base is retained vs lost?".

- Visuals are chosen by question:

    1. Column charts for churn rate by Tenure Band to highlight the steep drop in churn for customers who stay beyond 12 months.
    2. Bar charts for churn by Contract and sums of MonthlyCharges to rank which contract types and services drive the most lost revenue.
    3. Donut chart for retention overview to quickly communicate the share of churned vs active customers.

- Consistent theme and formatting: a dark background with contrasting colours for churned vs retained segments ensures KPIs are readable in meetings and screenshots.

Key quantified insights

- New, month-to-month customers are the critical pain point

    1. Overall churn rate is ~26.5% (1,869 of 7,043 customers).
    2. Customers in their first 0–6 months churn at above 50%, and the majority of churned customers are on Month-To-Month contracts.

Why it matters: if we focus on this narrow segment, small improvements in retention have a large impact on overall churn.

- Higher bills correlate with higher churn

    1. Churned customers pay on average around the mid-70s per month, while retained customers are closer to the low-60s.

Why it matters: a pricing and plan-fit review for high-charge, short-tenure, month-to-month customers can directly reduce churn without discounting the entire base.

- Lack of value-add services is a churn signal

    1. Customers without Online Security and Online Backup contribute disproportionately to churn and lost *MonthlyCharges*, compared with those who have these add-ons.

Why it matters: bundling these services at onboarding can both increase ARPU and reduce the likelihood of early churn.

Top 3 recommended initiatives

- Onboarding and save-offers for new month-to-month customers (0–6 months)

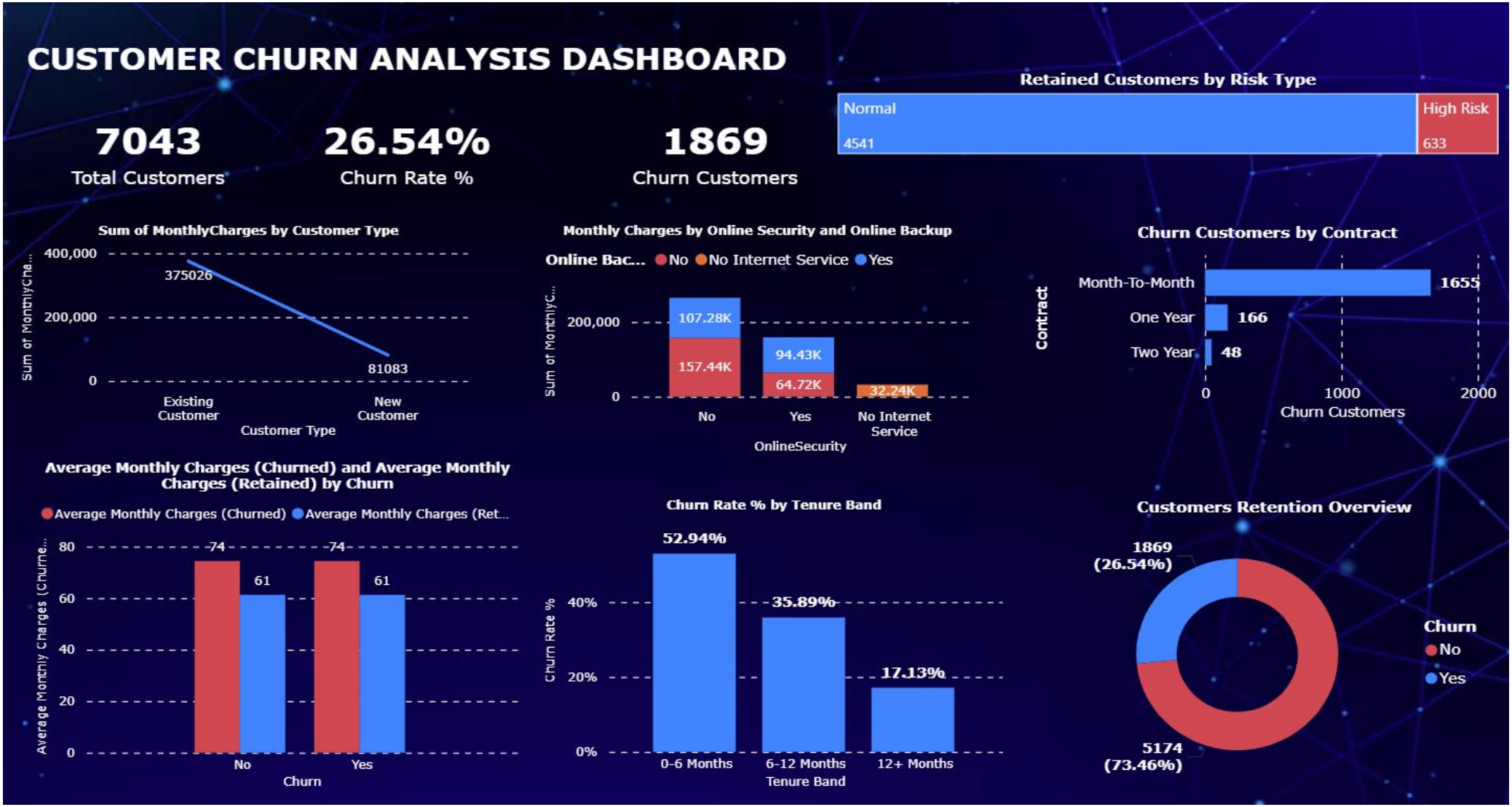
    1. Trigger a welcome journey, service usage nudges, and targeted save-offers for customers in High-Risk segment.
    2. Even a 5-point reduction in churn in this group would retain hundreds of customers annually and protect a significant portion of recurring revenue.

- Plan and pricing review for high-charge churn-prone customers

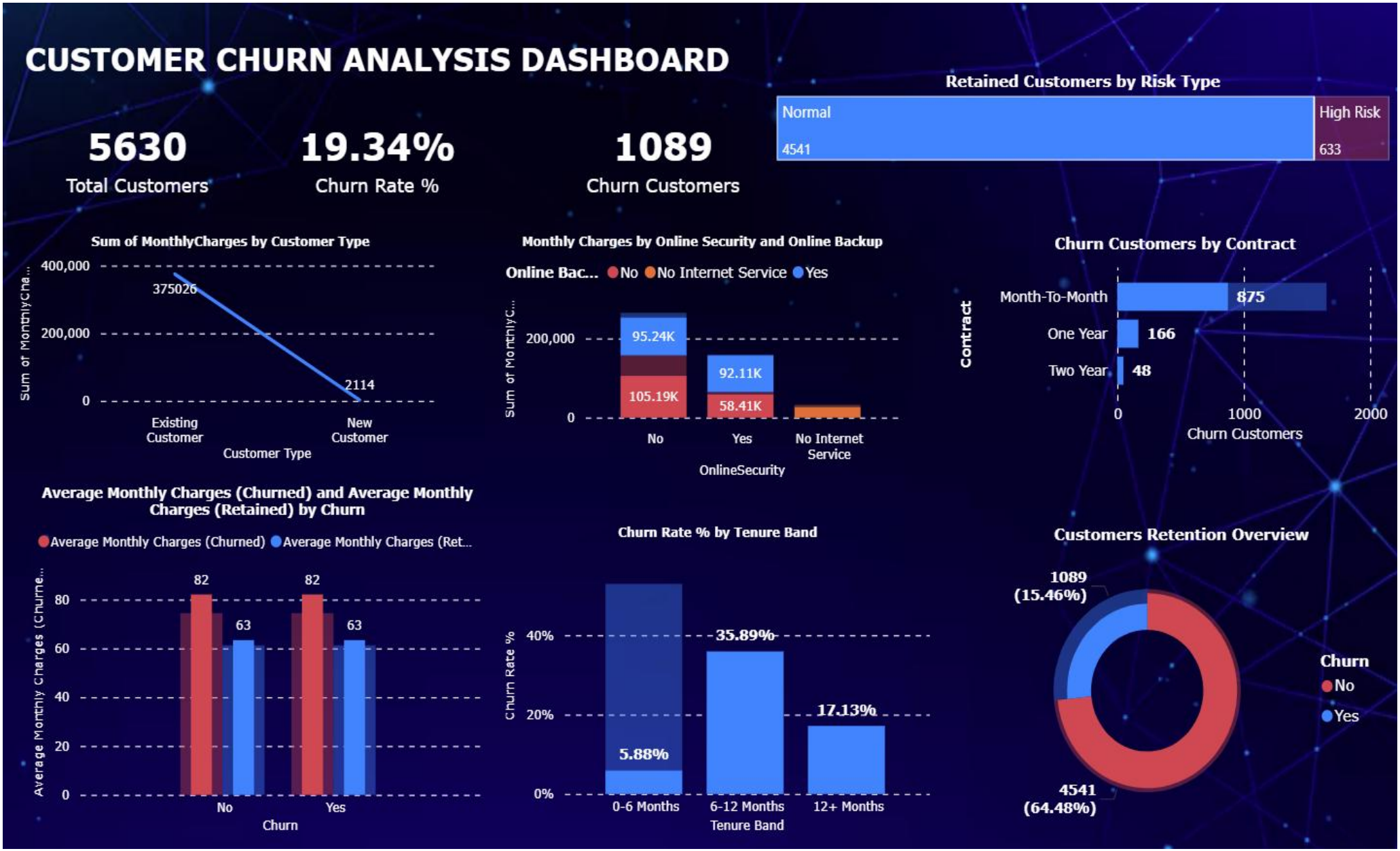
    1. Identify customers in the top *MonthlyCharges* quartile who are on Month-To-Month and within 12 months tenure; proactively offer plan optimisation or loyalty discounts.

- Bundle Online Security and Backup in acquisition campaigns

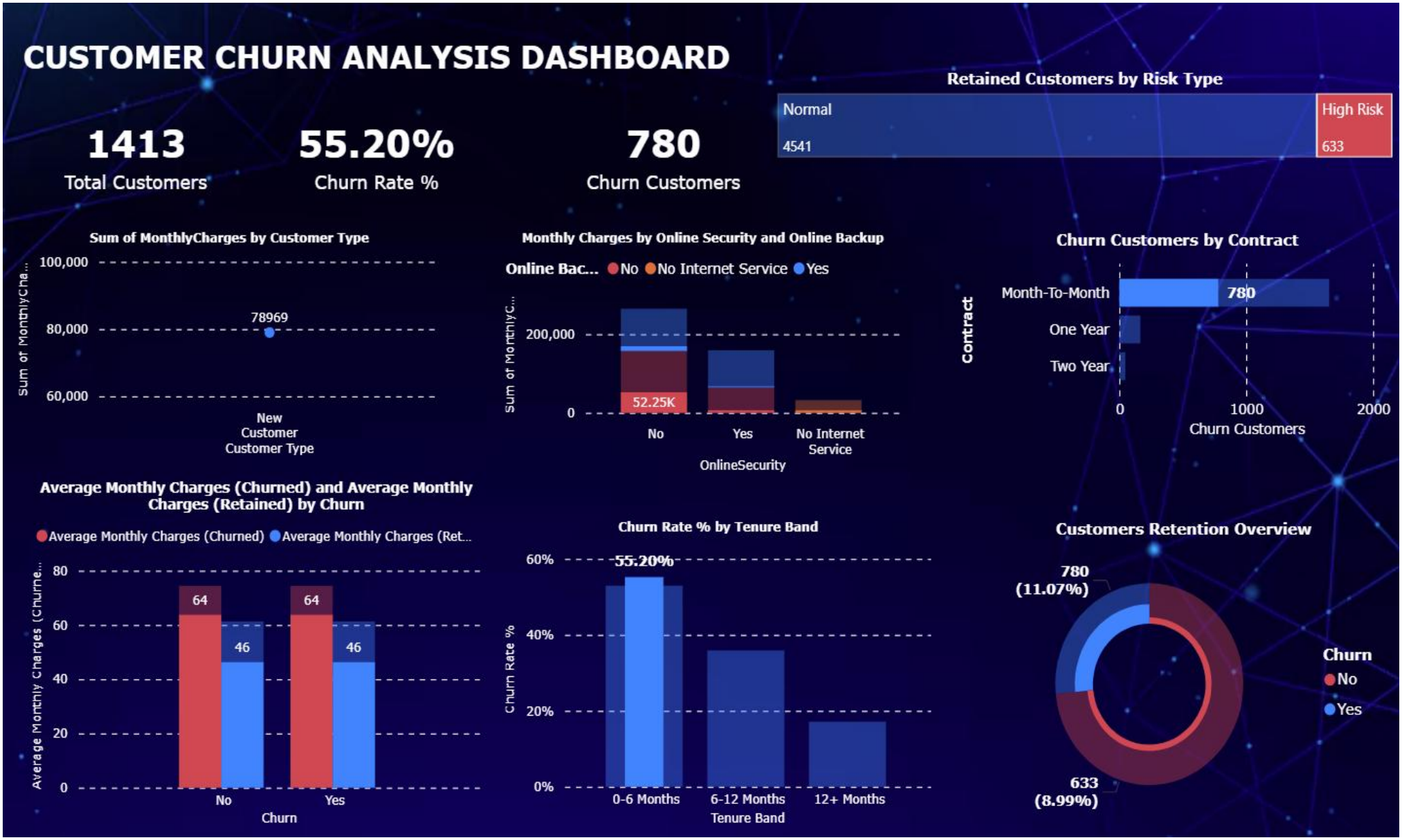
    1. Position these add-ons as part of "starter packs" for new customers; monitor churn differences between bundled and non-bundled cohorts on this dashboard going forward.


CUSTOMER CHURN ANALYSIS DASHBOARD
7043
Total Customers
26.54%
Churn Rate %
1869
Churn Customers
Retained Customers by Risk Type
Normal
4541
High Risk
633
Sum of MonthlyCharges by Customer Type
400,000
200,000
0
375026
81083
Existing Customer
New Customer
Customer Type
Monthly Charges by Online Security and Online Backup
Online Bac... No No Internet Service Yes
200,000
0
107.28K
157.44K
94.43K
64.72K
32.24K
No
Yes
No Internet Service
OnlineSecurity
Churn Customers by Contract
Contract
Month-To-Month
1655
One Year
166
Two Year
48
0
1000
2000
Churn Customers
Average Monthly Charges (Churned) and Average Monthly Charges (Retained) by Churn
Average Monthly Charges (Churned)
Average Monthly Charges (Ret...
80
60
40
20
0
74
61
74
61
No
Yes
Churn
Churn Rate % by Tenure Band
40%
20%
0%
52.94%
35.89%
17.13%
0-6 Months
6-12 Months
12+ Months
Tenure Band
Customers Retention Overview
1869
(26.54%)
5174
(73.46%)
Churn
No
Yes

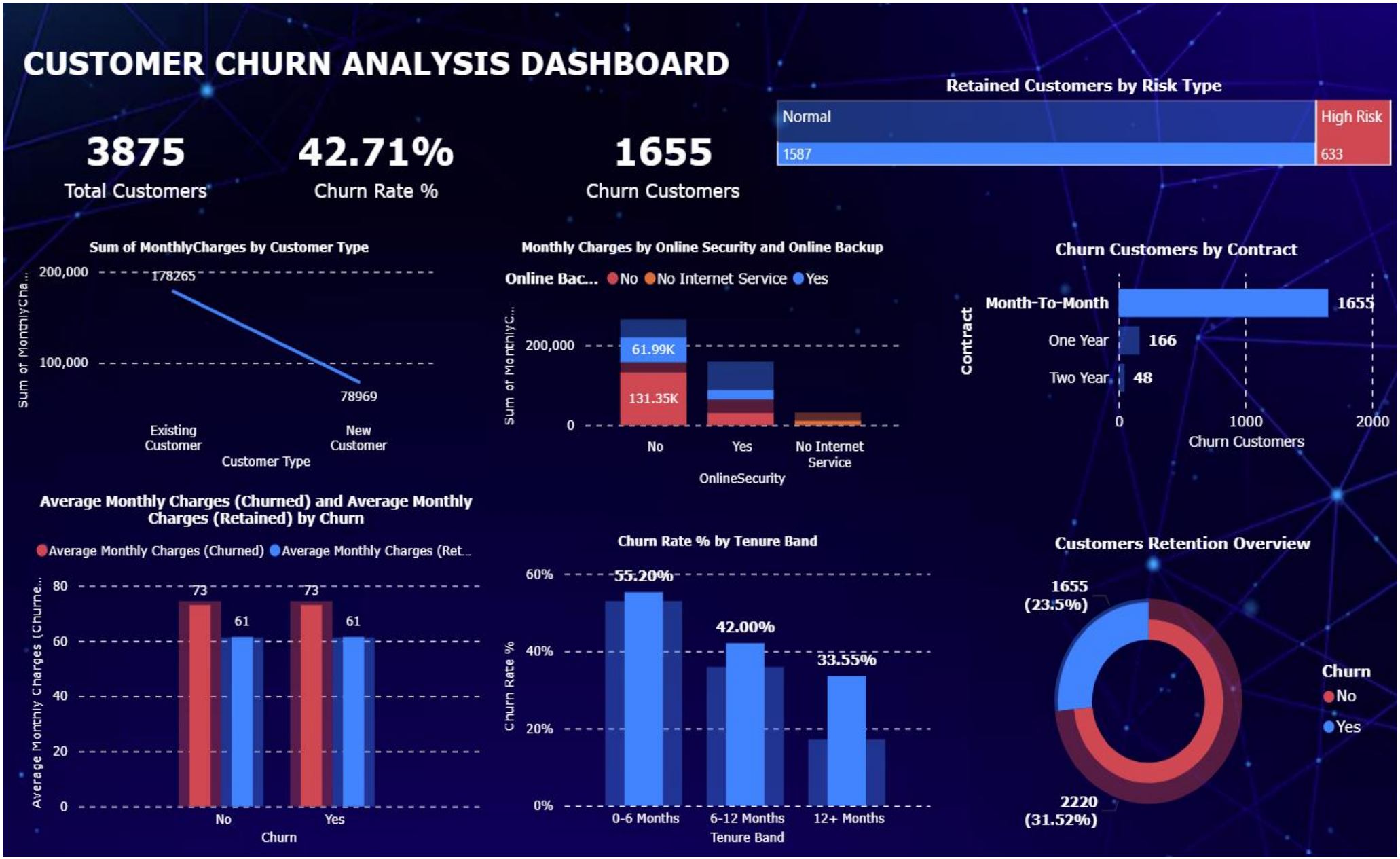
Dashboard



Filtered by – Retained Customers by Risk Type – "Normal"



Filtered by – Retained Customers by Risk Type – "High Risk"



Filtered by – Customer Retention – "Churn = No" and Churn Customers by Contract – "Month-To-Month"