

Meet Our Team



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INTRODUCTION

Telecom Company

Churn Customers

Best Solutions

Content

Introduction

Database Design

DWH Design

ETL Process

Analyzing data

Database Design

Collecting and understanding data ensures a clear foundation. Cleaning enhances accuracy, and an ERD organizes the structure. Creating SQL tables and transferring data supports efficient analysis and decision-making.

01

Data Collection

02

Understanding the data

03

Data Cleaning

04

Design entity relation diagram (ERD)

05

Modeling and Mapping

06

Creating Data Base Using SQL

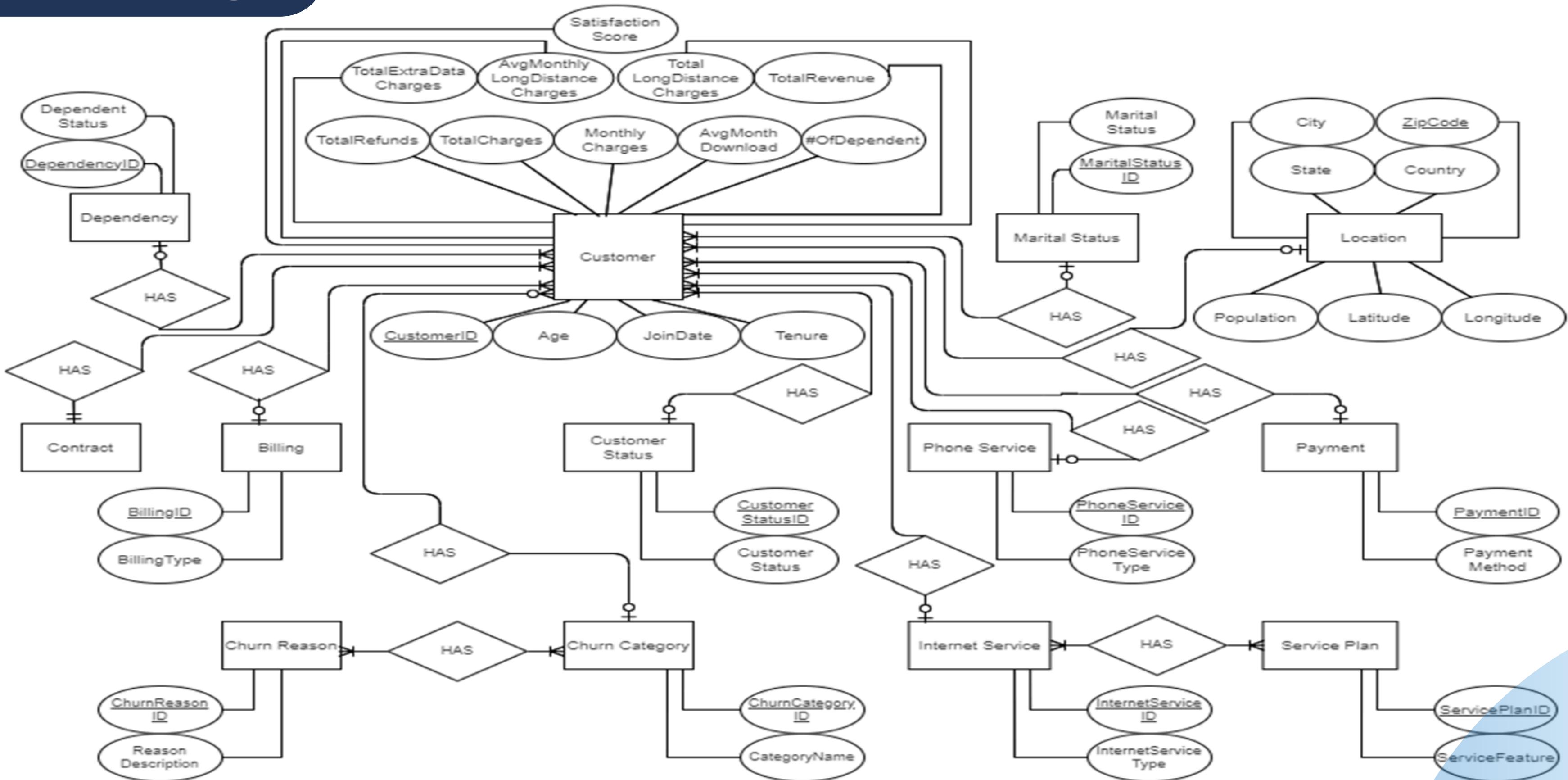
07

Transferring the data into SQL

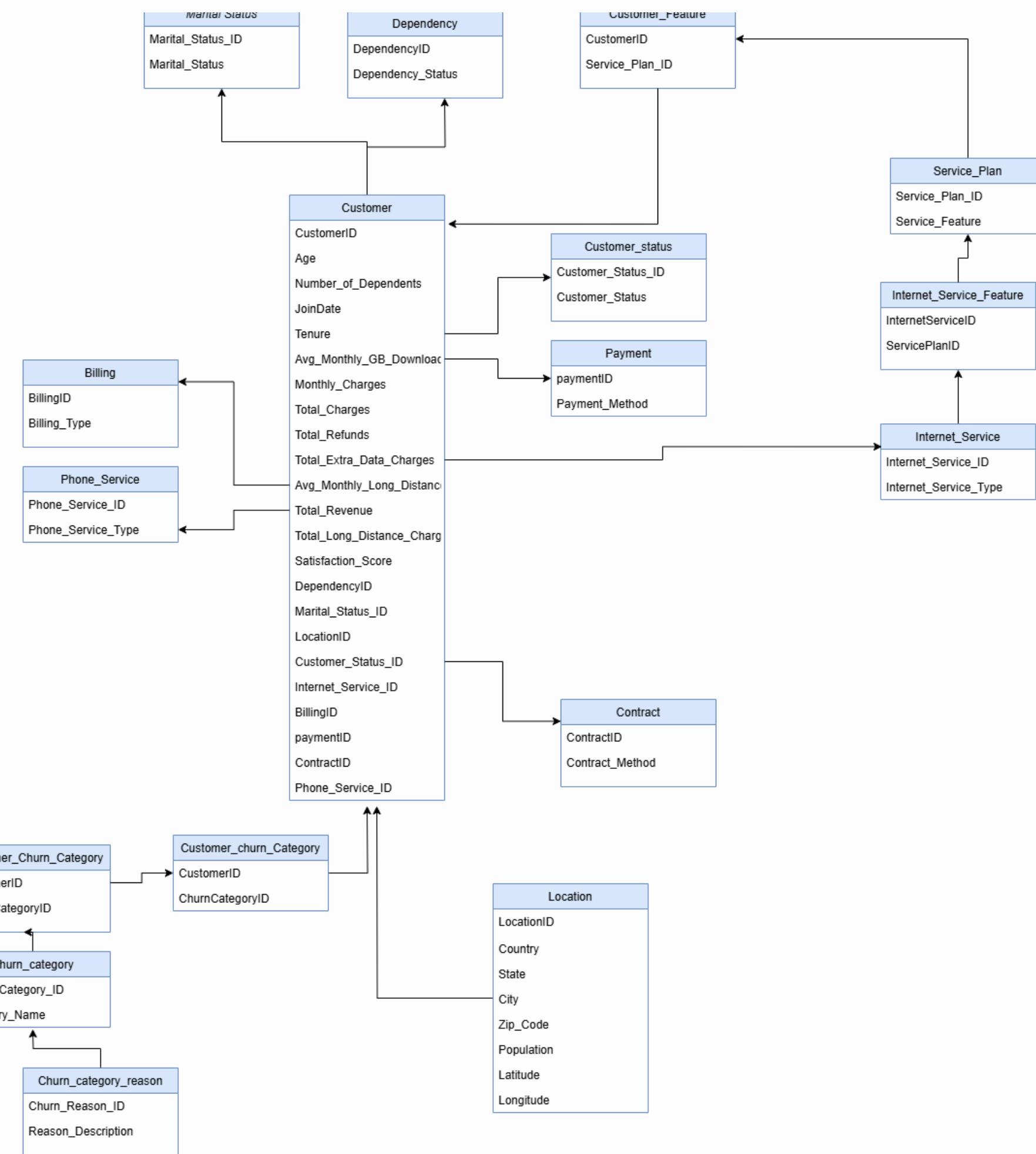
ERD



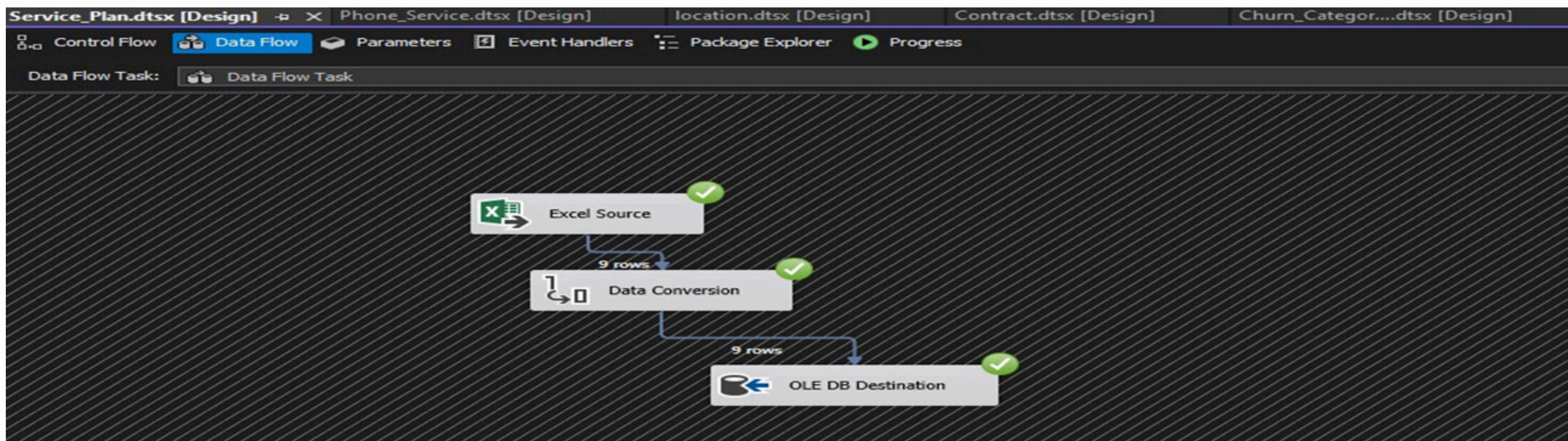
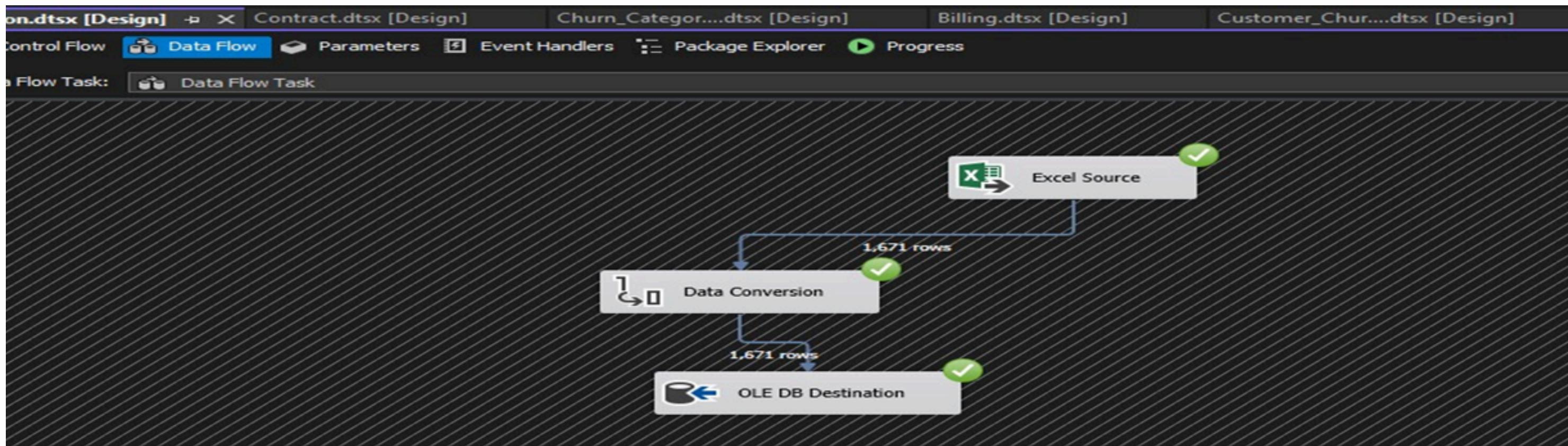
Telecom ERD



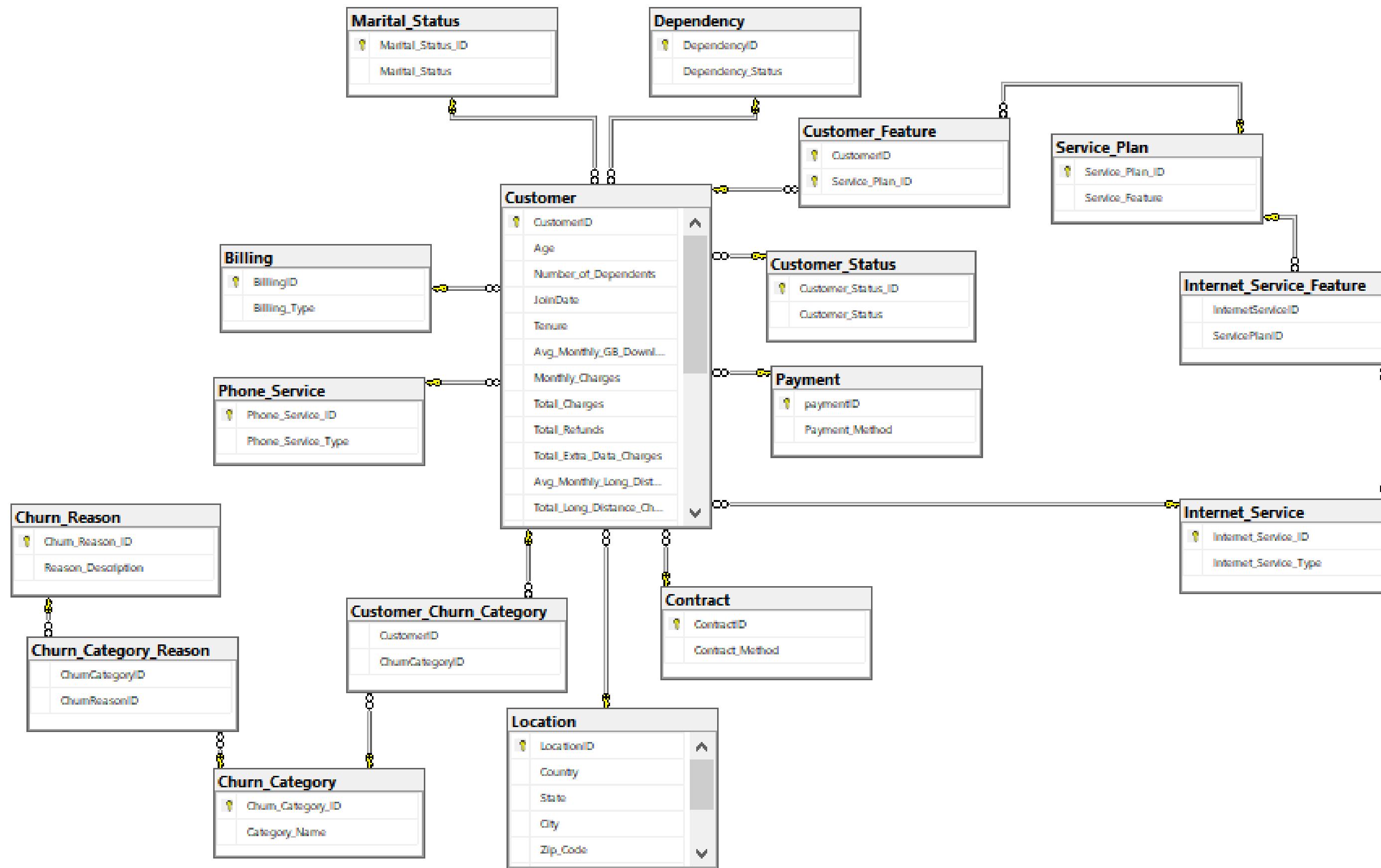
Mapping



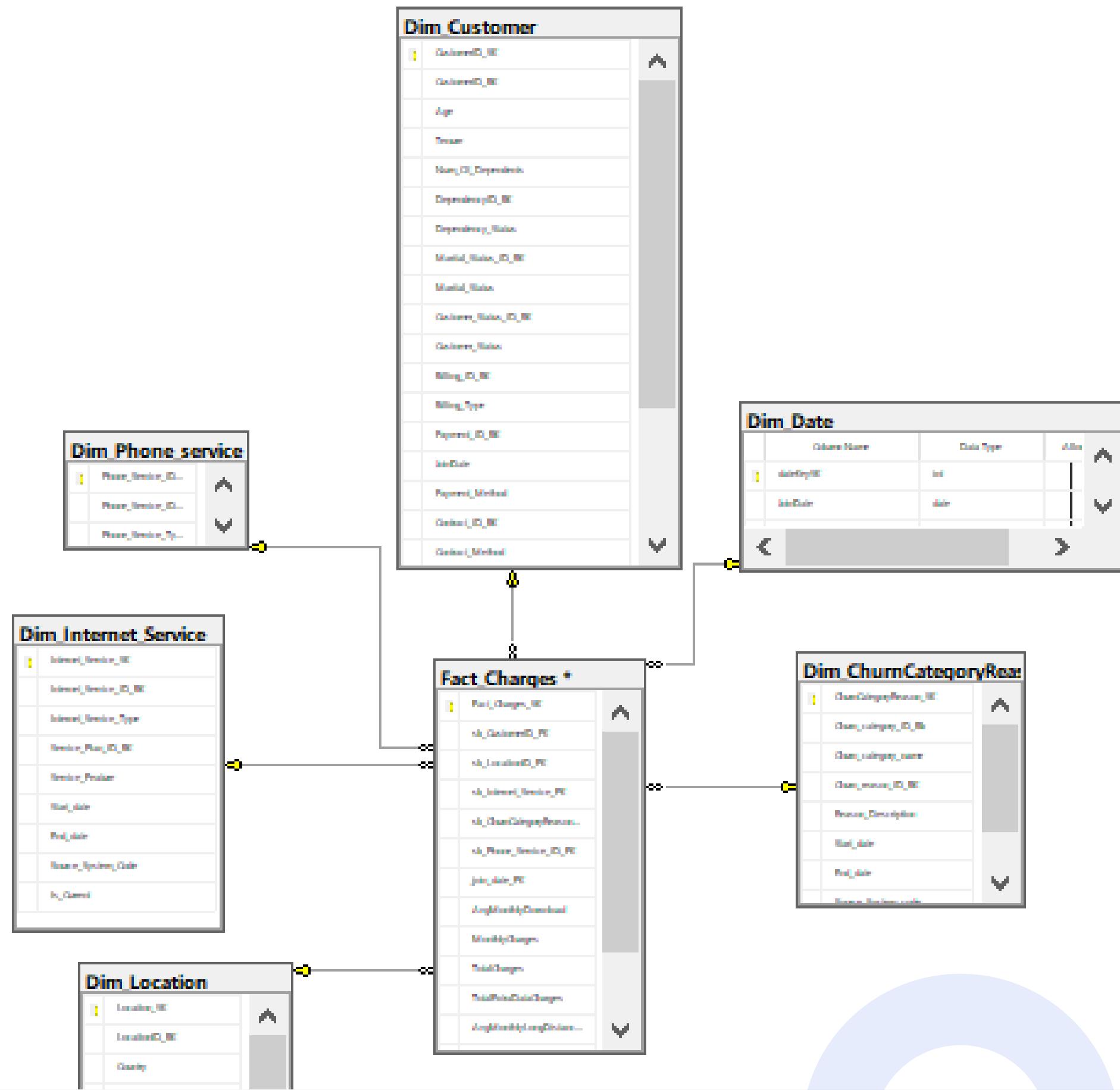
Transfer data to SQL



Database Diagram



DWH Diagram



Creating DWH using SQL

```
CREATE DATABASE TelecomDWH;
USE TelecomDWH;

CREATE TABLE DimCustomer (
    CustomerID INT PRIMARY KEY,
    CustomerName NVARCHAR(255),
    Gender CHAR(1),
    SeniorCitizen BIT,
    Partner BIT,
    Dependents BIT,
    Tenure INT
);

CREATE TABLE Dim_Phone_Service (
    PhoneServiceID INT PRIMARY KEY,
    PhoneServiceType NVARCHAR(255),
    MultipleLines BIT
);

CREATE TABLE Dim_Internet_Service (
    InternetServiceID INT PRIMARY KEY,
    InternetServiceType NVARCHAR(255),
    OnlineSecurity BIT,
    OnlineBackup BIT,
    DeviceProtection BIT,
    TechSupport BIT,
    StreamingTV BIT,
    StreamingMovies BIT
);

CREATE TABLE Dim_Location (
    LocationID INT PRIMARY KEY,
    City NVARCHAR(255),
    State NVARCHAR(255),
    Country NVARCHAR(255),
    ZipCode NVARCHAR(10)
);

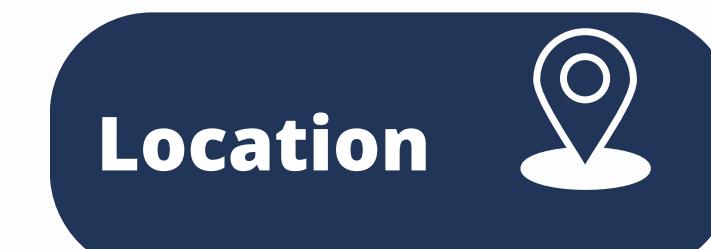
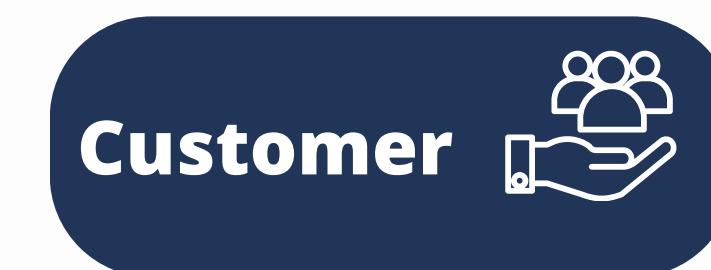
CREATE TABLE Dim_Date (
    DateID INT PRIMARY KEY,
    FullDate DATE,
    Year INT,
    Quarter INT,
    Month INT,
    Day INT,
    Weekday NVARCHAR(50)
);

CREATE TABLE Dim_ChurnCategoryReason (
    ChurnCategoryID INT PRIMARY KEY,
    ChurnCategory NVARCHAR(255),
    ChurnReason NVARCHAR(255)
);

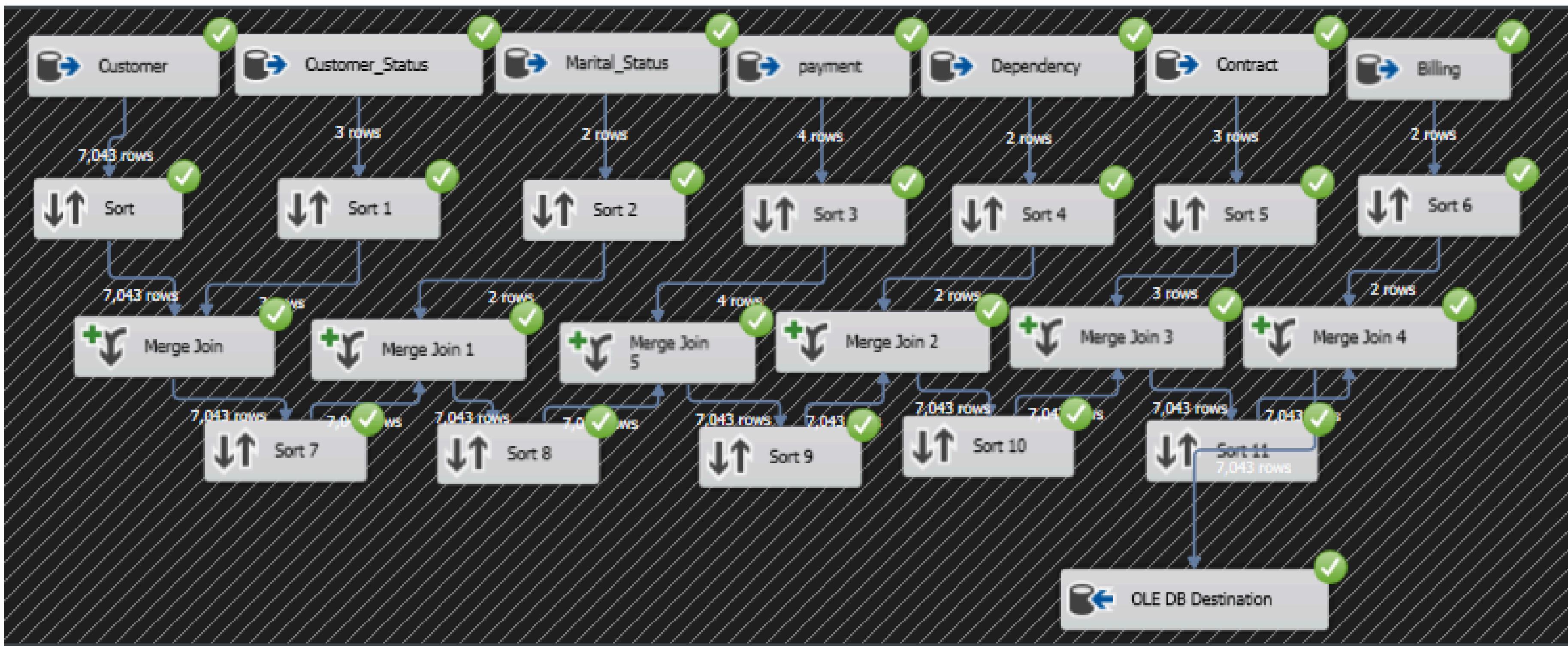
CREATE TABLE Fact_Charges (
    ChargeID INT PRIMARY KEY,
    CustomerID INT,
    DateID INT,
    PhoneServiceID INT,
    InternetServiceID INT,
    LocationID INT,
    ChurnCategoryID INT,
    MonthlyCharges DECIMAL(10, 2),
    TotalCharges DECIMAL(10, 2),
    FOREIGN KEY (CustomerID) REFERENCES DimCustomer(CustomerID),
    FOREIGN KEY (DateID) REFERENCES Dim_Date(DateID),
    FOREIGN KEY (PhoneServiceID) REFERENCES Dim_Phone_Service(PhoneServiceID),
    FOREIGN KEY (InternetServiceID) REFERENCES Dim_Internet_Service(InternetServiceID),
    FOREIGN KEY (LocationID) REFERENCES Dim_Location(LocationID),
    FOREIGN KEY (ChurnCategoryID) REFERENCES Dim_ChurnCategoryReason(ChurnCategoryID)
);
```

ETL Process Overview

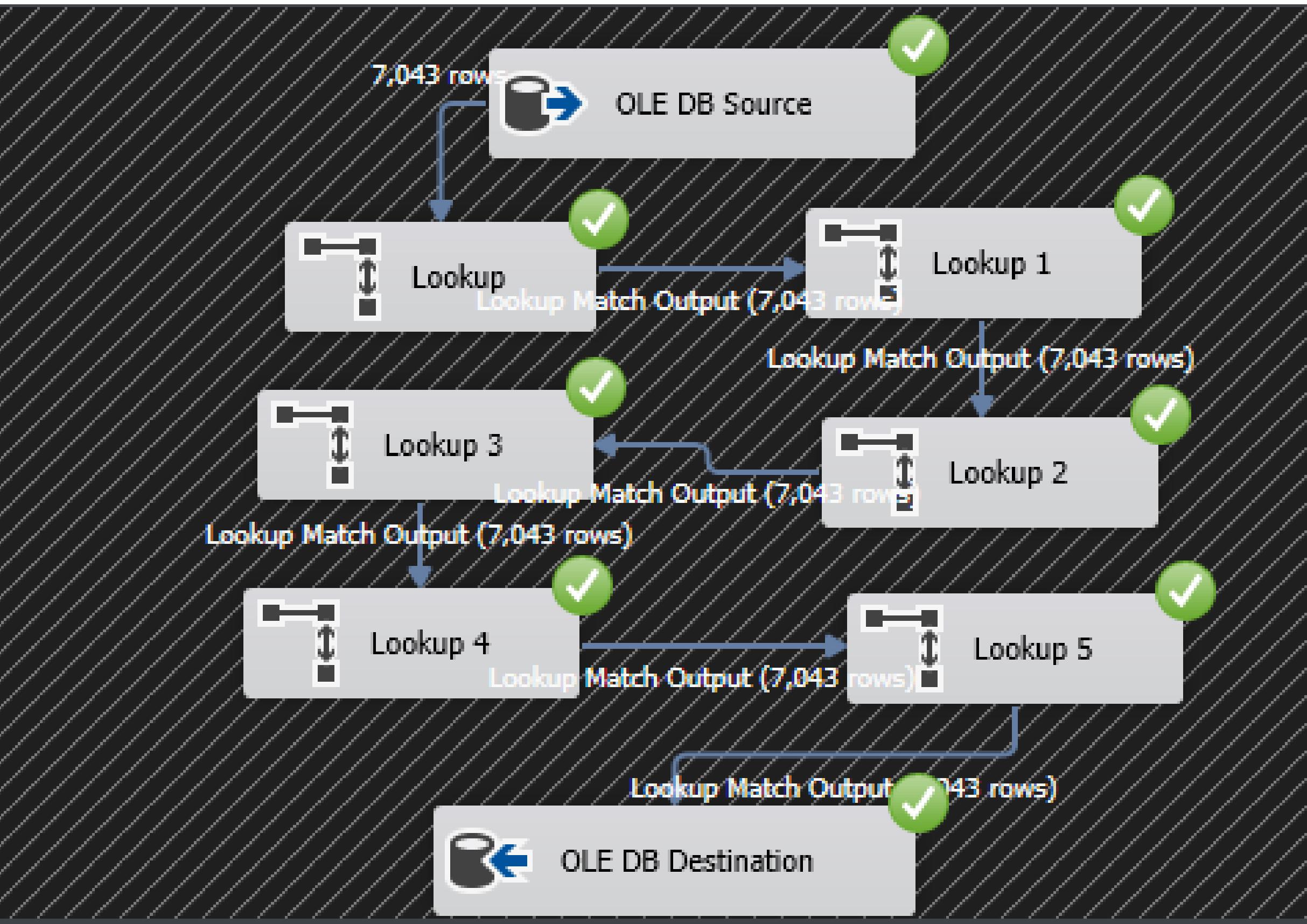
To facilitate the analysis of SK's customer churn data, an ETL (Extract, Transform, Load) process was implemented. This process transforms the data from Data Base into a structured SQL Server Data Warehouse (DWH). The following tables were created in the DWH to organize the data effectively:



ETL Process



ETL Process



ANALYZING DATA

**inspects, cleans, transforms, and
models data to extract insights
and support decision-making**



VISUALIZATION

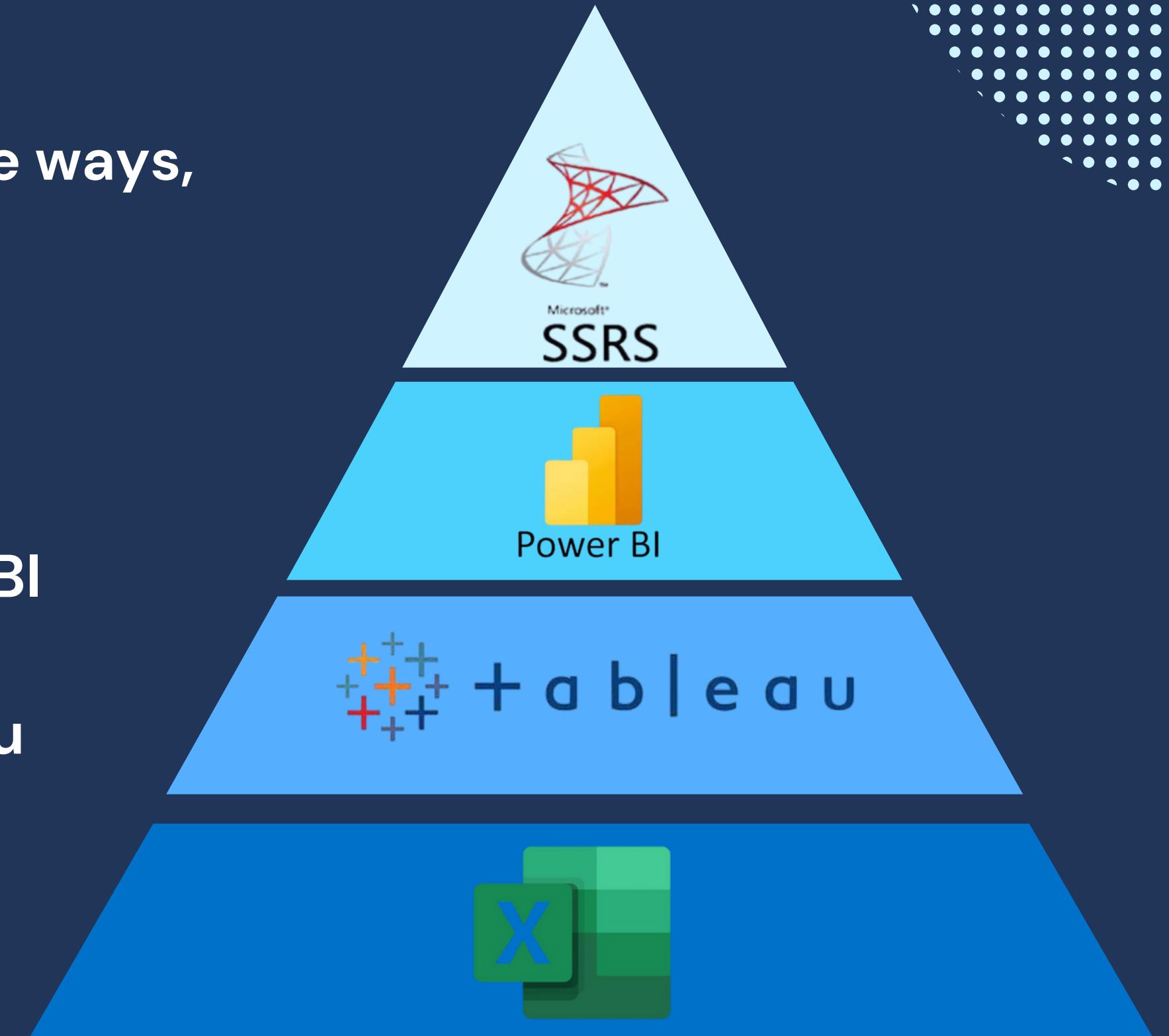
We can analyze data in multiple ways,
such as:

01 SSAS and SSRS

02 visualization using Power BI

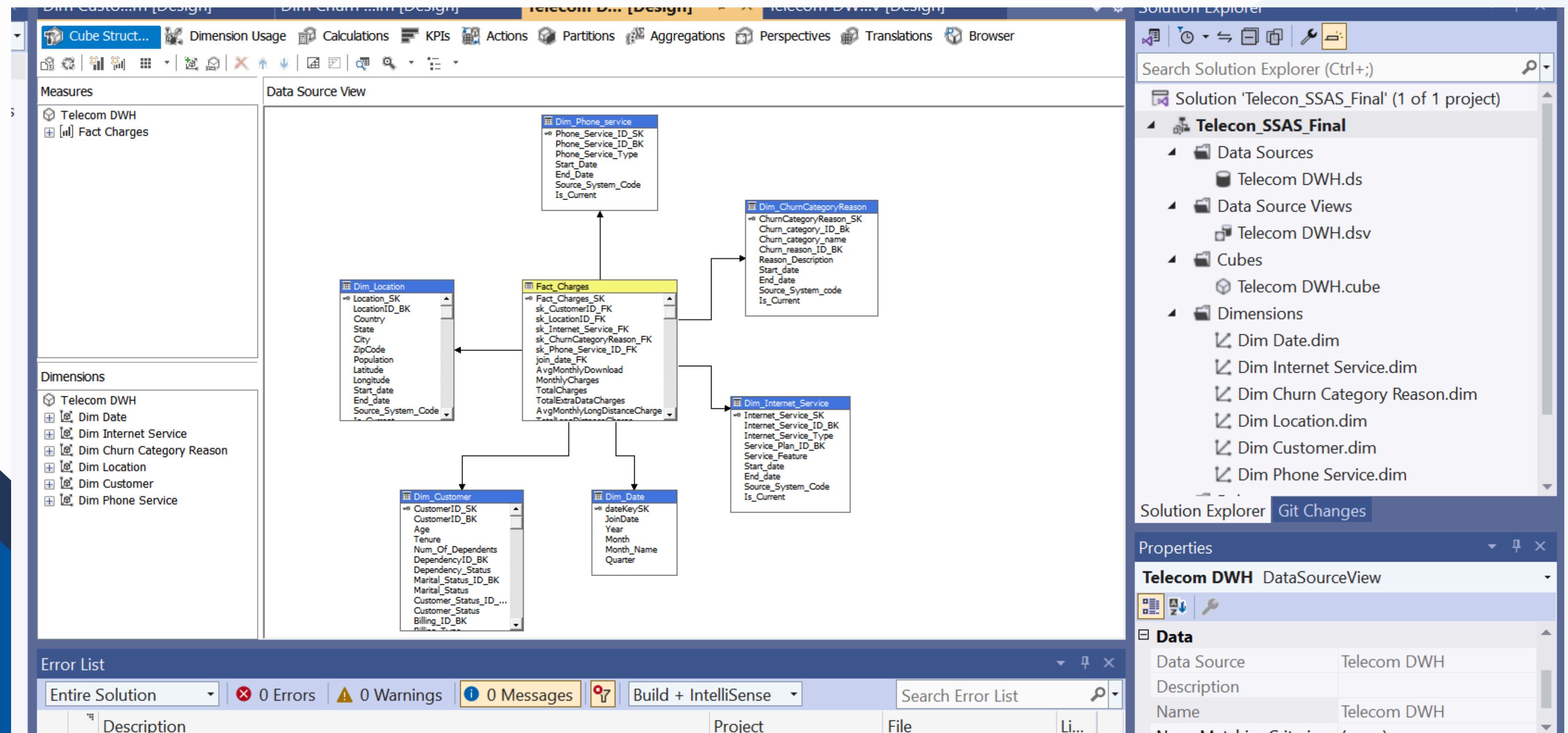
03 visualization using Tableau

04 visualization using Excel





SSAS (CUBE STRUCTURE)





SSAS (CUBE BROWSER)

The screenshot shows the Microsoft Analysis Services (SSAS) Cube Browser interface. The top menu bar includes options like File, Edit, View, Insert, Tools, and Help. The ribbon tabs include Cube Structure, Dimension Usage, Calculations, KPIs, Actions, Partitions, Aggregations, Perspectives, Translations, and Browser. The Browser tab is selected.

The left sidebar contains a Search Toolbox with a General section. It displays a message: "There are no usable controls in this group. Drag an item onto this text to add it to the toolbox." Below this are sections for Cube (Telecom DWH), Metadata, Search Model, Measure Group (with options like Fact Charges Count, Monthly Charges, Source System Code, Total Charges, Total Customers, Total Extra Data Charges, Total Long Distance Charge, and Total Revenue), and Calculated Members.

The main workspace features a toolbar with various icons for editing and managing cubes. A table is displayed with the following data:

| Zip Code | City | Total Customers |
|----------|-------------|-----------------|
| 90001 | Los Angeles | 4 |
| 90002 | Los Angeles | 4 |
| 90003 | Los Angeles | 5 |
| 90004 | Los Angeles | 5 |
| 90005 | Los Angeles | 4 |
| 90006 | Los Angeles | 5 |
| 90007 | Los Angeles | 5 |
| 90008 | Los Angeles | 5 |
| 90010 | Los Angeles | 4 |
| 90011 | Los Angeles | 5 |
| 90012 | Los Angeles | 5 |
| 90013 | Los Angeles | 5 |
| 90014 | Los Angeles | 4 |
| 90015 | Los Angeles | 5 |
| 90016 | Los Angeles | 4 |

The bottom navigation bar includes links for Entire Solution, Error List, 0 Errors, 0 Warnings, 0 Messages, Build + IntelliSense, and Search Error List.



CUSTOMERS BY CITY

SSRS (Report)



Customers By City

| Zip Code | City | Count Of Customers |
|----------|-------------|--------------------|
| 90001 | Los Angeles | 4 |
| 90002 | Los Angeles | 4 |
| 90003 | Los Angeles | 5 |
| 90004 | Los Angeles | 5 |
| 90005 | Los Angeles | 4 |
| 90006 | Los Angeles | 5 |
| 90007 | Los Angeles | 5 |
| 90008 | Los Angeles | 5 |
| 90010 | Los Angeles | 4 |
| 90011 | Los Angeles | 5 |
| 90012 | Los Angeles | 5 |
| 90013 | Los Angeles | 5 |

oooo

PHONE SERVICE BY CUSTOMER OVER EVERY CITY

SSRS - Report



Phone service by City over customer

| | | Multiple Line Service | No Phone Service | One Line Service | Total |
|--|---------------------|--------------------------|---------------------|---------------------|-------|
| | Acampo | 95220 | 3 | 0 | 1 |
| | Acton | 93510 | 2 | 1 | 1 |
| | Adelanto | 92301 | 3 | 0 | 2 |
| | Adin | 96006 | 0 | 1 | 3 |
| | Agoura Hills | 91301 | 2 | 2 | 1 |
| | Aguanga | 92536 | 1 | 0 | 3 |
| | Ahwahnee | 93601 | 1 | 0 | 3 |
| | Alameda | 94501 | 1 | 0 | 3 |
| | | 94502 | 1 | 1 | 2 |
| | Alamo | 94507 | 2 | 1 | 1 |
| | Albany | 94706 | 3 | 0 | 1 |
| | Albion | 95410 | 2 | 0 | 2 |
| | Alderpoint | 95511 | 2 | 1 | 1 |
| | Alhambra | 91801 | 1 | 0 | 3 |
| | | 91803 | 0 | 1 | 4 |
| | Aliso Viejo | 92656 | 2 | 0 | 2 |
| | Alleghany | 95910 | 0 | 0 | 4 |
| | Alpaugh | 93201 | 2 | 1 | 1 |
| | Alpine | 91901 | 2 | 0 | 3 |
| | | | | | 5 |



TELECOMMUNICATION INTERNET TYPE BY CITY

SSRS (REPORT)



Telecommunication Internet Type By City

| City | Zip Code | DSL | Fiber optic | No internet service |
|--------------|----------|-----|-------------|---------------------|
| Acampo | 95220 | 0 | 4 | 0 |
| Acton | 93510 | 2 | 2 | 0 |
| Adelanto | 92301 | 2 | 1 | 2 |
| Adin | 96006 | 1 | 2 | 1 |
| Agoura Hills | 91301 | 3 | 1 | 1 |
| Aguanga | 92536 | 2 | 1 | 1 |
| Ahwahnee | 93601 | 1 | 1 | 2 |
| Alameda | 94501 | 0 | 0 | 4 |
| | 94502 | 1 | 0 | 3 |
| Alamo | 94507 | 2 | 2 | 0 |
| Albany | 94706 | 2 | 2 | 0 |
| Albion | 95410 | 0 | 3 | 1 |
| Alderpoint | 95511 | 2 | 2 | 0 |
| Alhambra | 91801 | 1 | 1 | 2 |
| | 91803 | 1 | 3 | 1 |
| Aliso Viejo | 92656 | 2 | 2 | 0 |
| Alleghany | 95910 | 1 | 1 | 2 |
| Alpaugh | 93201 | 2 | 2 | 0 |

CHURNED CUSTOMERS BY TENURE(1,2)

SSRS (REPORT)



Churned Customers by Tenure (1,2)

| Customer ID | Tenure | City | Phone Service Type | Internet Service Type | Join Date | Contract Method | Total Charges |
|-------------|--------|------------------|-----------------------|-----------------------|------------|-----------------|---------------|
| 18 | 1 | San Marcos | Multiple Line Service | Fiber optic | 2020-01-12 | Month-to-month | 72 |
| 20 | 1 | Morgan Hill | No Phone Service | DSL | 2020-01-12 | Month-to-month | 25 |
| 26 | 1 | Palomar Mountain | No Phone Service | DSL | 2020-01-12 | Month-to-month | 30 |
| 41 | 2 | Tipton | One Line Service | DSL | 2020-01-11 | Month-to-month | 91 |
| 49 | 1 | Calistoga | One Line Service | DSL | 2020-01-12 | Month-to-month | 44 |
| 64 | 1 | West Point | One Line Service | No internet service | 2020-01-12 | Month-to-month | 19 |
| 65 | 1 | Los Angeles | Multiple Line Service | Fiber optic | 2020-01-12 | Month-to-month | 99 |
| 83 | 2 | Alhambra | One Line Service | Fiber optic | 2020-01-11 | Month-to-month | 181 |
| 87 | 1 | Fairfield | Multiple Line Service | Fiber optic | 2020-01-12 | Month-to-month | 80 |
| 89 | 2 | Inyokern | One Line Service | Fiber optic | 2020-01-11 | Month-to-month | 190 |
| 94 | 1 | Moorpark | One Line Service | Fiber optic | 2020-01-12 | Month-to-month | 70 |
| 107 | 2 | Redwood City | One Line Service | No internet service | 2020-01-11 | Month-to-month | 33 |
| 128 | 2 | Fort Jones | One Line Service | Fiber optic | 2020-01-11 | Month-to-month | 167 |
| 134 | 2 | Calixico | One Line Service | DSL | 2020-01-11 | Month-to-month | 89 |

Power BI Analysis



Overview (Dark Mode)



Customer (Dark Mode)



Internet Service (Dark Mode)



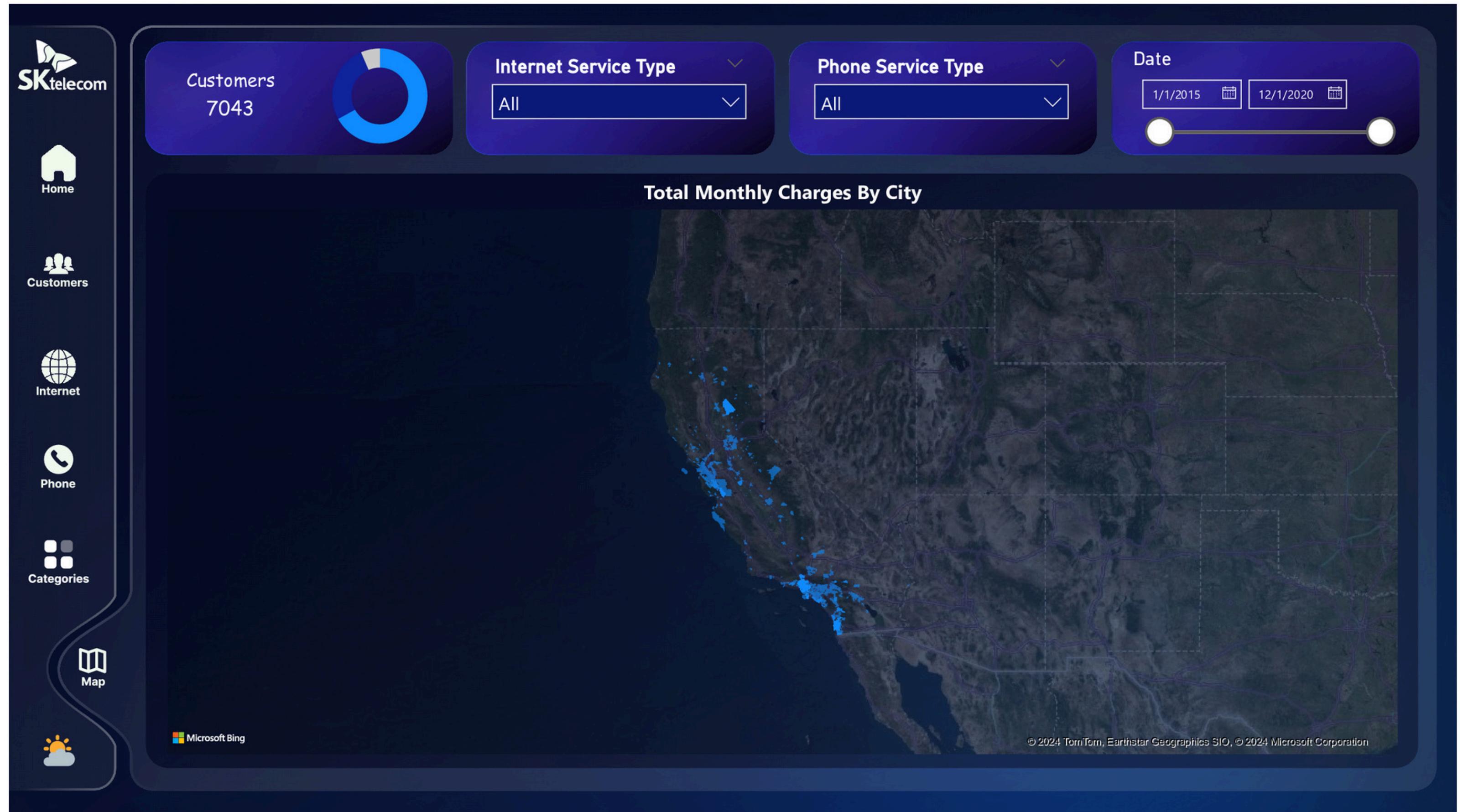
Phone Service (Dark Mode)



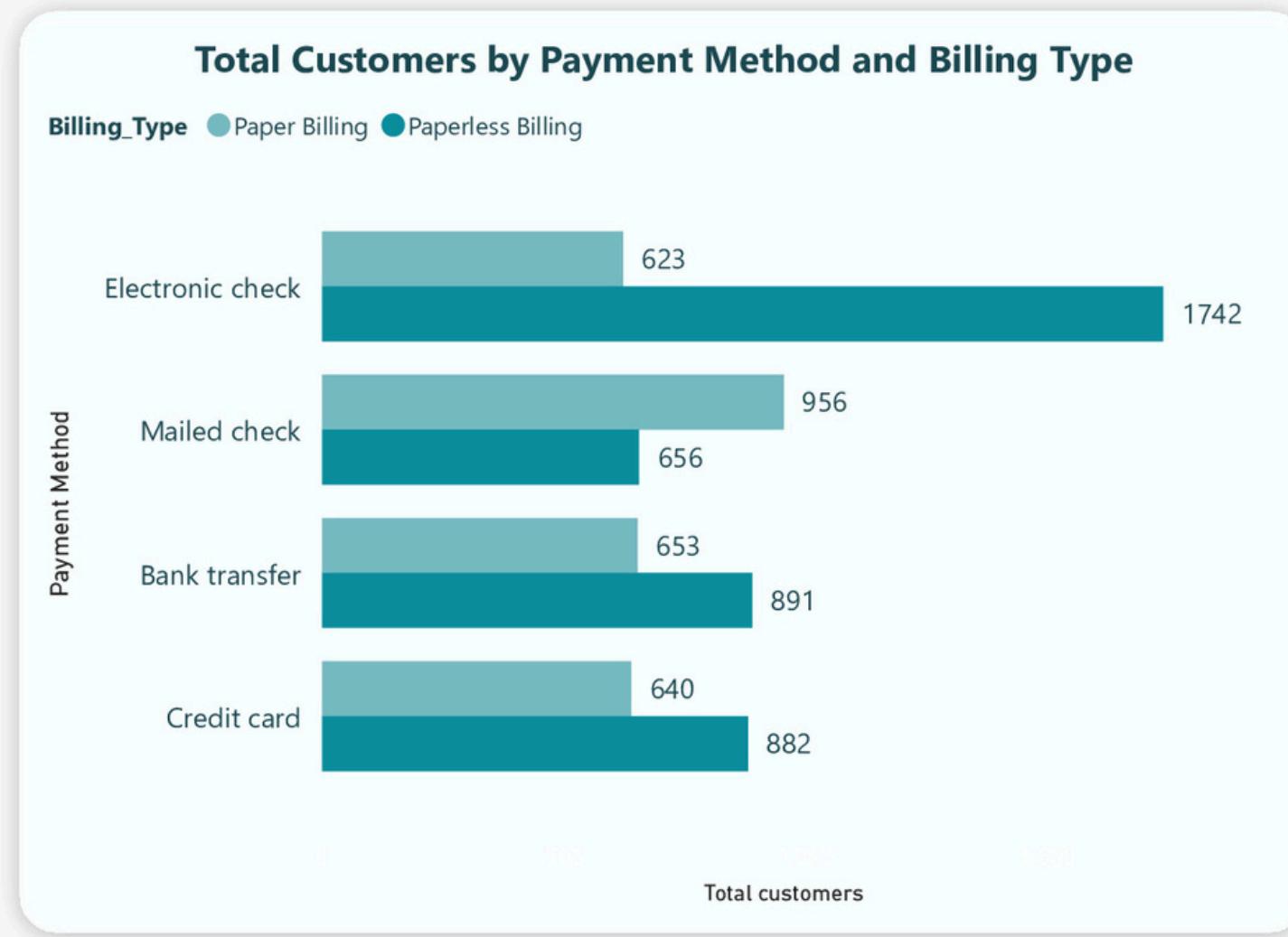
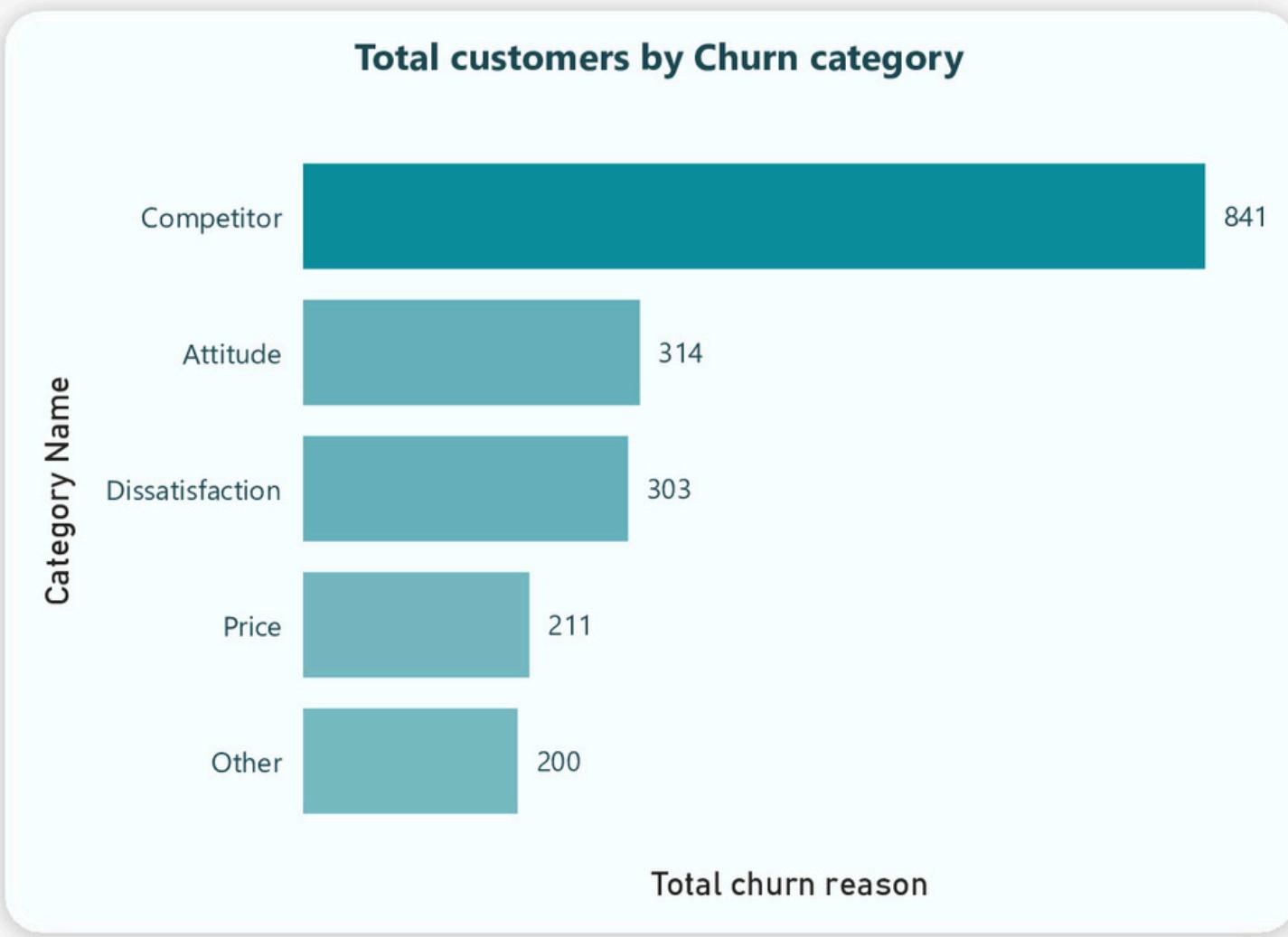
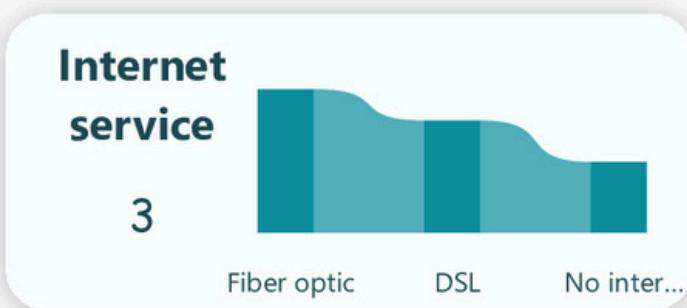
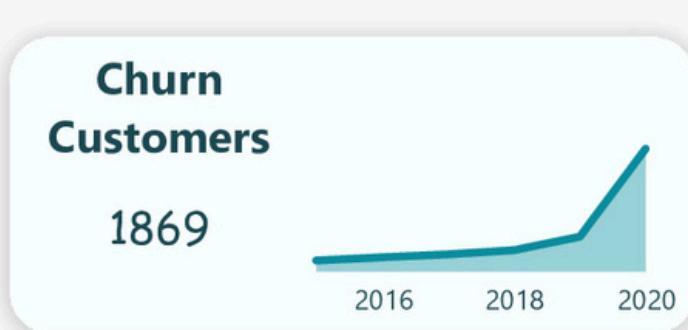
Category (Dark Mode)



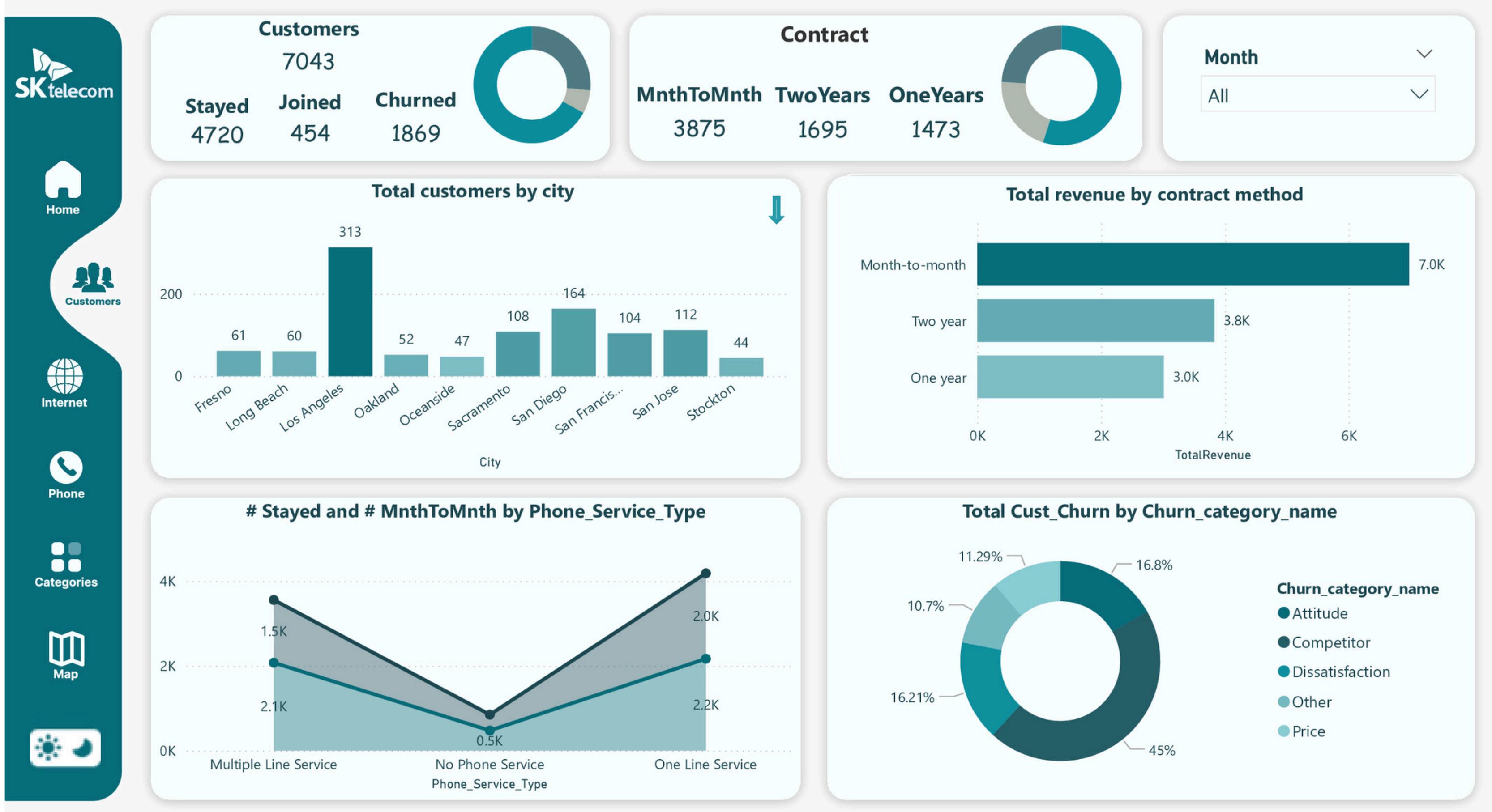
Map (Dark Mode)



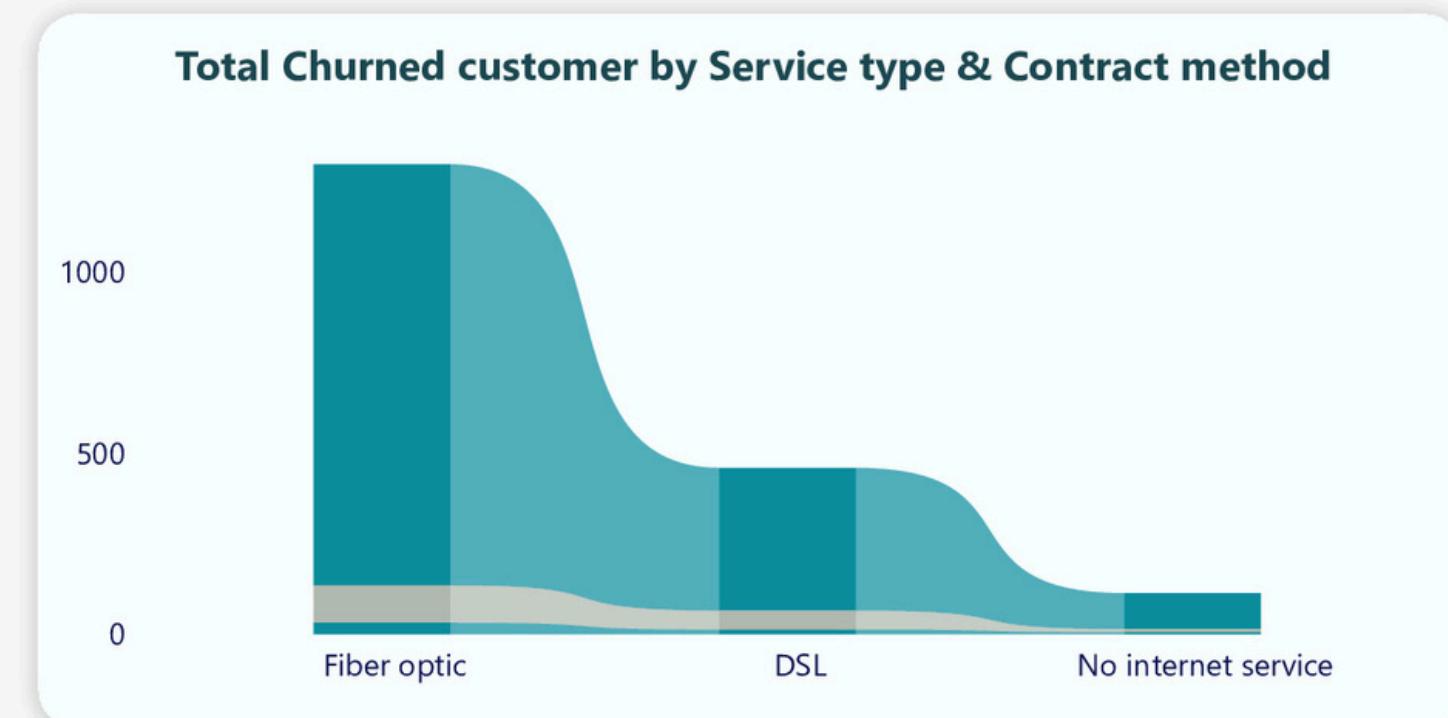
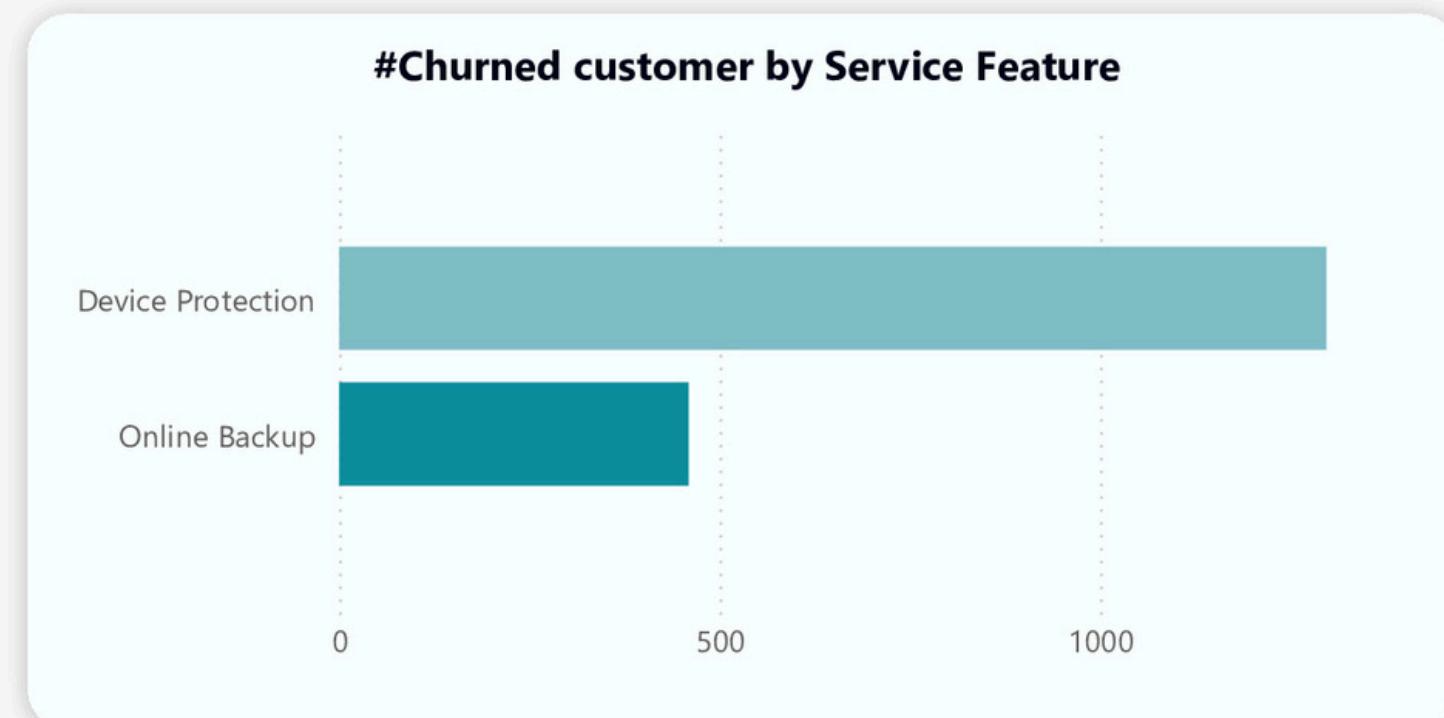
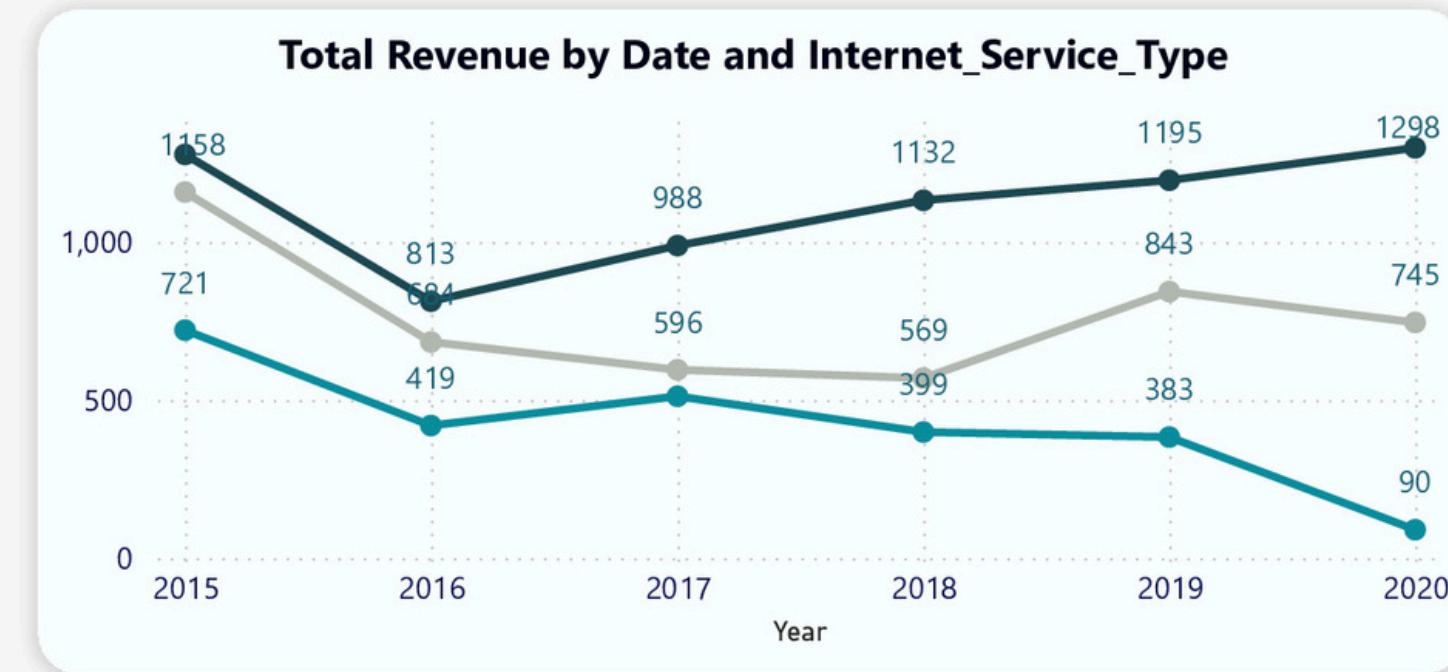
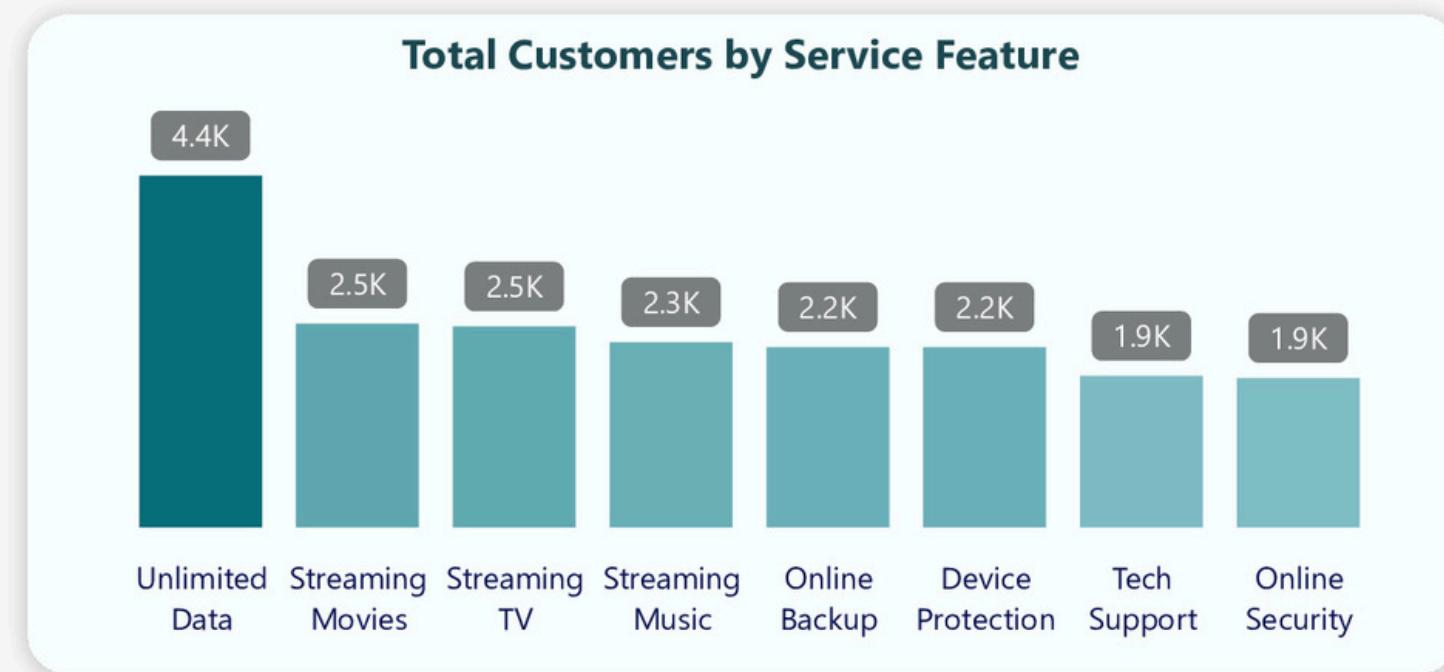
Overview (White Mode)



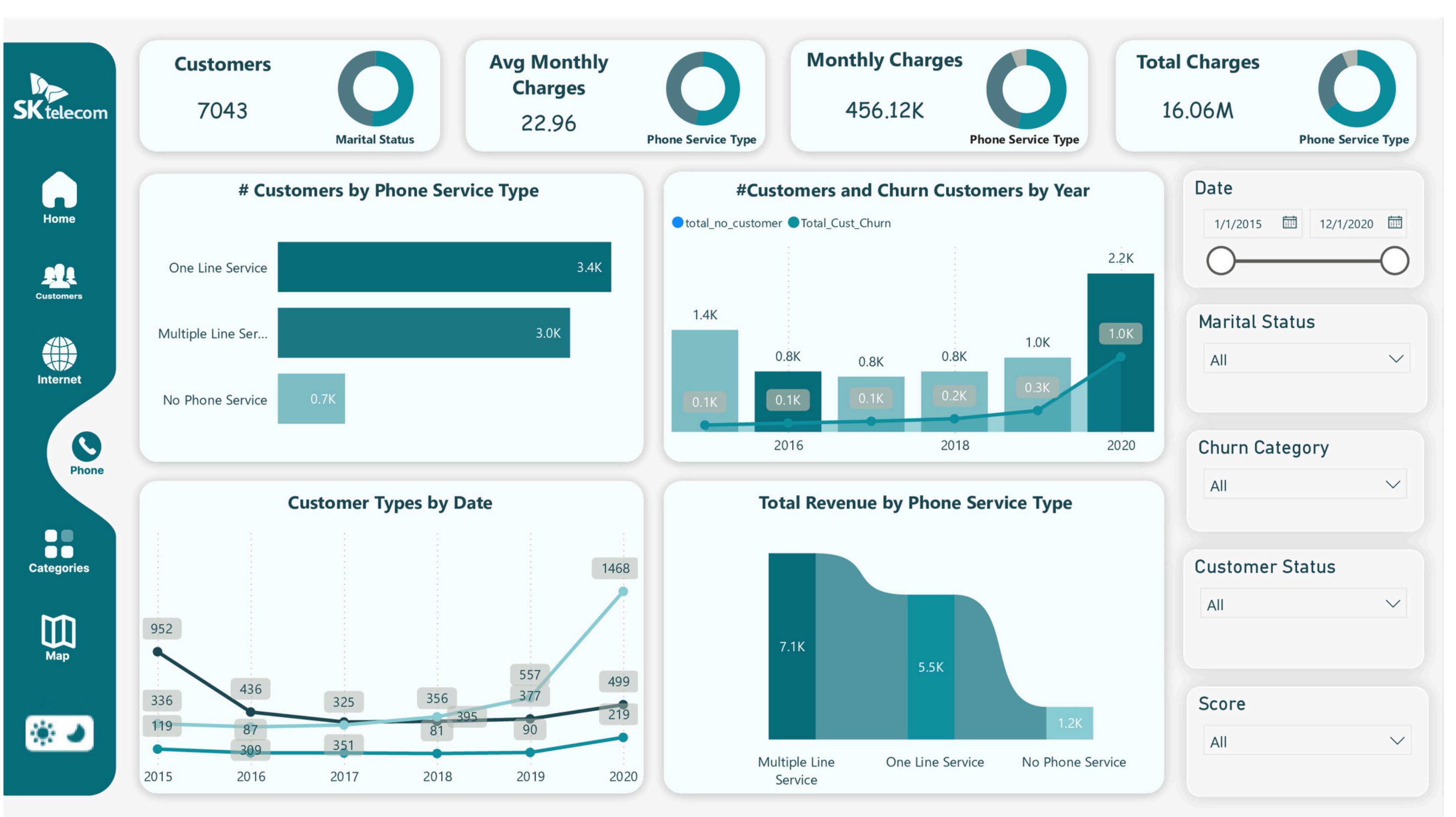
Customer (White Mode)



Internet Service (White Mode)



Phone Service (White Mode)



Category (White Mode)



Churned Customer

1869



Revenue Lost

2.84K



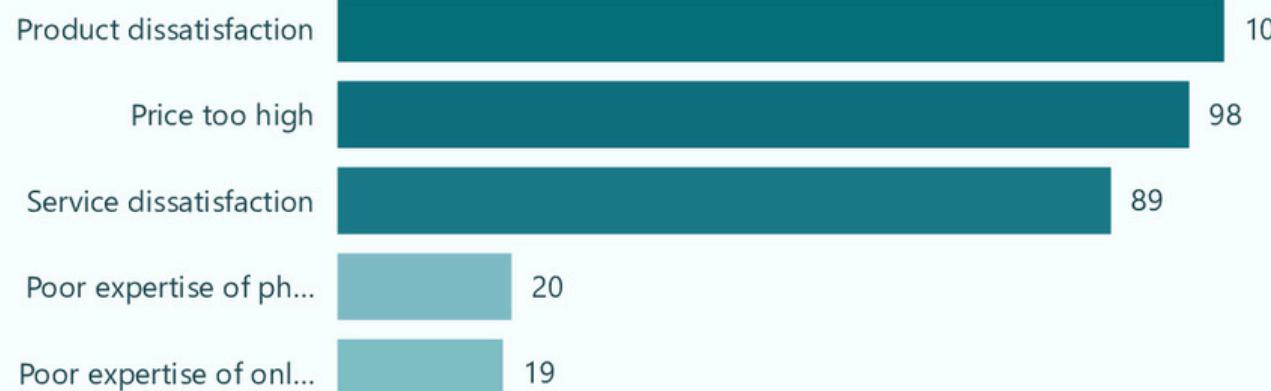
Month

All

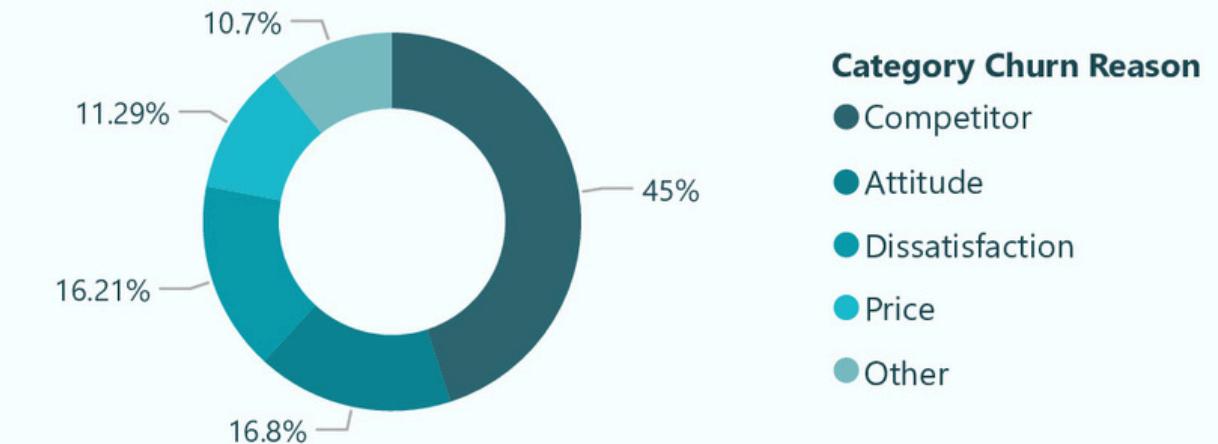
Year

All

Customers Reasons for Churn



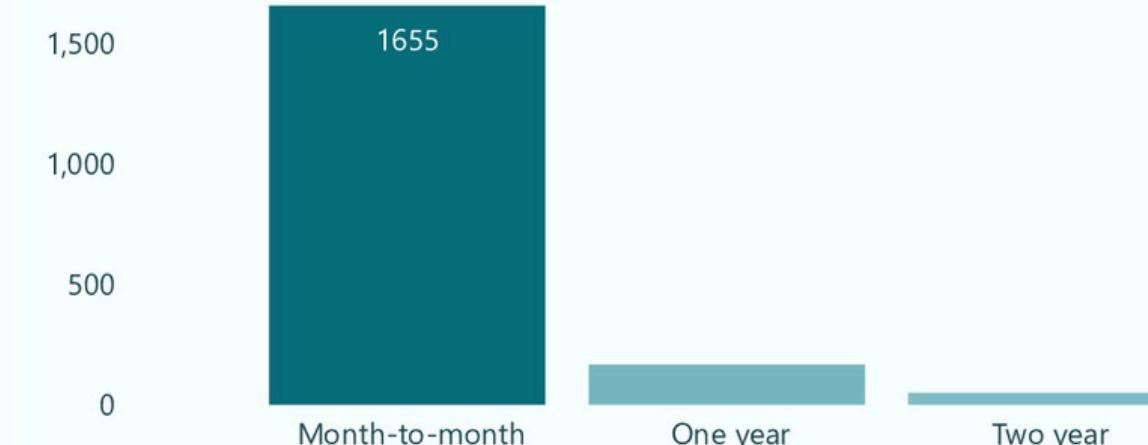
Churn Reasons Categories



Total Revenue after Customer Churn



Churned Customers Contracts



Map (White Mode)

K telecom

- Home
- Customers
- Internet
- Phone
- Categories
- Map
- Weather

Customers
7043



Customer Status

Internet Service Type

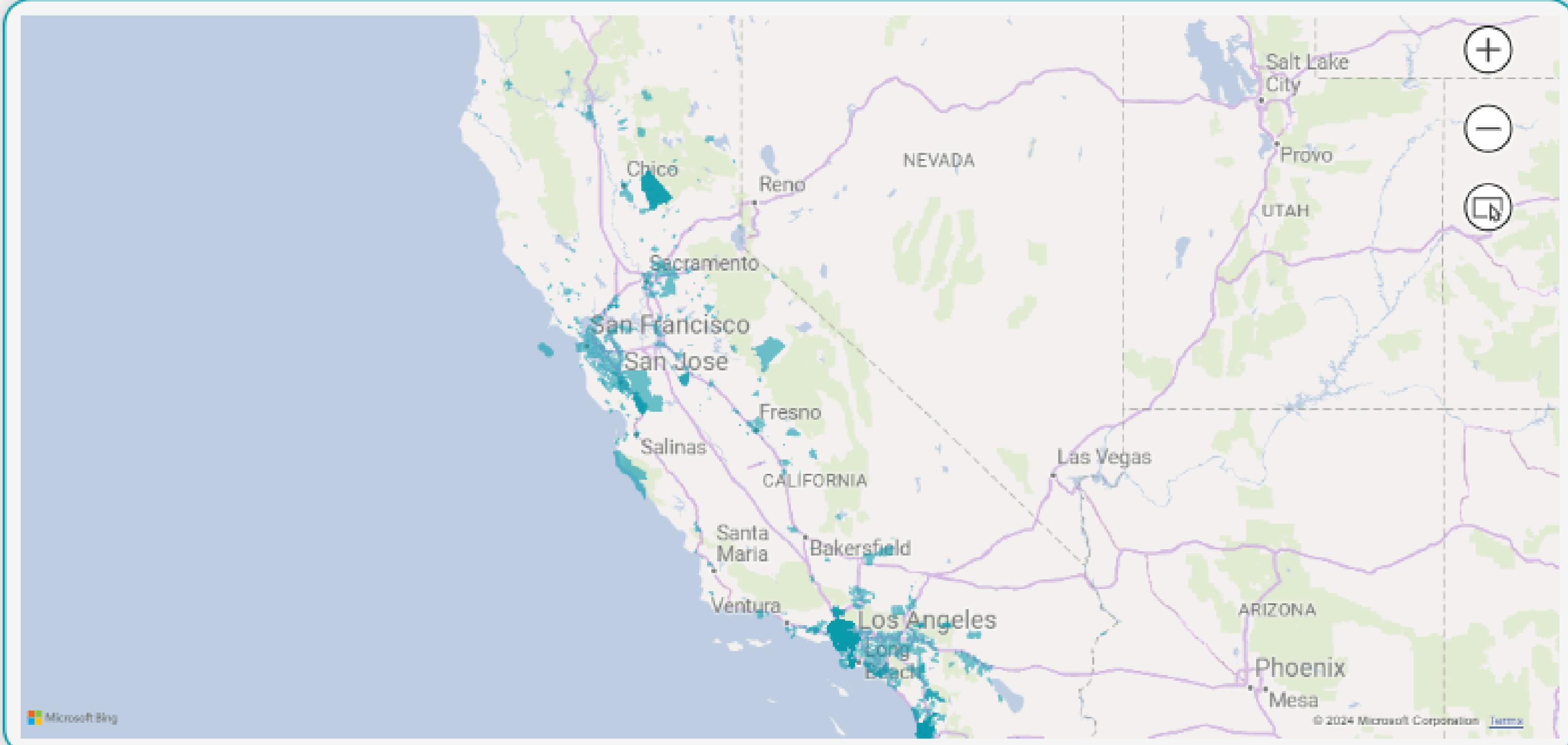
All

Phone Service Type

All

Date

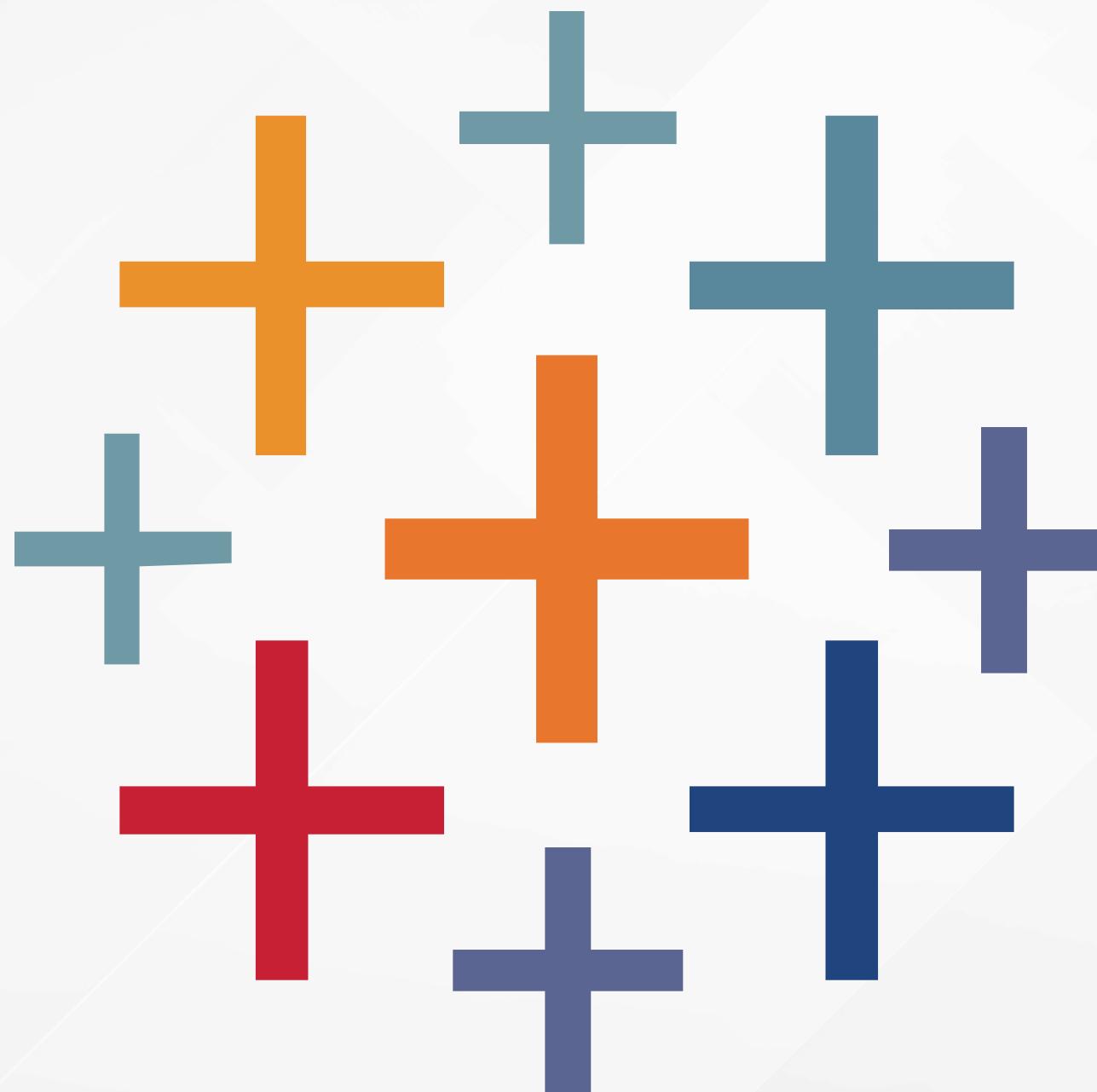
1/1/2015 - 12/1/2020



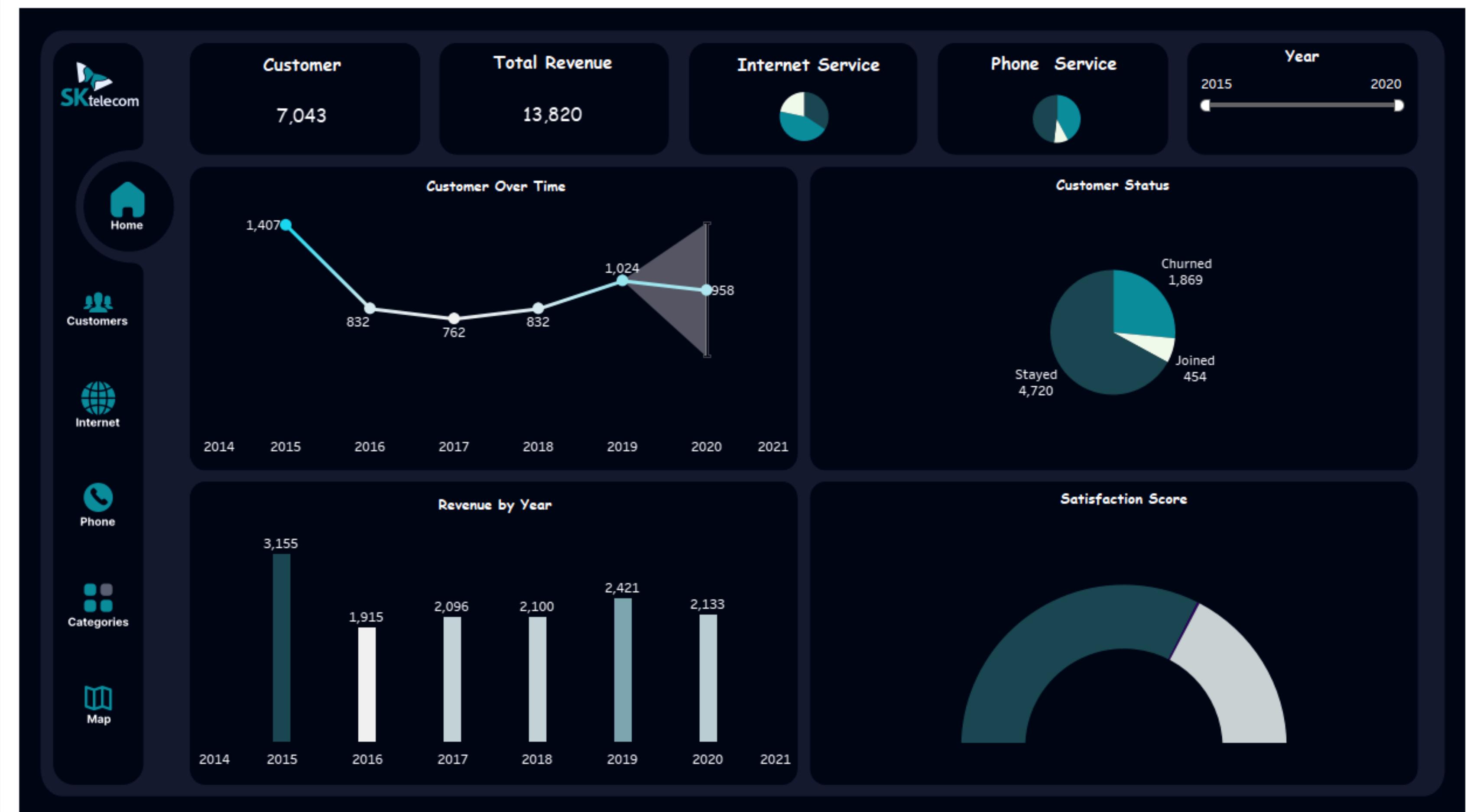
Microsoft Bing

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Tableau Analysis



Overview



Customer



Internet Service



Total Customers

7,043

Total Revenue

13,820

Churned Customers

1,869

Revenue of churn

2,839

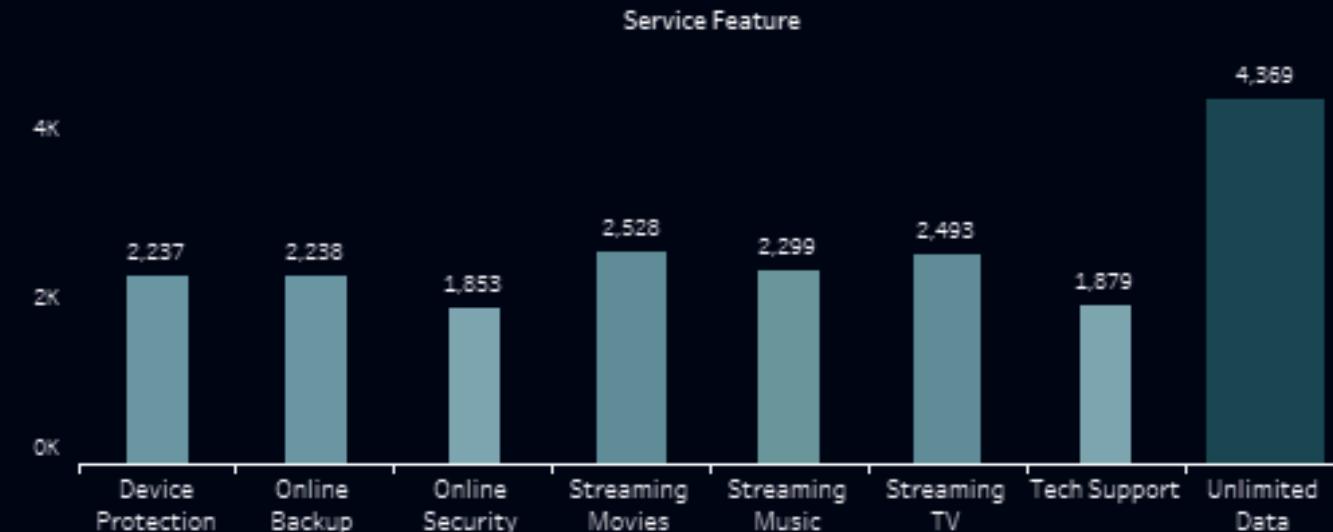
Year

2015

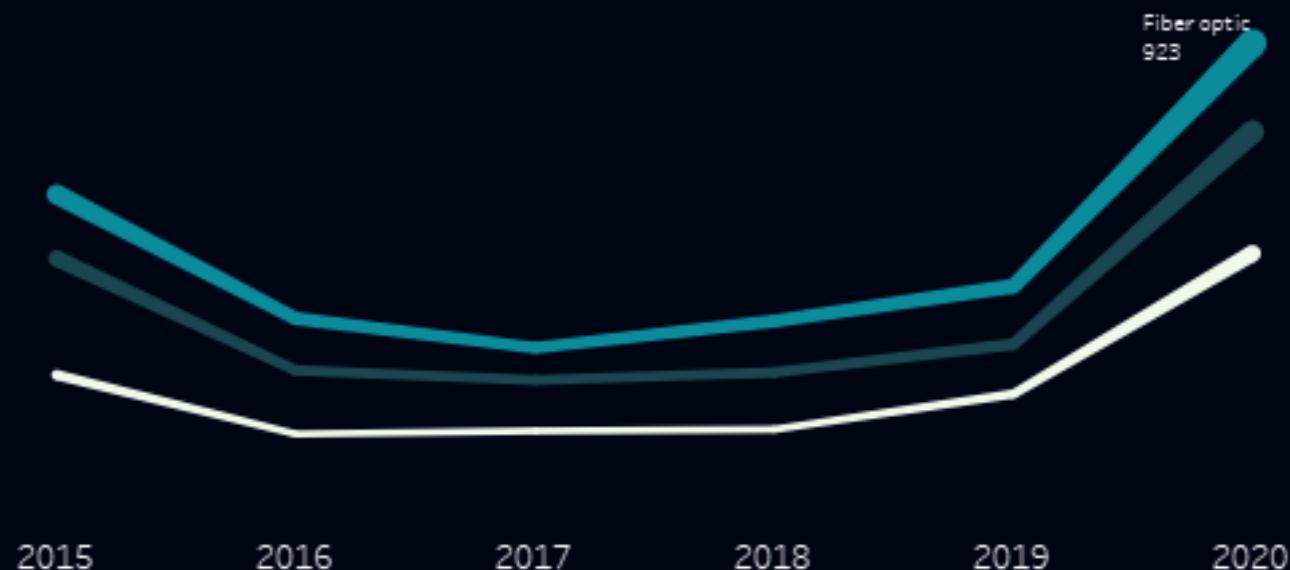
2020



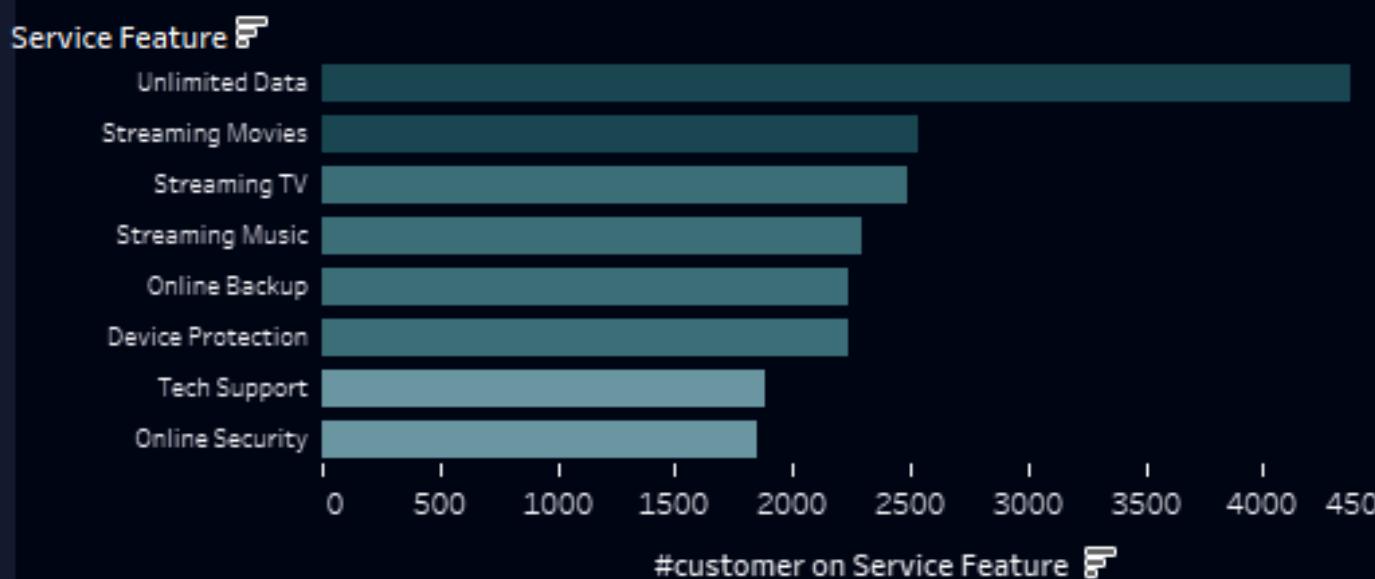
Total customer by service feature



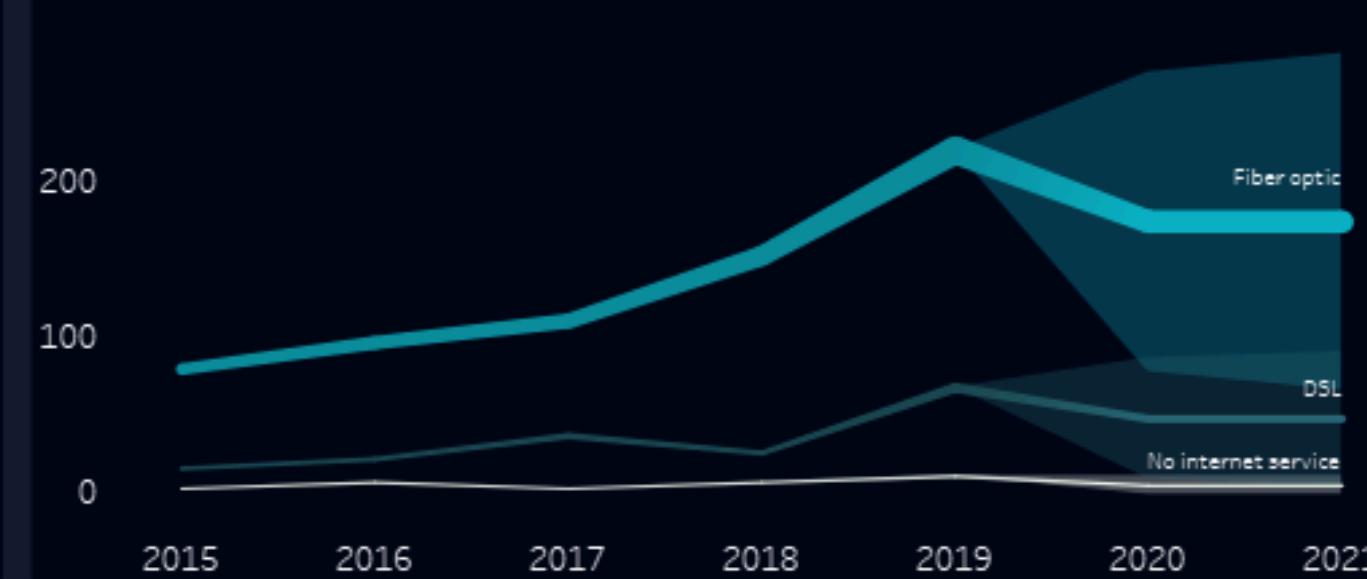
Customers by date and Internet type



Churned customer by feature



Churned customers by date and Internet type Forecasting



Phone Service



Customer
7,043

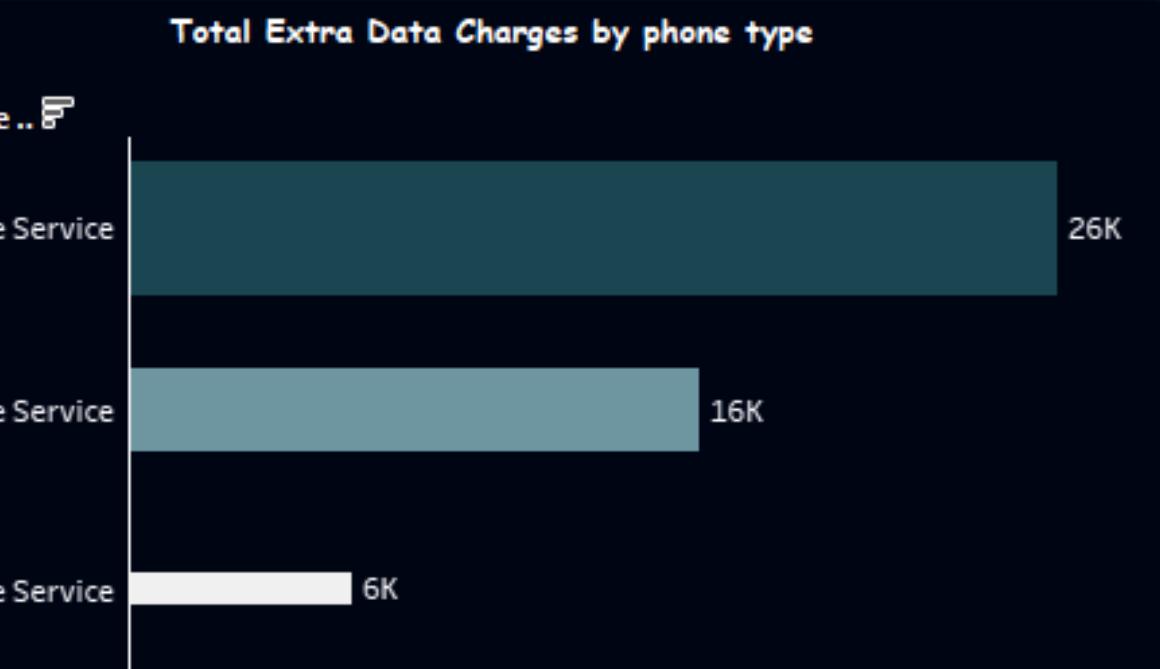
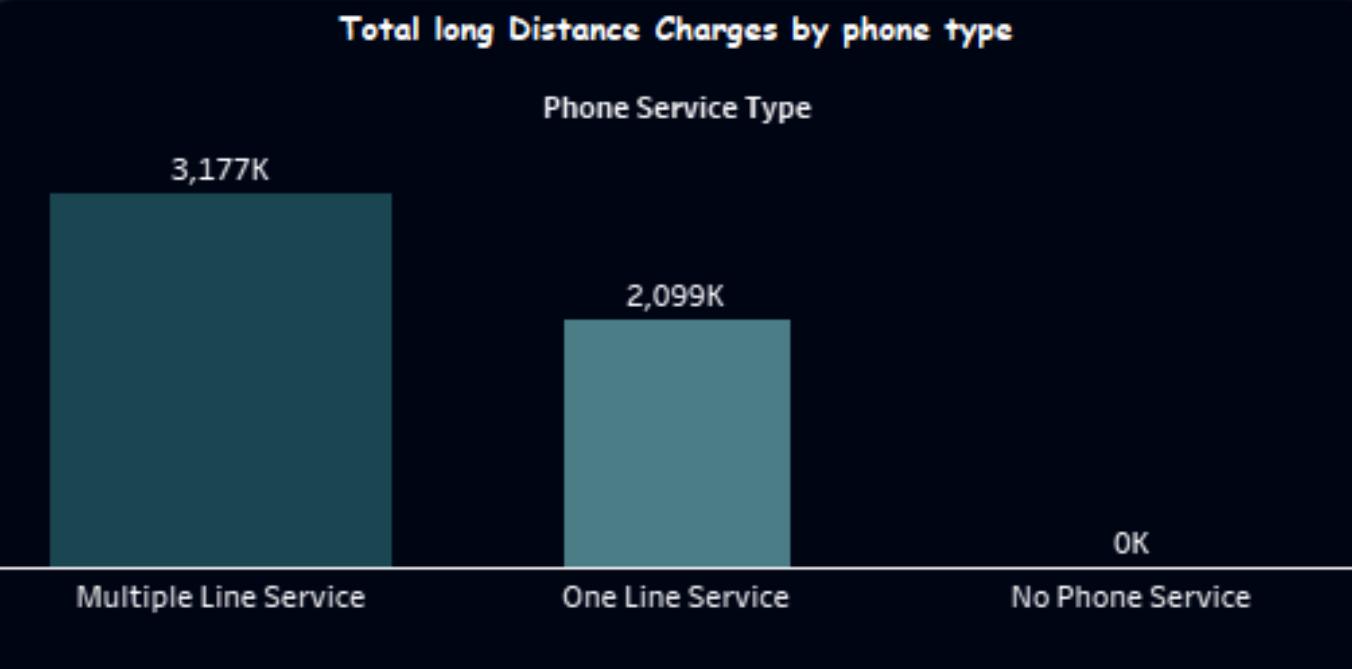
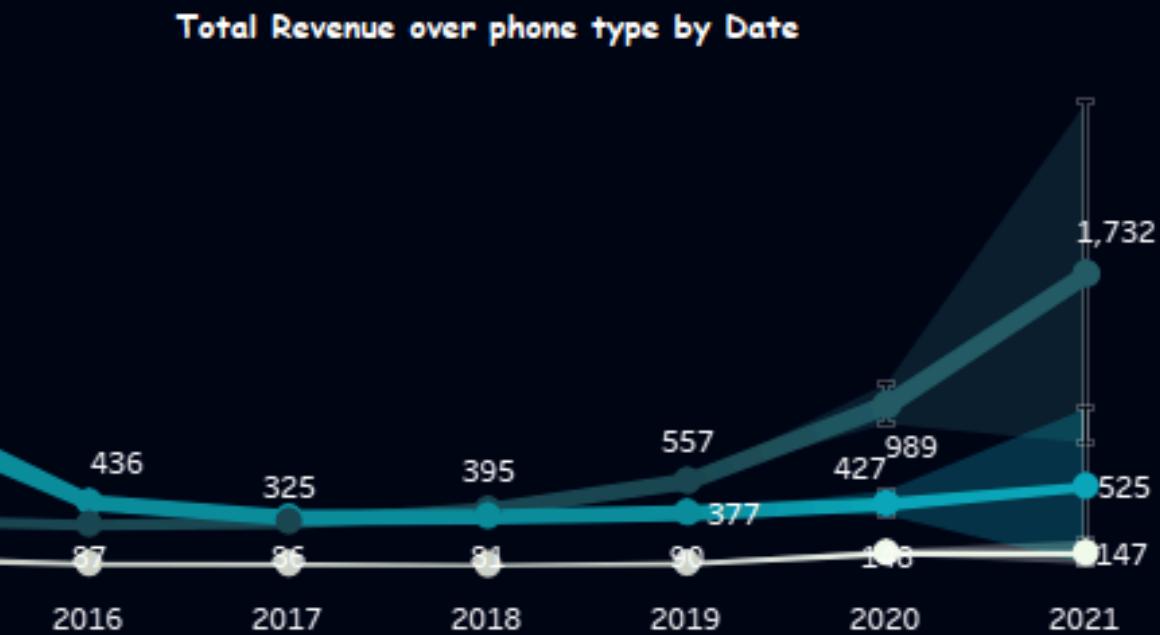
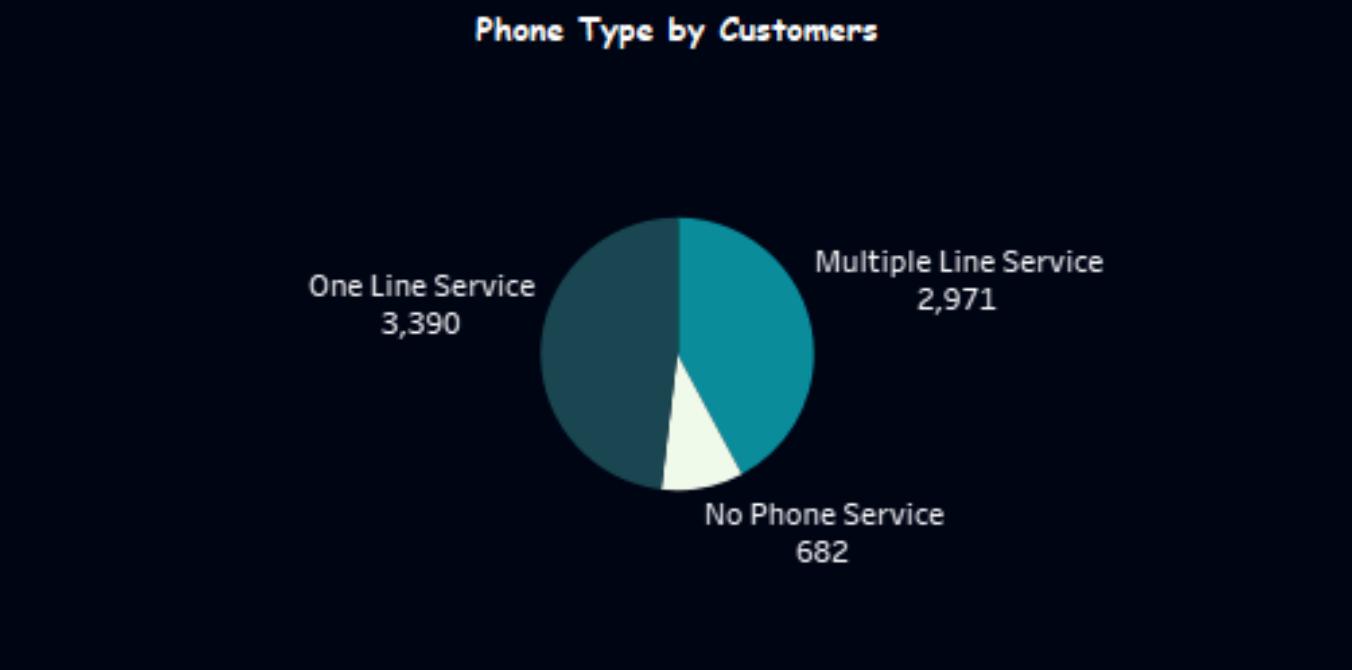


Monthly Charges
456,117

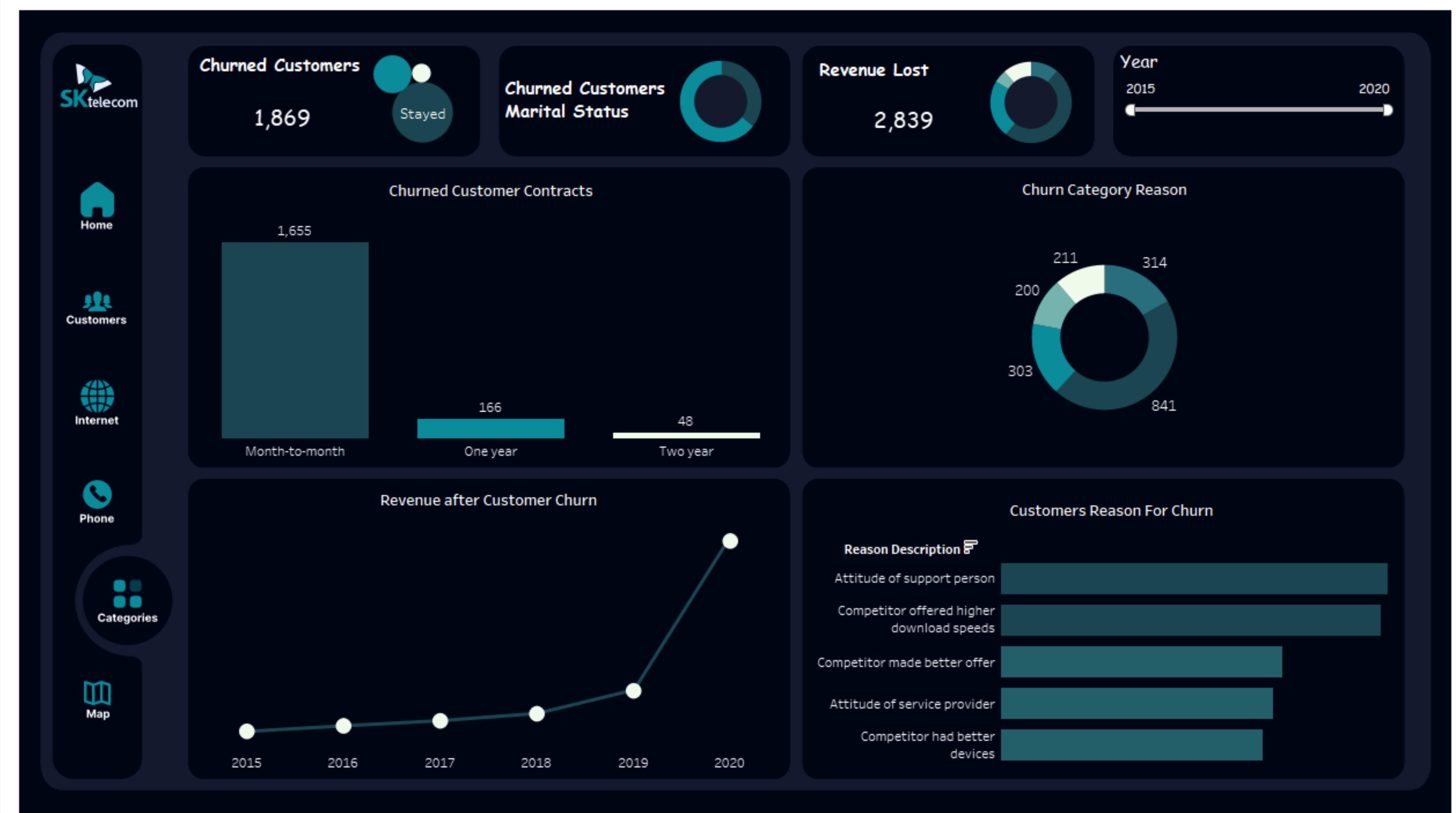
Total Charges
16,056,169

Total Revenue
13,820

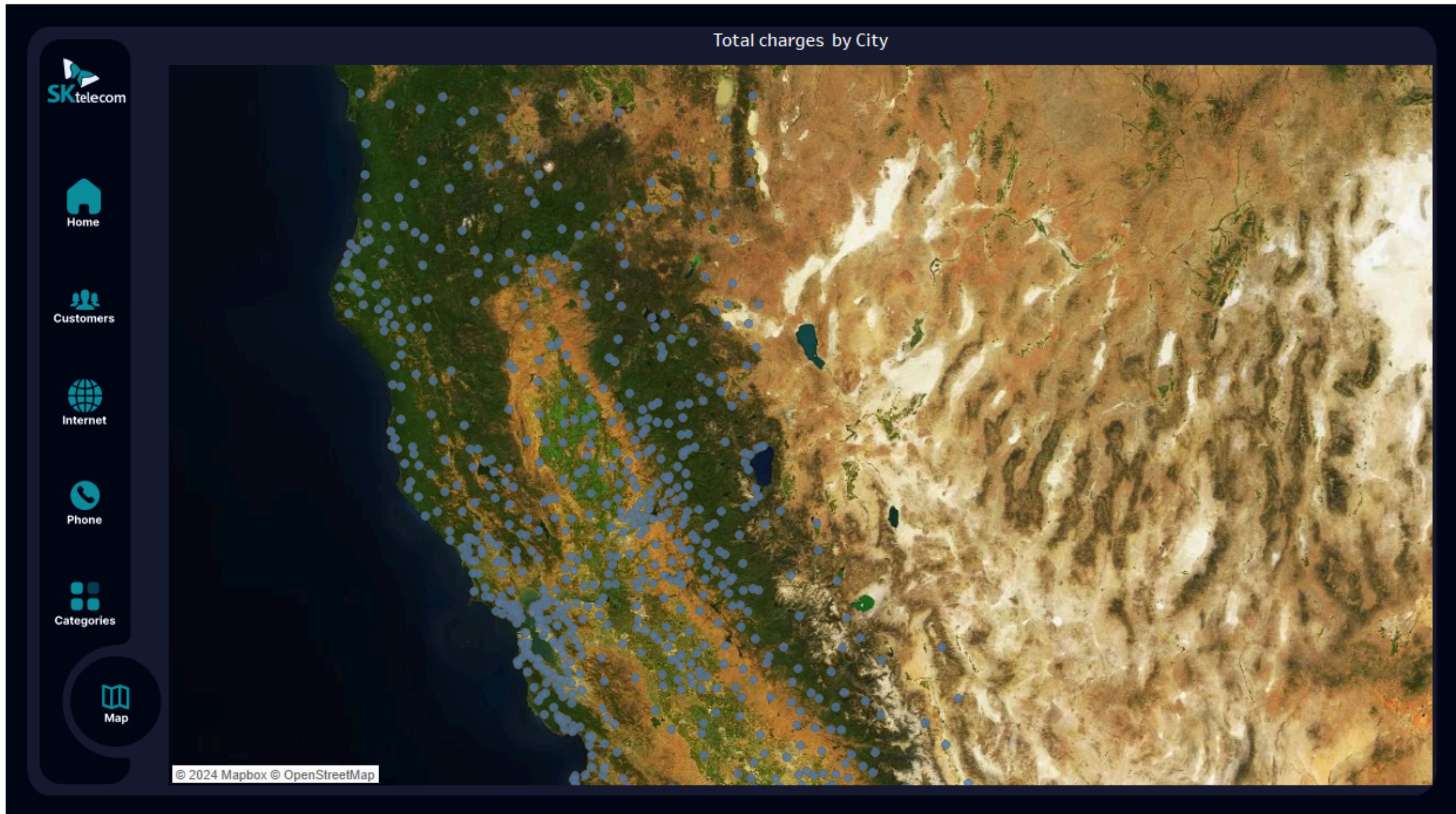
Year
2015 2020



Category



Map



Excel Analysis



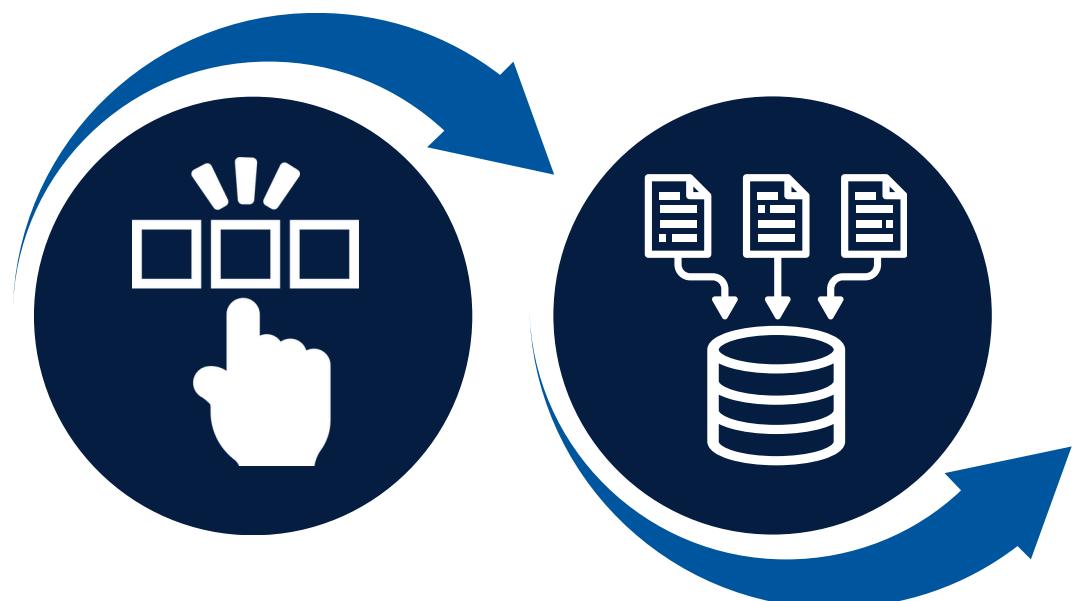
Excel Dashboards



Our Project got through

Select Data Set

Telecom_Churn from
Kaggle



Data Analysis

Analysis data with
SSAS create cubes and
generate Reports with
SSRS

Create Database

Design ERD & tables
and Transform dataset
from Excel to
database with SSIS

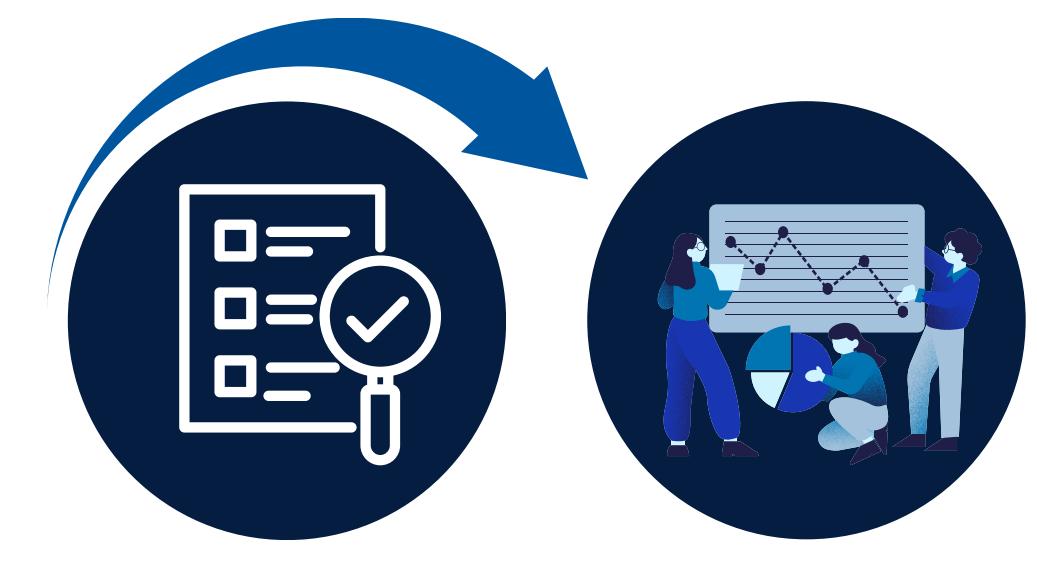


Data Cleaning & Transformation

Cleaning data in
power query Load
transformation

Create DWH

Design Data
warehouse
with star Schema and
Transform database to
DWH with SSIS



Visualization

analyze data in
multiple ways:- Using
Power BI, Tableau and
Excel



Thank You

