

Speedy Telco Customer Churn Analysis

DATA INSIGHTS FOR SMARTER RETENTION STRATEGIES

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PORTFOLIO

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1 Self-

Introduction



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1

Experience

GTM (Go-To-Market)

OPPO Indonesia

Business Development

JD.ID

Project Manager

JD.ID

2

Education

Data Science Bootcamp

dibimbing.id

Bachelor of Accounting

University of Tarumanagara

2 Project Overview

This project analyzes customer churn for Speedy Telco, a fictional telecommunications company that provides home phone and internet services to 7,043 customers in California (Q3 data). The goal is to identify patterns and drivers behind customer attrition and provide actionable recommendations to improve retention.

The dataset includes customer demographics, subscription details, contract types, internet services, satisfaction scores, churn labels, and Customer Lifetime Value (CLTV) & etc.

3

Background

1

Customer churn is a significant challenge in the telecommunications industry, impacting long-term revenue and market share. Retaining existing customers is generally more cost-effective than acquiring new ones. Speedy Telco seeks to understand why customers leave and develop targeted retention strategies.

2

Identify key factors influencing customer churn.

3

Measure the churn rate and its financial impact.

4

Provide data-driven recommendations to reduce churn and improve customer satisfaction.

5

Data Understanding

1

Customer ID

A unique ID that identifies each customer.

3

Age

The customer's current age, in years, at the time the fiscal quarter ended.

5

City

The city of the customer's primary residence.

2

Gender

The customer's gender: Male, Female.

4

Country

The country of the customer's primary residence.

6

Latitude & Longitude

The latitude & Longitude of the customer's primary residence.

Dataset consist of combined 5 dataset with 26 Columns used and 7,043 Rows

[Link to Dataset](#)

5

Data Understanding

7

Phone Service

Indicates if the customer subscribes to home phone service with the company: Yes, No

9

Online Security

Indicates if the customer subscribes to an additional online security service provided by the company: Yes, No

11

Device Protection Plan

Indicates if the customer subscribes to an additional device protection plan: Yes, No

8

Internet Service

Indicates if the customer subscribes to Internet service with the company: No, DSL, Fiber Optic, Cable.

10

Online Backup

Indicates if the customer subscribes to an additional online backup service provided by the company: Yes, No

12

Premium Tech Support

Indicates if the customer subscribes to an additional technical support plan: Yes, No

5

Data Understanding

13

Streaming TV

Indicates if the customer uses their Internet service to stream television programming: **Yes, No**

15

Streaming Music

Indicates if the customer uses their Internet service to stream music: **Yes, No**

17

Monthly Charge

Indicates the customer's current total monthly charge for all their services from the company

14

Streaming Movies

Indicates if the customer uses their Internet service to stream movies: **Yes, No**

16

Contract

Indicates the customer's current contract type: **Month-to-Month, One Year, Two Year**

18

Total Charges

Indicates the customer's total charges calculated to date

5

Data Understanding

19

Streaming TV

Indicates if the customer uses their Internet service to stream television programming: **Yes, No**

21

Streaming Music

Indicates if the customer uses their Internet service to stream music: **Yes, No**

23

Monthly Charge

Indicates the customer's current total monthly charge for all their services from the company

20

Streaming Movies

Indicates if the customer uses their Internet service to stream movies: **Yes, No**

22

Contract

Indicates the customer's current contract type: **Month-to-Month, One Year, Two Year**

24

Total Charges

Indicates the customer's total charges calculated to date

5

Data Understanding

19

Total Refunds

Indicates total refunds given to date

21

Offer

Identifies last marketing offer accepted by this customer (**No Offer**, **Offer A-E**)

23

Customer Status

Status of the customer at quarter end:
Churned, Stayed, or Joined

20

Referred a Friend

Indicates if the customer has ever referred a friend or family member to this company: **Yes, No**

22

Satisfaction Score

A customer's overall satisfaction rating from **1 (Very Unsatisfied)** to **5 (Very Satisfied)**.

24

Churn Label

Yes = left company this quarter; No = remained with company

5

Data Understanding

25

Churn Value

1 = left company this quarter; 0 = remained with company

26

Churn Score

Value from 0-100 indicating likelihood to churn based on predictive IBM SPSS modeler.

Dataset consist of combined 5 dataset with 26 Columns used and 7,043 Rows

[Link to Dataset](#)

Tools Used



Python
Programming Language



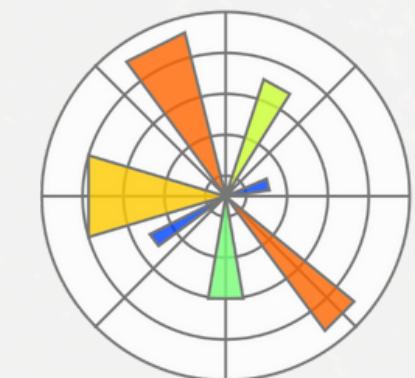
Google Collab
Data Cleaning
Data Manipulation
Data Analysis & Visualization



Power BI
Data Manipulation
Data Visualization
Dashboard Building



seaborn



matplotlib

6 Data Pre-Processing

1

Combine Dataframes

Combined all 5 dataframes, all data has the same total row, but different columns.

CustomerID as the Primary Key of every dataframes.

2

Checking Null-Values

Checks for null values for every data frames, found null values in **churn_reason**, **offer** & **internet_type** column.

3

Fill in Null-Values

Fill Null values in :

- **churn_reason** column from **NaN** → **Not Churned**
- **offer** column from **NaN** → **No Offer**
- **internet_type** column from **NaN** → **No Internet**

6 Data Pre-Processing

4

Checking Duplicates

No duplicates detected.

5

Data Transform

Data will be transform into numerical to find relationship between each data using correlation.

6

Save the clean data

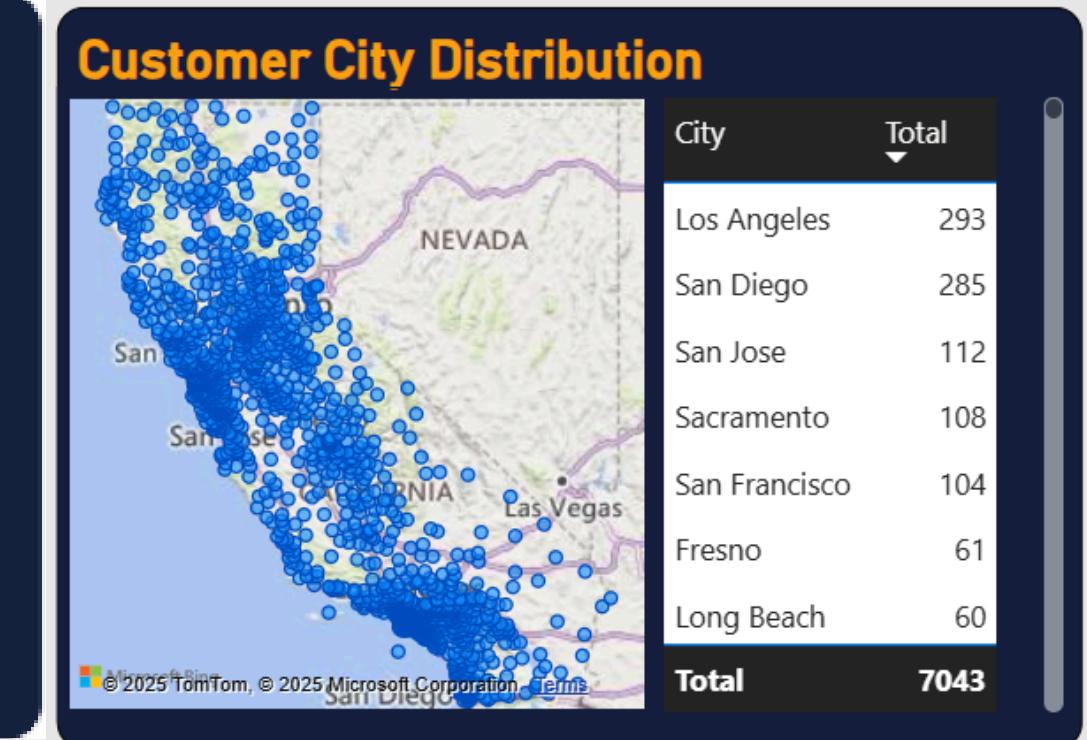
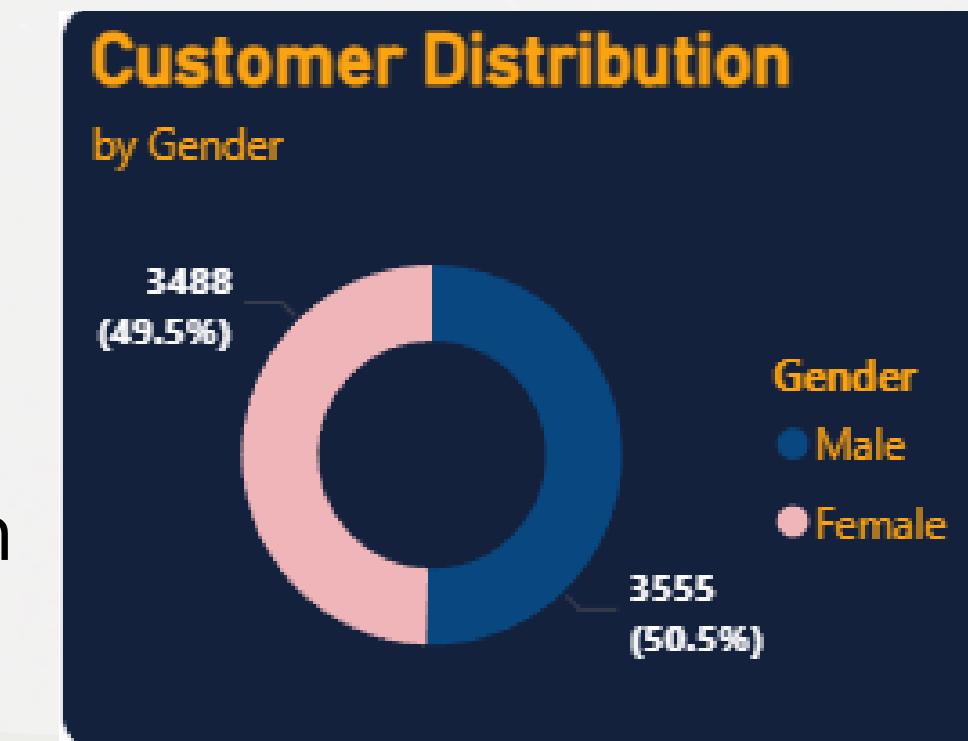
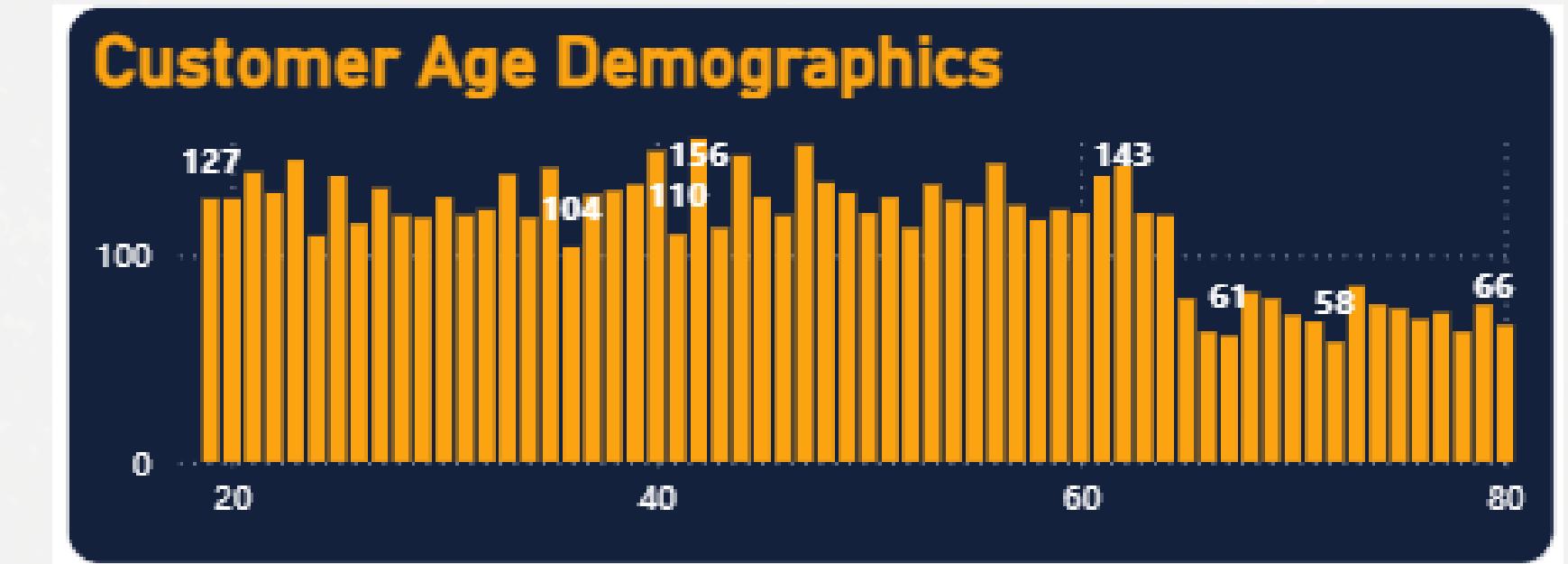
Save cleaned and manipulated data for dashboard building using PowerBI.

After data Cleaning and manipulation, new dataframe has 52 columns and 7043 rows

7 Data Observation

Demographics & Geographic Focus

- **Findings:**
 - Age distribution is spread but peaks between 20–60 years.
 - Gender distribution is balanced (Male 50.5%, Female 49.5%).
 - Major customer's cities: Los Angeles, San Diego, San Jose.
- **Implication:** Retention campaigns should be city focused rather than age or gender-targeted.

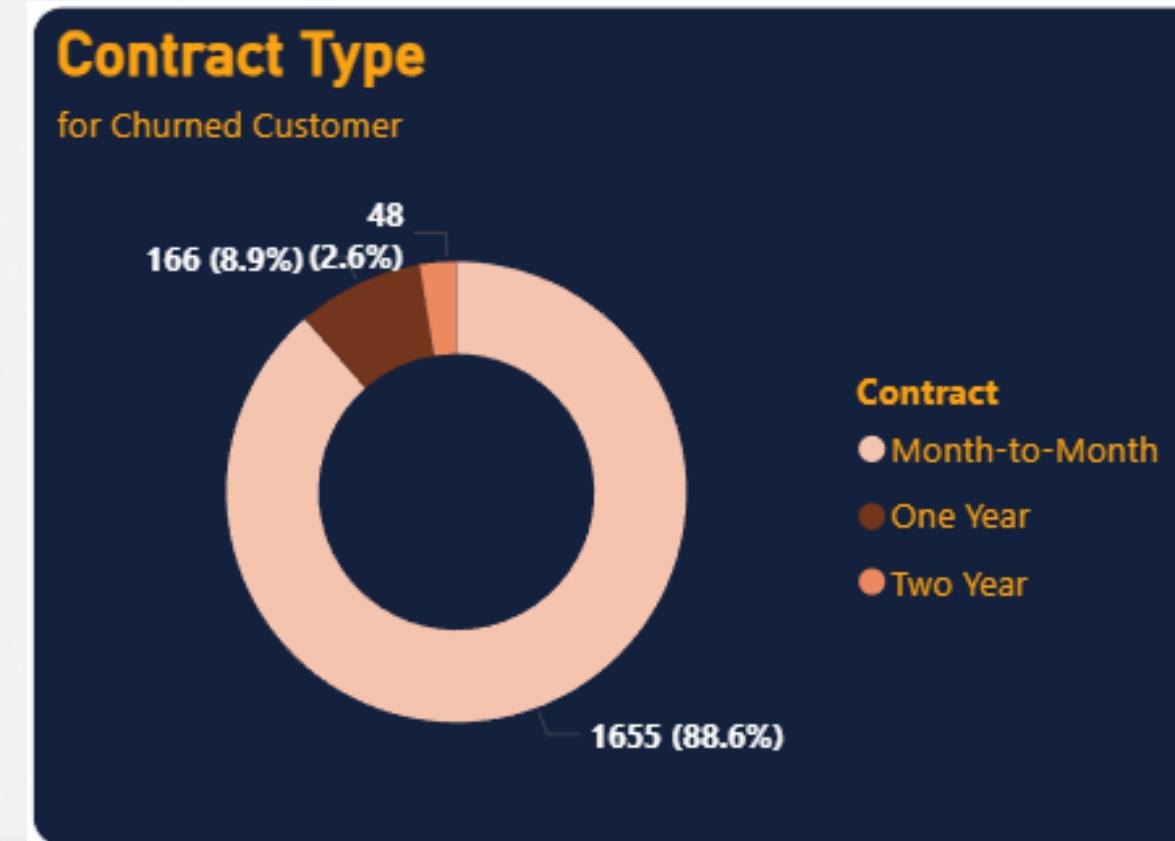
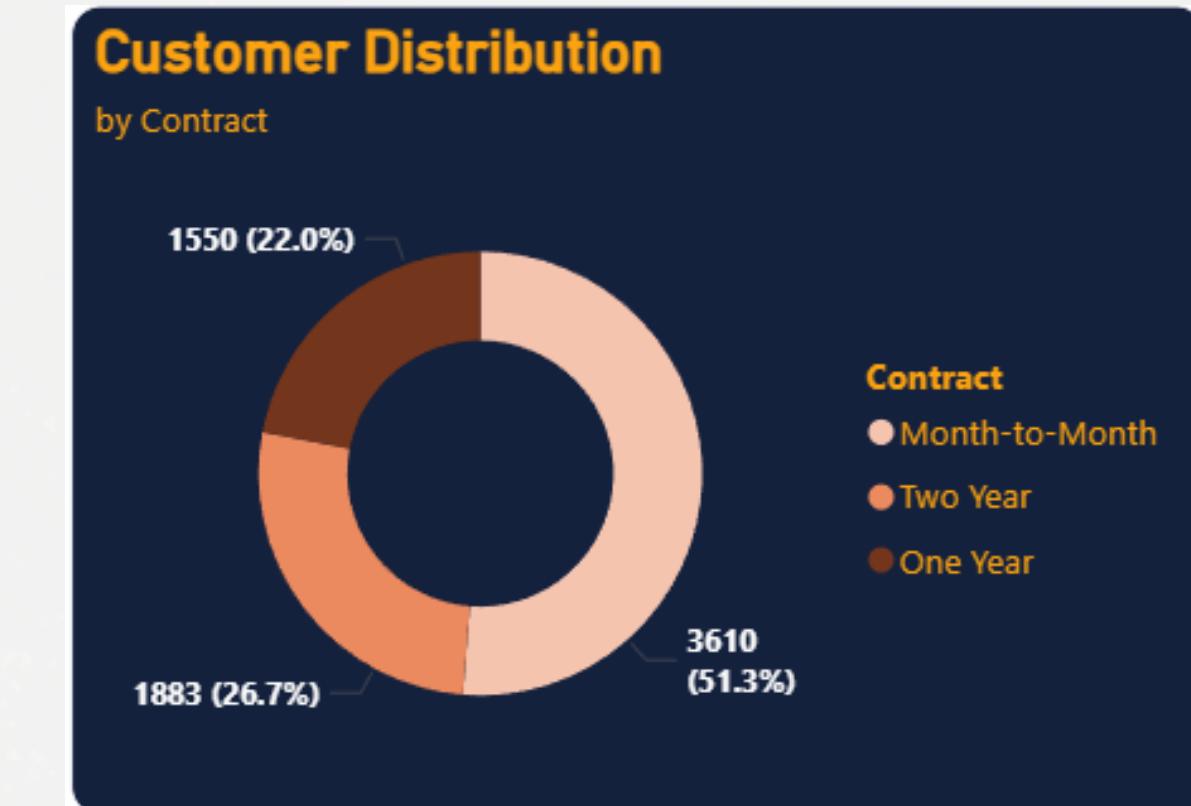


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Data Observation

Contract Type & Churn Risk

- **Findings:**
 - Month-to-Month contracts dominate churn (88.6% of churned customers).
 - Long-term contracts (1-year and 2-year) have far lower churn rates could be possibly due to penalties for early termination or customer satisfaction with longer-term deals.
- **Implication:** Contract flexibility leads to higher churn risk.



7

Data Observation

Price Sensitivity to Churn

- **Findings:**
 - Churned customers pay an average of \$74/month, higher than the \$61/month for stayed customers.
 - Indicates that high charges may trigger dissatisfaction, especially if perceived value is low.
- **Implication:** Need to align pricing or value perception.

\$118.75

Maximum Monthly Charges

\$18.25

Minimum Monthly Charges

Average Monthly Charges

for Churned Customer

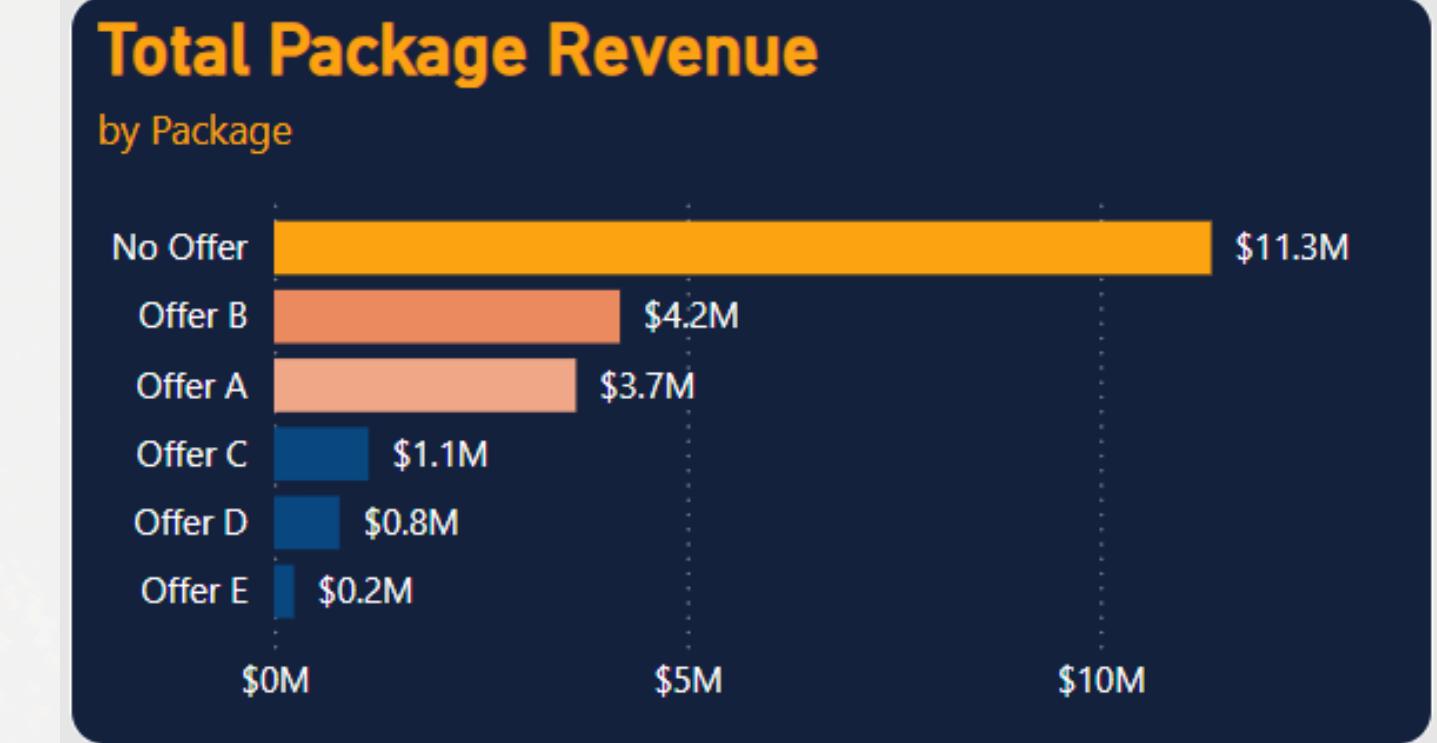


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Data Observation

Package Revenue vs Offers

- **Findings:**
 - “No Offer” generates the most revenue (\$11.3M).
 - Offer B Package perform well in attracting new customer, and generated \$4.2M revenue.
- **Implication:** Structured offers could improve loyalty if targeted strategically.



7

Data Observation

Customer Satisfaction & Referrals

- **Findings:**
 - Average satisfaction score is moderate (3.24/5).
 - Stayed customers have an even split between "Yes" and "No" for referrals, but churned customers mostly say "No" (66.61%).
- **Implication:** Lower satisfaction reduces advocacy and increases churn likelihood.

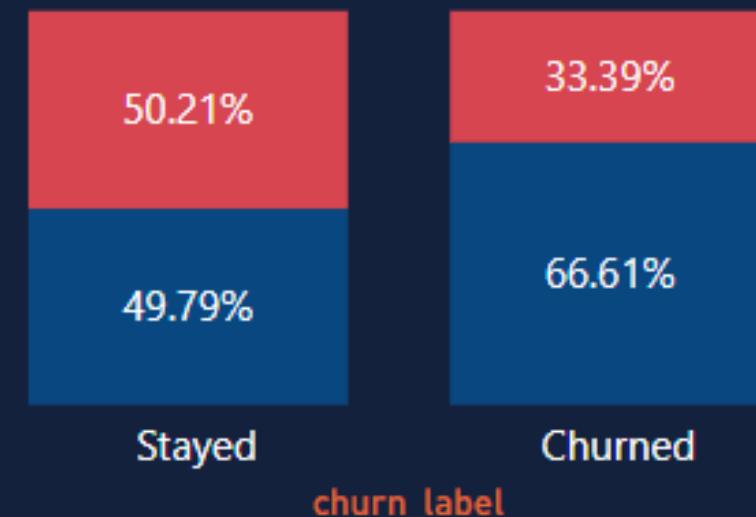
Average Satisfaction Score

3.24 out of 5

Customer Referral percentage

by Customer's Status

Refer to friend? ● No ● Yes



7

Data Observation

Satisfaction Score Factor

- **Findings:**
 - Customer would likely churn if the satisfaction score of the product is below 2.
 - Customer who's satisfaction score are above average are more likely to stay using our products.
- **Implication:** Possible product quality issues.

Churned Satisfaction Score

Average Satisfaction Score

1.74 out of 5

Stayed Satisfaction Score

Average Satisfaction Score

3.79 out of 5

7

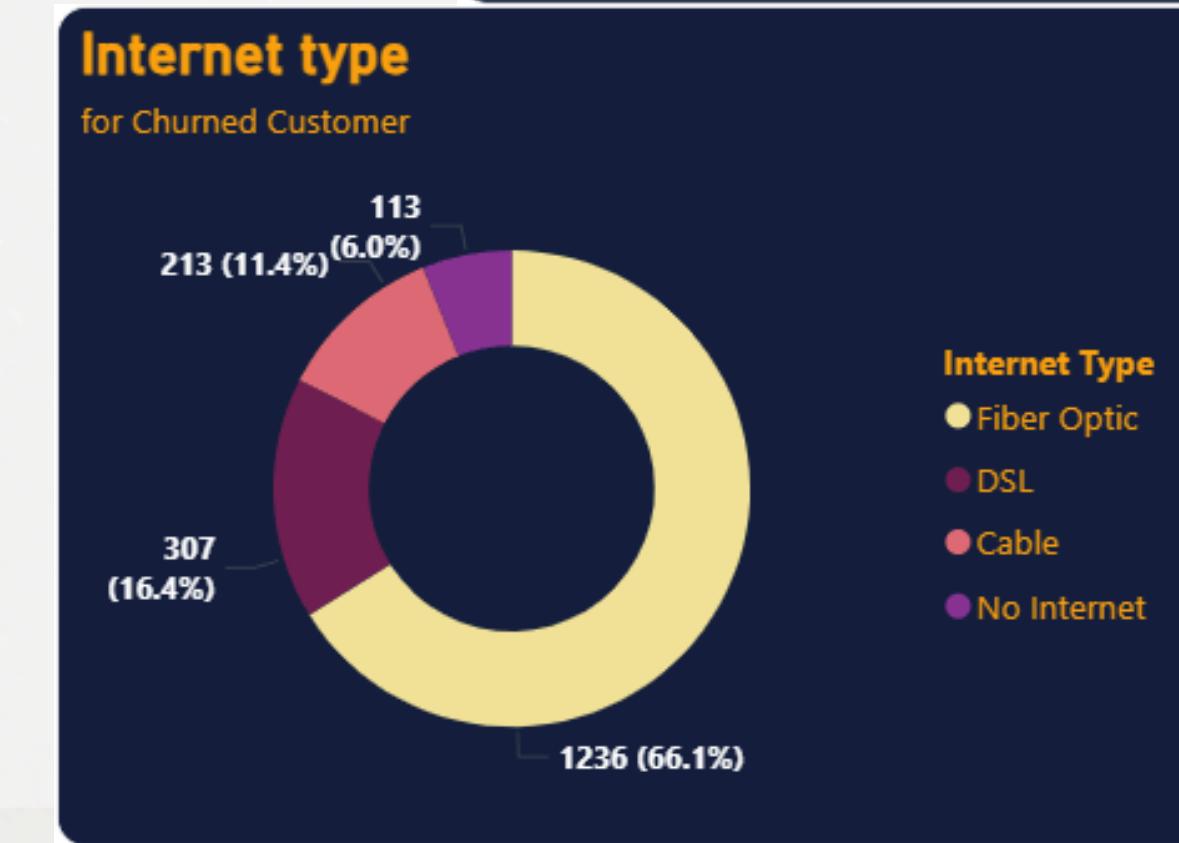
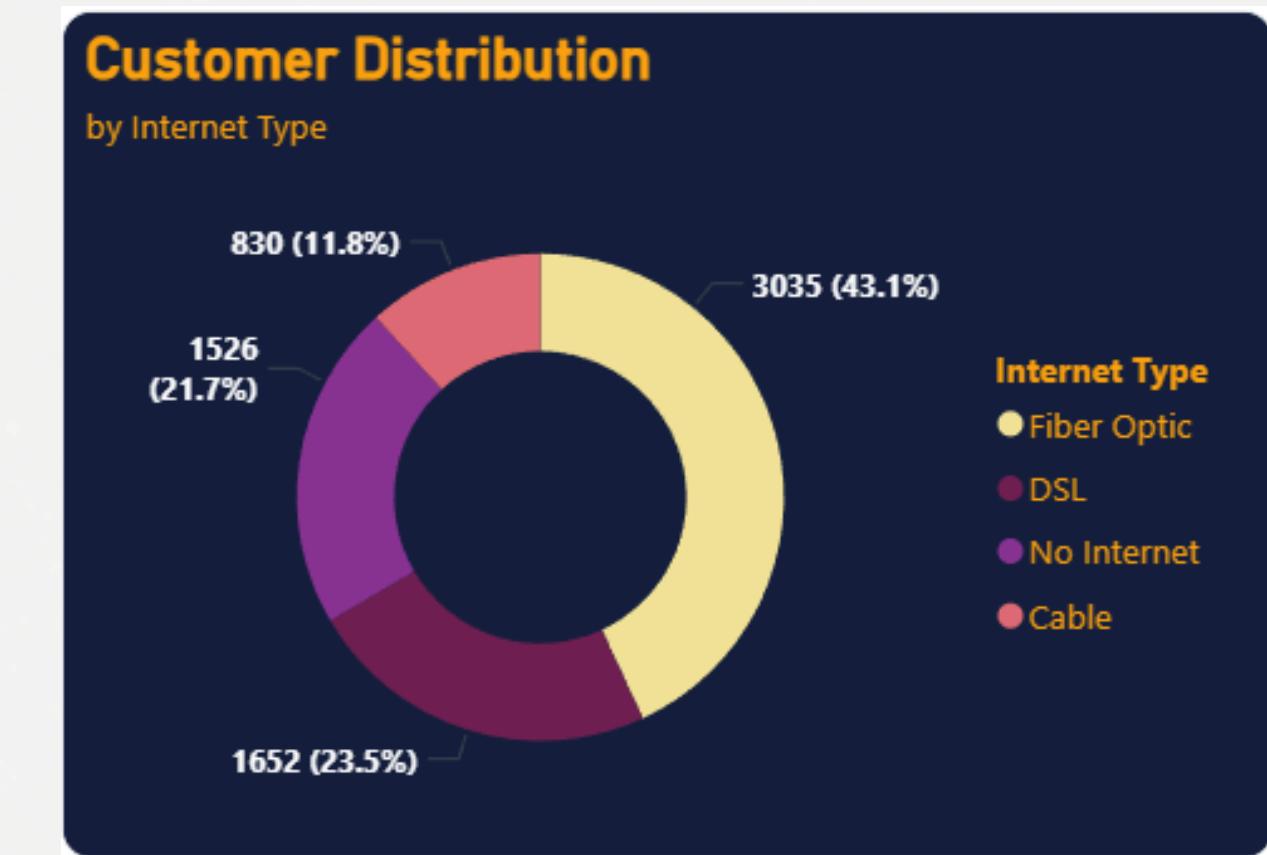
Data Observation

Internet Type & Service Quality Concerns

- **Findings:**

- Fiber Optic is the most popular (43.1% of total customers) but also makes up 66.1% of churned customers.
- DSL, Cable, and No Internet have lower churn rates in proportion to their share of the total base.

- **Implication:** There may be possible service quality or price dissatisfaction specific to Fiber Optic customers.



7

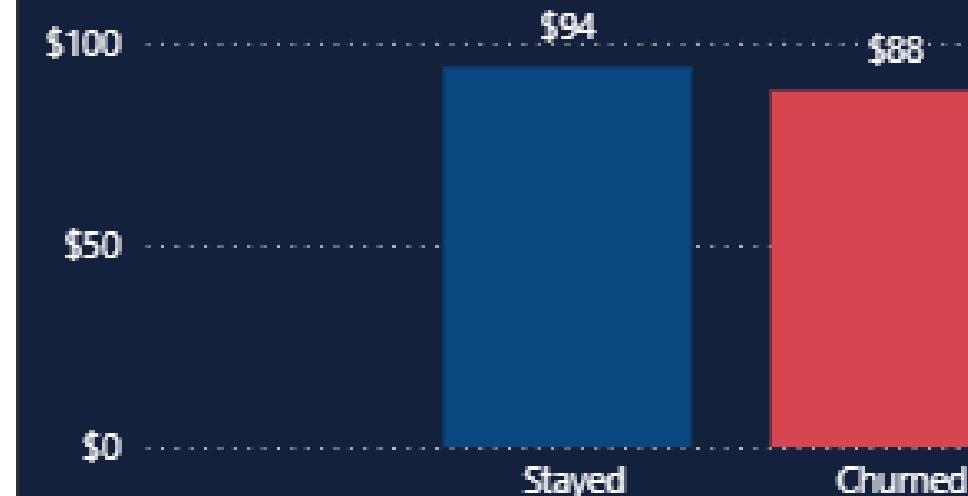
Data Observation

Price & Quality Correlation

- **Finding:**
 - Fiber Optic has the highest monthly charges for customers, but the relationship between churned and stayed customer are the opposite of what happened to other services
- **Implication:** There may be possible product quality dissatisfaction to Fiber Optic services.

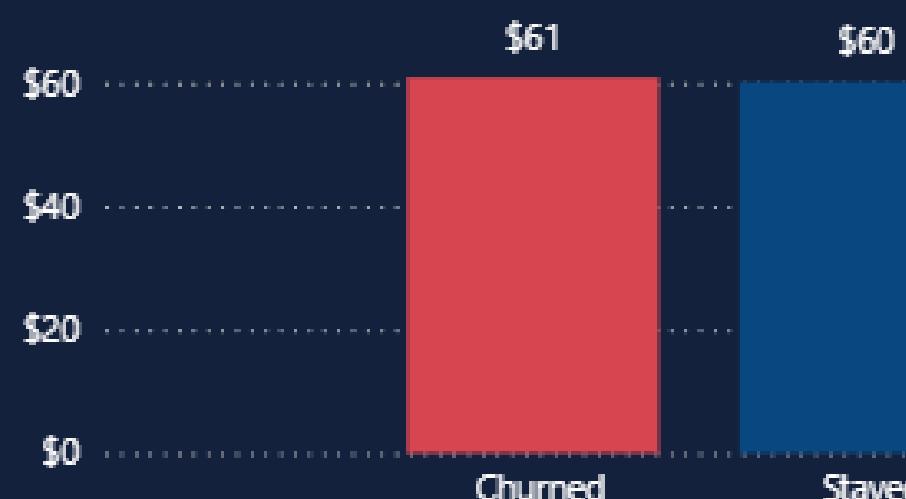
Average Monthly Charges

for Fiber Optic Customer



Average Monthly Charges

for Cable Customer



7

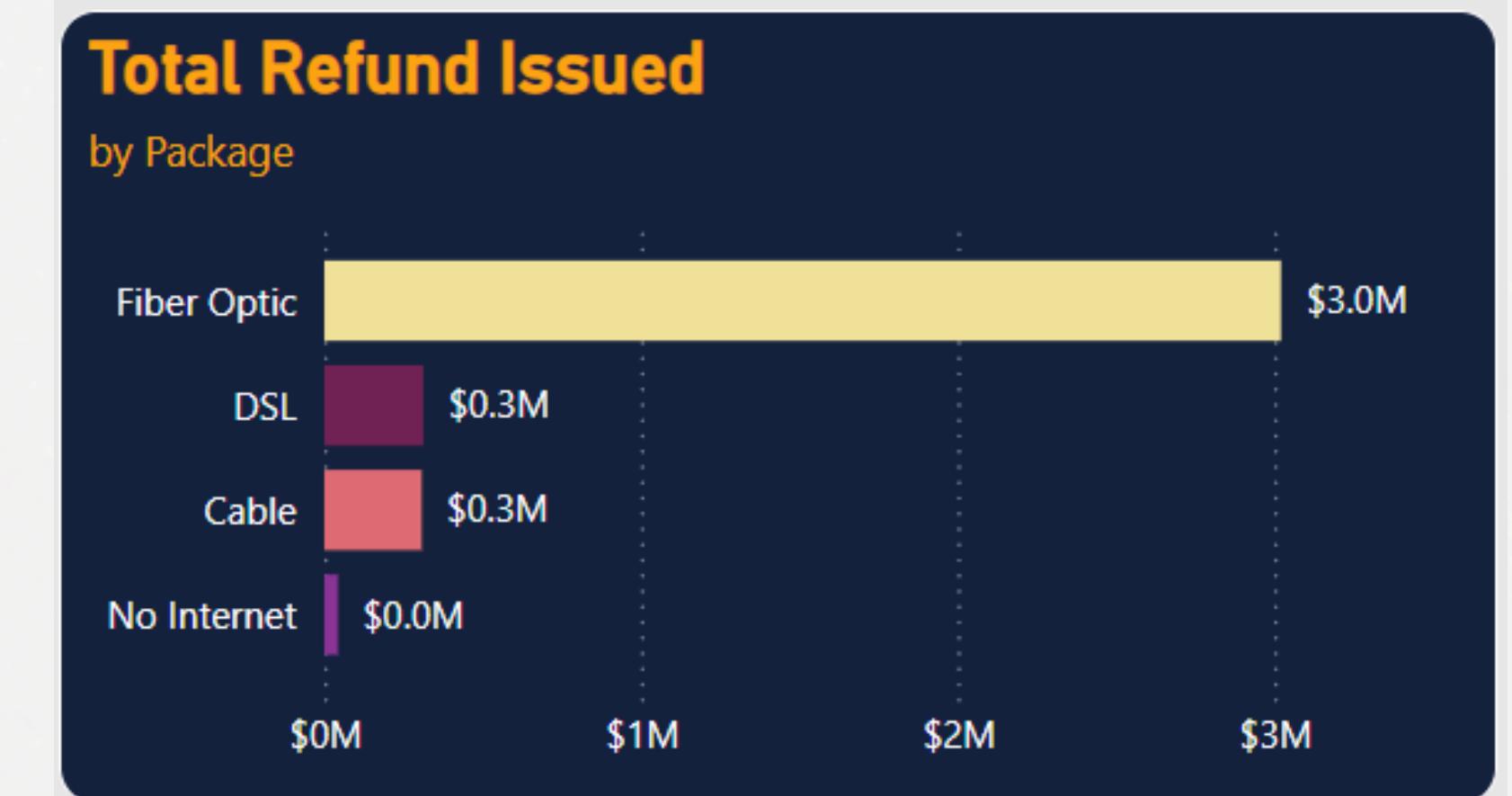
Data Observation

Refund Trends

- **Finding:**
 - Fiber Optic refunds are significantly higher (\$3M) compared to other types.
 - Fiber Optic contributes to 66% of Churned Customer.
 - Below average satisfaction score, which implies there's an issue with the Fiber Optic services.
- **Implication:** Service dissatisfaction or billing disputes for Fiber Optic customers could be contributing to churn.

Lost Customer
1236

Average Satisfaction Score
2.94 out of 5



8

Key Insights

1

Contract Type Matters

Month-to-month customers are more likely to churn compared to long-term contract holders.

3

Fiber Optic Churn Risk

While popular, Fiber Optic plans have the highest churn rate, indicating possible dissatisfaction or possible pricing concerns.

5

Package Revenue vs Offers

“No Offer” plans generate the highest revenue (\$11.3M) but might lack loyalty incentives. Offer B performs well in marketing resulting in new customers.

2

Service Cost Impact

Higher monthly charges correlate with higher churn rates.

4

Referral Connection

Customers who are willing to refer friends are significantly less likely to churn.

6

Refund Patterns

Fiber Optic refunds total \$3M, far higher than other services. Indicates possible service dissatisfaction, billing disputes, or installation issues.

Recommendations

1

Promote Long-Term Contracts

Offer incentives or discounts for 1-year and 2-year contracts to improve retention.

3

Target High-Charge Customers

Provide tailored discounts or loyalty programs for customers with above average charges.

5

Optimize Package Strategy

Expand successful packages like Offer B to more customers and add incentives to “No Offer” customers to increase loyalty without heavily discounting revenue.

2

Review Fiber Optic Plans

Reassess pricing, speed consistency, and customer support for Fiber Optic users.

4

Increase Referral Engagement

Launch a referral rewards program to leverage satisfied customers for retention.

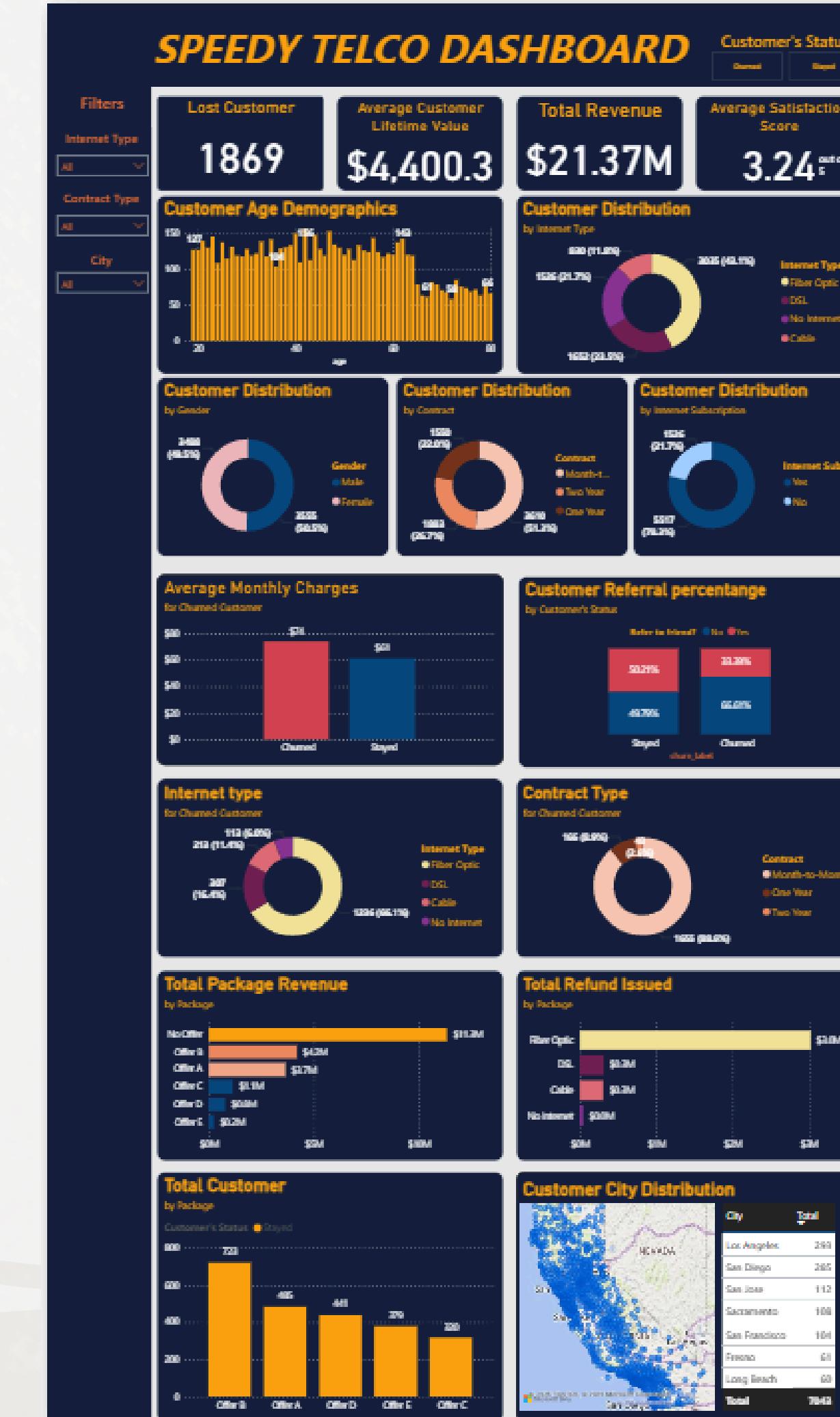
6

Product Quality Issues

Improve product quality checks and services, especially for Fiber Optic customers.

Full Dashboard

9



Appendix

DATASET

[KAGGLE](#)

DATA PROCESSING

[GOOGLE COLLAB](#)

DASHBOARD

[POWERBI](#)

CONNECT WITH ME

[LINKEDIN](#)

The End

THANK YOU FOR LISTENING