Churn Analysis Report of a Telecom Company (Using SQL)
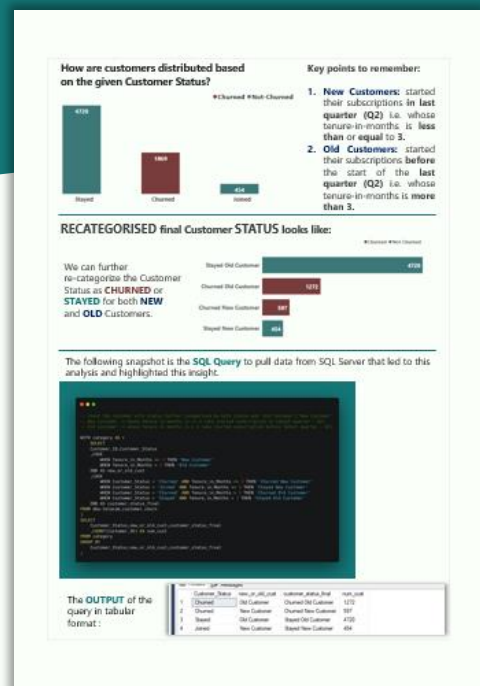
MAIN TOOL USED:
- SQL (Analysis)

OTHER TOOLS USED:
- Excel (web scraping)
- Power BI (visualization)
- Power point (presentation)

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PLEASE READ THE FOLLOWING:

1. The **objective** of this **SQL project** is to present a **report** (**newsletter** style) perform some **BASIC Exploratory Data Analysis (EDA)** of a fictional **Telecommunications Company**.

2. The **datasets** was taken from **Data playground** of **Maven Analytics** (**LINK**).

3. The SQL codes used in this project are to be run in **SQL-server**.

4. The server is hosted on a **localhost** and a **database** named **"TelecomCustomerChurn"** is created using SSMS GUI.

5. The **two csv files** are imported into this database as tables and created **two corresponding tables** named: **"telecom_customer_churn"** and **"telecom_zipcode_population."**

6. Also, the names of **Counties** are **extracted** from web (**LINK**) which corresponds to given **relevant zip-codes** in one of the data sets as follows:

   Get data > From Other Sources> From Web

7. For **better understanding** of the outputs, they are **visualized** in **Power BI** by extracting the outputs as follows:

   Get data > SQL Server > import (Advanced Options:SQL Statements) > OK

8. Finally the codes and their respective visuals are organized in **powerpoint** and then, saved as **pdf file.**

9. Feedbacks and suggestions are always appreciated. THANK YOU.

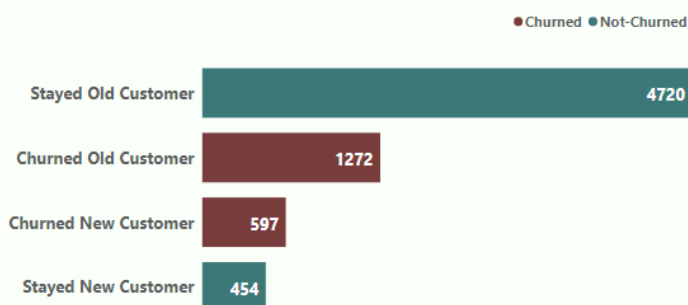## How are customers distributed based on the given Customer Status?

● Churned ● Not-Churned

- 4720 — Stayed
- 1869 — Churned
- 454 — Joined
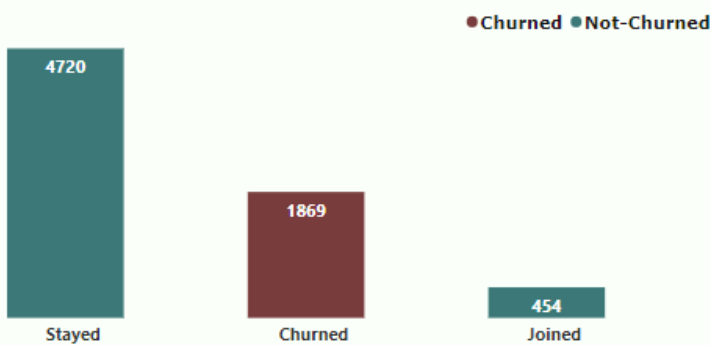
Key points to remember:

1. **New Customers:** started their subscriptions **in last quarter (Q2)** i.e. whose tenure-in-months is **less than** or **equal** to **3.**
2. **Old Customers:** started their subscriptions **before** the start of the **last quarter (Q2)** i.e. whose tenure-in-months is **more than 3.**

RECATEGORISED final Customer STATUS looks like:

We can further re-categorize the Customer Status as **CHURNED** or **STAYED** for both **NEW** and **OLD** Customers.

● Churned ● Not-Churned

- Stayed Old Customer — 4720
- Churned Old Customer — 1272
- Churned New Customer — 597
- Stayed New Customer — 454

The following snapshot is the **SQL Query** to pull data from SQL Server that led to this analysis and highlighted this insight.

```sql
-- Count the customer with status further categorised by both status and 'Old Customer'/'New Customer'
-- New Customer -> whose tenure in months is <= 3 (who started subscription in latest quarter - Q2)
-- Old Customer -> whose tenure in months is > 3 (who started subscription before latest quarter - Q2)

WITH category AS (
    SELECT
    Customer_ID,Customer_Status
    ,CASE
        WHEN Tenure_in_Months <= 3 THEN 'New Customer'
        WHEN Tenure_in_Months > 3 THEN 'Old Customer'
    END AS new_or_old_cust
    ,CASE
        WHEN Customer_Status = 'Churned' AND Tenure_in_Months <= 3 THEN 'Churned New Customer'
        WHEN Customer_Status = 'Joined' AND Tenure_in_Months <= 3 THEN 'Stayed New Customer'
        WHEN Customer_Status = 'Churned' AND Tenure_in_Months > 3 THEN 'Churned Old Customer'
        WHEN Customer_Status = 'Stayed' AND Tenure_in_Months > 3 THEN 'Stayed Old Customer'
    END AS customer_status_final
FROM dbo.telecom_customer_churn
)
SELECT
    Customer_Status,new_or_old_cust,customer_status_final
    ,COUNT(Customer_ID) AS num_cust
FROM category
GROUP BY
    Customer_Status,new_or_old_cust,customer_status_final
;
```

The **OUTPUT** of the query in tabular format :

	Customer_Status	new_or_old_cust	customer_status_final	num_cust
1	Churned	Old Customer	Churned Old Customer	1272
2	Churned	New Customer	Churned New Customer	597
3	Stayed	Old Customer	Stayed Old Customer	4720
4	Joined	New Customer	Stayed New Customer	454

1051 New Customers started subscribing in **Q2** and **597 (57%)** of them **CHURNED**

Old Customers seems to be doing better than **New** with **79%** of them (**5992**) **STAYING** with the company.

43%

57%

● Stayed New Customer ● Churned New Customer

21%

79%
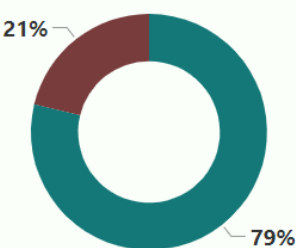
● Stayed Old Customer ● Churned Old Customer

The **Churned New Customers** seemed to have inflated the **OVERALL CHURN-RATE** a bit in **Q2**.

26.54%

● Churned ● Not-Churned

```sql
-- The percentage distribution of stayed and churned NEW customers
SELECT
    ROUND(
        100.0 * COUNT(CASE WHEN Customer_Status = 'Joined' AND Tenure_in_Months <= 3 THEN 1 ELSE NULL END)
        /COUNT(CASE WHEN Tenure_in_Months <= 3 THEN 1 ELSE NULL END)
    ,0) AS stayed_NEW_to_all_new_percent
    ,ROUND(
        100.0 * COUNT(CASE WHEN Customer_Status = 'Churned' AND Tenure_in_Months <= 3 THEN 1 ELSE NULL END)
        /COUNT(CASE WHEN Tenure_in_Months <= 3 THEN 1 ELSE NULL END)
    ,0) AS churned_NEW_to_all_new_percent
FROM  dbo.telecom_customer_churn
;

-- The percentage distribution of stayed and churned OLD customers
SELECT
    ROUND(
        100.0 * COUNT(CASE WHEN Customer_Status = 'Stayed' AND Tenure_in_Months > 3 THEN 1 ELSE NULL END)
        /COUNT(CASE WHEN Tenure_in_Months > 3 THEN 1 ELSE NULL END)
    ,0) AS stayed_OLD_to_all_new_percent
    ,ROUND(
        100.0 * COUNT(CASE WHEN Customer_Status = 'Churned' AND Tenure_in_Months > 3 THEN 1 ELSE NULL END)
        /COUNT(CASE WHEN Tenure_in_Months > 3 THEN 1 ELSE NULL END)
    ,0) AS churned_OLD_to_all_new_percent
FROM  dbo.telecom_customer_churn
;

-- Find the Churn-rate of the latest quarter Q2 end
SELECT
    ROUND(
        100.0*COUNT(CASE WHEN Customer_Status = 'Churned' THEN 1 ELSE NULL END)
        /COUNT(*)
    ,2) AS churn_rate_Q2_percent
FROM
    dbo.telecom_customer_churn
;
```

The snapshot to the left is the **SQL Queries** to pull data from SQL Server that led to this analysis and highlighted this insight.

The **OUTPUTS** of the queries in tabular formats :

	churn_rate_Q2
1	26.540000000000

	stayed_NEW_to_all_new_percent	churned_NEW_to_all_new_percent
1	43.000000000000	57.000000000000

	stayed_OLD_to_all_new_percent	churned_OLD_to_all_new_percent
1	79.000000000000	21.000000000000

The County with **highest** number of **customers** is **Los Angeles County**
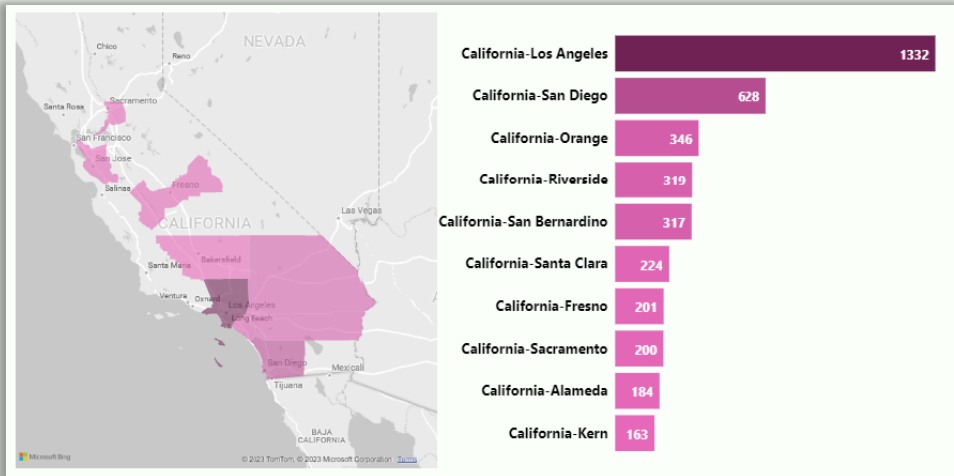
California-Los Angeles	1332
California-San Diego	628
California-Orange	346
California-Riverside	319
California-San Bernardino	317
California-Santa Clara	224
California-Fresno	201
California-Sacramento	200
California-Alameda	184
California-Kern	163

The names of **Counties** are **extracted** from web (**LINK**) which corresponds to given **relevant zip-codes**

The County with **highest** value of **Revenue** is again **Los Angeles County**

California-Los Angeles	$4.0M
California-San Diego	$1.8M
California-Orange	$1.1M
California-San Bernardino	$1.0M
California-Riverside	$1.0M
California-Santa Clara	$0.7M
California-Sacramento	$0.7M
California-Fresno	$0.6M
California-Alameda	$0.5M
California-Contra Costa	$0.5M
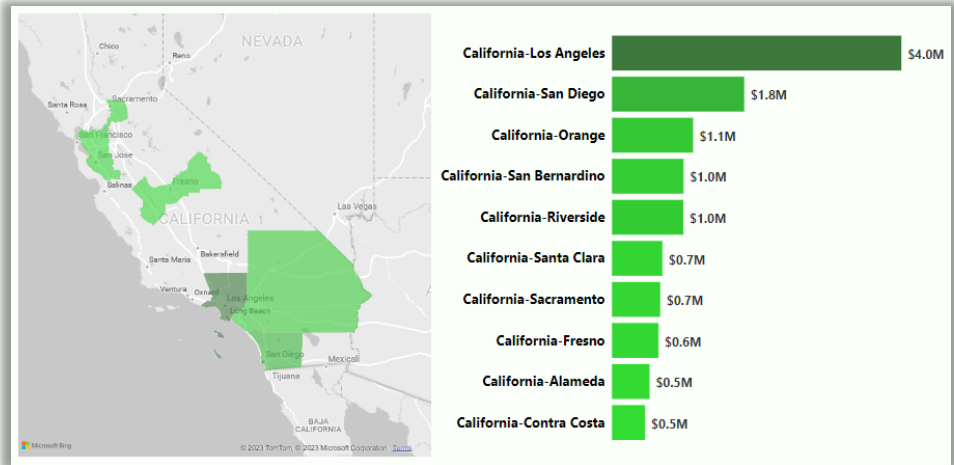
The County with **highest** value of **Churn-rate** is **Del Norte**

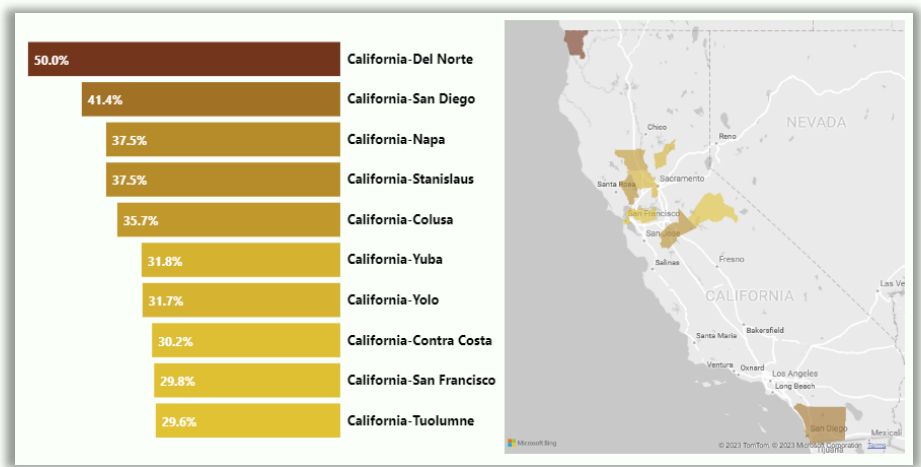|	
50.0%	California-Del Norte
41.4%	California-San Diego
37.5%	California-Napa
37.5%	California-Stanislaus
35.7%	California-Colusa
31.8%	California-Yuba
31.7%	California-Yolo
30.2%	California-Contra Costa
29.8%	California-San Francisco
29.6%	California-Tuolumne

The snapshot given just below this texts is the **SQL Queries** to pull data from SQL Server that led to this analysis and insight on the reasons for each churn category.

```sql
-- top 10 counties by number of customers
SELECT
    TOP 10 (zip.state_county),COUNT(cust.Customer_ID) AS num_customer
FROM
    dbo.telecom_customer_churn AS cust
    LEFT JOIN dbo.telecom_zipcode_population AS zip
    ON cust.Zip_Code = zip.Zip_Code
GROUP BY zip.state_county
ORDER BY COUNT(cust.Customer_ID) DESC
;

-- to 10 counties by total revenue
SELECT
    TOP 10 (zip.state_county),ROUND(SUM(cust.Total_Revenue),2) as total_revenue
FROM
    dbo.telecom_customer_churn AS cust
    LEFT JOIN dbo.telecom_zipcode_population AS zip
    ON cust.Zip_Code = zip.Zip_Code
GROUP BY zip.state_county
ORDER BY SUM(cust.Total_Revenue) DESC
;

-- to 10 counties by Churn rate
SELECT
    TOP 10 zip.state_county
    ,ROUND(
        100.0*COUNT(CASE WHEN cust.Customer_Status = 'Churned' THEN 1 ELSE NULL END)
        /COUNT(cust.Customer_ID)
    ,1) AS churn_rate
FROM
    dbo.telecom_customer_churn AS cust
    LEFT JOIN dbo.telecom_zipcode_population AS zip
    ON cust.Zip_Code = zip.Zip_Code
GROUP BY zip.state_county
order by ROUND(
        100.0*COUNT(CASE WHEN cust.Customer_Status = 'Churned' THEN 1 ELSE NULL END)
        /COUNT(cust.Customer_ID)
    ,1)  DESC
;
```
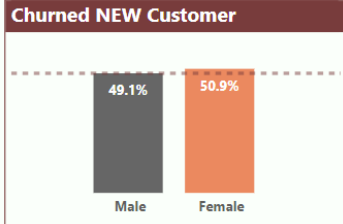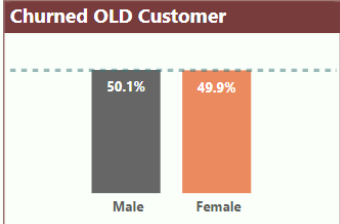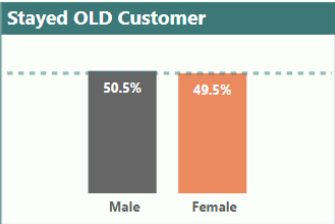
The **OUTPUT** of the queries are just below in tabular format as follows:

state_county	num_customer
California-Los Angeles	1332
California-San Diego	628
California-Orange	346
California-Riverside	319
California-San Bernardino	317
California-Santa Clara	224
California-Fresno	201
California-Sacramento	200
California-Alameda	184
California-Kern	163

state_county	total_revenue
California-Los Angeles	3991167.56
California-San Diego	1823176.17
California-Orange	1118284.55
California-San Bernardino	986738.53
California-Riverside	984698.7
California-Santa Clara	695409.88
California-Sacramento	665374.7
California-Fresno	641268.54
California-Alameda	517882.81
California-Contra Costa	455454.66

state_county	churn_rate
California-Del Norte	50.000000000000
California-San Diego	41.400000000000
California-Stanislaus	37.500000000000
California-Napa	37.500000000000
California-Colusa	35.700000000000
California-Yuba	31.800000000000
California-Yolo	31.700000000000
California-Contra Costa	30.100000000000
California-San Francisco	29.800000000000
California-Tuolumne	29.500000000000

Gender proportions are almost **BALANCED** in all the groups of customers based on recategorized customer status.

Stayed OLD Customer

50.5% Male | 49.5% Female

Churned OLD Customer

50.1% Male | 49.9% Female

### Churned NEW Customer

49.1% Male | 50.9% Female

```sql
-- Distribution by GENDER amongst the Stayed-OLD-Customers (initially given status = Stayed)
WITH ctetable AS (
    SELECT Gender,COUNT(Gender) AS num_customer
    FROM dbo.telecom_customer_churn
    WHERE Customer_Status = 'Stayed' AND Tenure_in_Months > 3
    GROUP BY Gender
)
SELECT *, SUM(num_customer) OVER() AS total_customer_OLD_stayed
    ,ROUND(100.0*num_customer/SUM(num_customer) OVER(),1) AS percent_gender_OLD_stayed
FROM ctetable
;

-- Distribution by GENDER amongst the Churned-OLD-Customers
-- (initially given status = Churned; and Tenure_in_Months > 3)
WITH ctetable2 AS (
    SELECT Gender,COUNT(Gender) AS num_customer
    FROM dbo.telecom_customer_churn
    WHERE Customer_Status = 'Churned' AND Tenure_in_Months > 3
    GROUP BY Gender
)
SELECT *, SUM(num_customer) OVER() AS total_OLD_customer_churned
    ,ROUND(100.0*num_customer/SUM(num_customer) OVER(),1) AS percent_gender_OLD_churned
FROM ctetable2
;

-- Distribution by GENDER amongst the Churned-NEW-Customers
-- (initially given status = Churned; and Tenure_in_Months <=3)
WITH ctetable1 AS (
    SELECT Gender,COUNT(Gender) AS num_customer
    FROM dbo.telecom_customer_churn
    WHERE Customer_Status = 'Churned' AND Tenure_in_Months <= 3
    GROUP BY Gender
)
SELECT *, SUM(num_customer) OVER() AS total_NEW_customer_churned
    ,ROUND(100.0*num_customer/SUM(num_customer) OVER(),1) AS percent_gender_NEW_churned
FROM ctetable1
;

-- Distribution by GENDER amongst the Stayed-NEW-Customers (initially given status = Joined)
WITH ctetable AS (
    SELECT Gender,COUNT(Gender) AS num_customer
    FROM dbo.telecom_customer_churn
    WHERE Customer_Status = 'Joined' AND Tenure_in_Months <= 3
    GROUP BY Gender
)
SELECT *, SUM(num_customer) OVER() AS total_customer_joined_or_NEW_stayed
    ,ROUND(100.0*num_customer/SUM(num_customer) OVER(),1) AS
percent_gender_joined_or_NEW_stayed
FROM ctetable
;
```
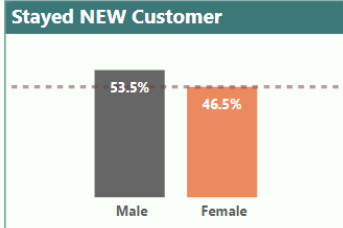
Stayed NEW Customer

53.5% Male | 46.5% Female

The snapshot to the left is the **SQL Queries** to pull data from SQL Server that led to this analysis and highlighted this insight.

The **OUTPUTS** of the queries in tabular formats :

	Gender	num_customer	total_customer_OLD_stayed	percent_gender_OLD_stayed
1	Male	2382	4720	50.500000000000
2	Female	2338	4720	49.500000000000

	Gender	num_customer	total_OLD_customer_churned	percent_gender_OLD_churned
1	Male	637	1272	50.100000000000
2	Female	635	1272	49.900000000000

	Gender	num_customer	total_NEW_customer_churned	percent_gender_NEW_churned
1	Female	304	597	50.900000000000
2	Male	293	597	49.100000000000

	Gender	num_customer	total_customer_joined_or_NEW_stayed	percent_gender_joined_or_NEW_stayed
1	Female	211	454	46.500000000000
2	Male	243	454	53.500000000000

Overall Distribution of Customers based on Generations (Age-Group):

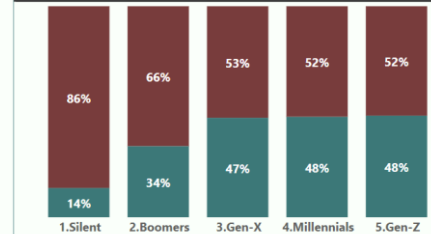| 1.Silent | 162 | 115 |
2.Boomers	1175	569
3.Gen-X	1589	506
4.Millennials	1521	489
5.Gen-Z	727	190

● Churned ● Not-Churned
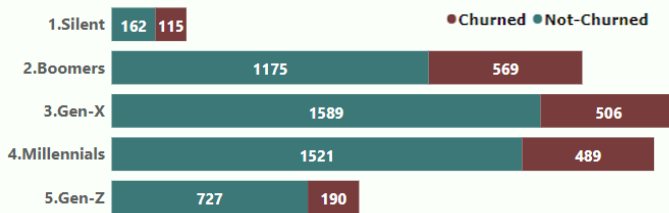
Note: The generations (Age-Groups) are defined as per the PEW RESEARCH CENTER from the customers' birth year (calculated from their given ages as on Q2-2022).

OLD Customers (subscribtions started before Q2-2022)

	1.Silent	2.Boomers	3.Gen-X	4.Millennials	5.Gen-Z
Churned	35%	27%	19%	19%	15%
Not-Churned	65%	73%	81%	81%	85%
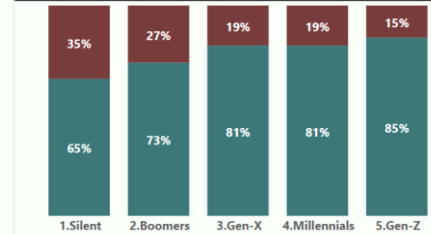
NEW Customers (subscribtions started in Q2-2022)

	1.Silent	2.Boomers	3.Gen-X	4.Millennials	5.Gen-Z
Churned	86%	66%	53%	52%	52%
Not-Churned	14%	34%	47%	48%	48%

- **Majority** of the customers belong to **boomers**, **generation-X** and **millennials**.
- As observed from the both stacked charts to the right, the customers of **OLDER GENERATIONS (Age-Groups)** have **higher churn-rates**.

The snapshot below is the **SQL Queries** to pull data from SQL Server that led to this analysis and highlighted this insight.
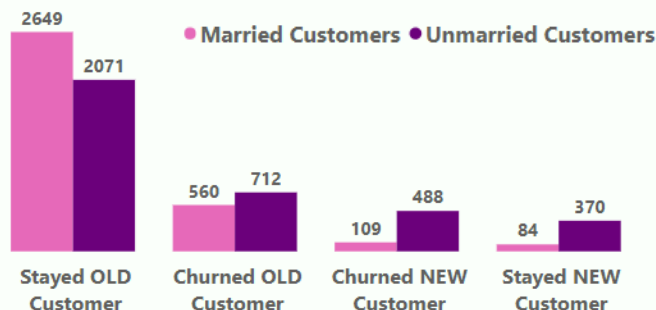
```sql
-- Churn-distribution based on Age-Group
WITH ctetable AS (
    SELECT
        Customer_ID,Customer_Status
        ,CASE
            WHEN Customer_Status = 'Stayed' AND Tenure_in_Months > 3 THEN 'Stayed OLD Customer'
            WHEN Customer_Status = 'Churned' AND Tenure_in_Months > 3 THEN 'Churned OLD Customer'
            WHEN Customer_Status = 'Churned' AND Tenure_in_Months <= 3 THEN 'Churned NEW Customer'
            WHEN Customer_Status = 'Joined' AND Tenure_in_Months <= 3 THEN 'Stayed NEW Customer'
        END AS final_customer_status
        ,CASE
            WHEN Age BETWEEN 10 AND 25 THEN '5.Gen-Z'
            WHEN Age BETWEEN 26 AND 41 THEN '4.Millennials'
            WHEN Age BETWEEN 42 AND 57 THEN '3.Gen-X'
            WHEN Age BETWEEN 58 AND 76 THEN '2.Boomers'
            WHEN Age BETWEEN 77 AND 94 THEN '1.Silent'
        END AS generations
    FROM dbo.telecom_customer_churn
)
SELECT
    generations, COUNT(Customer_ID) AS total_customer_count
    ,COUNT(CASE WHEN Customer_Status = 'Stayed' OR Customer_Status = 'Joined' THEN 1 ELSE NULL END) AS total_stayed_customer
    ,COUNT(CASE WHEN Customer_Status = 'Churned' THEN 1 ELSE NULL END) AS total_churned_customer
    ,ROUND(100.0*COUNT(CASE WHEN final_customer_status = 'Stayed OLD Customer' THEN 1 ELSE NULL END)
        /COUNT(CASE WHEN final_customer_status = 'Stayed OLD Customer' OR final_customer_status = 'Churned OLD Customer' THEN 1 ELSE NULL END)
    ,0) AS stayed_OLD_percent
    ,ROUND(100.0*COUNT(CASE WHEN final_customer_status = 'Churned OLD Customer' THEN 1 ELSE NULL END)
        /COUNT(CASE WHEN final_customer_status = 'Stayed OLD Customer' OR final_customer_status = 'Churned OLD Customer' THEN 1 ELSE NULL END)
    ,0) AS churned_OLD_percent
    ,ROUND(100.0*COUNT(CASE WHEN final_customer_status = 'Stayed NEW Customer' THEN 1 ELSE NULL END)
        /COUNT(CASE WHEN final_customer_status = 'Stayed NEW Customer' OR final_customer_status = 'Churned NEW Customer' THEN 1 ELSE NULL END)
    ,0) AS stayed_NEW_percent
    ,ROUND(100.0*COUNT(CASE WHEN final_customer_status = 'Churned NEW Customer' THEN 1 ELSE NULL END)
        /COUNT(CASE WHEN final_customer_status = 'Stayed NEW Customer' OR final_customer_status = 'Churned NEW Customer' THEN 1 ELSE NULL END)
    ,0) AS churned_NEW_percent
FROM ctetable
GROUP BY generations
ORDER BY generations
;
```
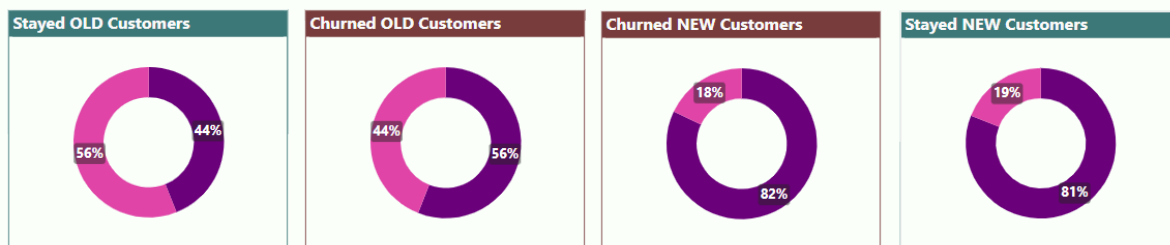
The **OUTPUTS** of the queries in tabular formats :

	generations	total_customer_count	total_stayed_customer	total_churned_customer	stayed_OLD_percent	churned_OLD_percent	stayed_NEW_percent	churned_NEW_percent
1	1.Silent	277	162	115	65.000000000000	35.000000000000	14.000000000000	86.000000000000
2	2.Boomers	1744	1175	569	73.000000000000	27.000000000000	34.000000000000	66.000000000000
3	3.Gen-X	2095	1589	506	81.000000000000	19.000000000000	47.000000000000	53.000000000000
4	4.Millennials	2010	1521	489	81.000000000000	19.000000000000	48.000000000000	52.000000000000
5	5.Gen-Z	917	727	190	85.000000000000	15.000000000000	48.000000000000	52.000000000000

Distribution of **Married** and **Unmarried** customers within each **Recategorized Customer Status:**

2649
2071
560
712
488
109
370
84

Married Customers ● Unmarried Customers

Stayed OLD Customer
Churned OLD Customer
Churned NEW Customer
Stayed NEW Customer

- **ONLY** in **Stayed-OLD-Customers** group, the **married** customers are more than **unmarried**.

- Majority of the **NEW customers (**both **churned and stayed)** who started their subscriptions in the latest quarter (Q2-2022) are **unmarried**

Stayed OLD Customers	Churned OLD Customers	Churned NEW Customers	Stayed NEW Customers
56% / 44%	44% / 56%	18% / 82%	19% / 81%

The snapshot below is the **SQL Queries** to pull data from SQL Server that led to this analysis and highlighted this insight.

```sql
-- Churn-analysis based on marital status
WITH ctetable AS (
    SELECT
        Customer_ID, Gender, Married,Number_of_Dependents,Tenure_in_Months,Customer_Status
        ,CASE
            WHEN Tenure_in_Months > 3 AND Customer_Status = 'Stayed' THEN 'Stayed OLD Customer'
            WHEN Tenure_in_Months > 3 AND Customer_Status = 'Churned' THEN 'Churned OLD Customer'
            WHEN Tenure_in_Months <= 3 AND Customer_Status = 'Joined' THEN 'Stayed NEW Customer'
            WHEN Tenure_in_Months <= 3 AND Customer_Status = 'Churned' THEN 'Churned NEW Customer'
        END AS final_customer_status
    FROM dbo.telecom_customer_churn
)
SELECT Customer_Status, final_customer_status
    ,SUM(CASE WHEN Married = 1 THEN 1 ELSE NULL END) AS married
    ,SUM(CASE WHEN Married = 0 THEN 1 ELSE NULL END) AS unmarried
    ,ROUND(100.0 * SUM(CASE WHEN Married = 1 THEN 1 ELSE NULL END)/COUNT(Customer_ID)
        ,0) AS married_percent
    ,ROUND(100.0 * SUM(CASE WHEN Married = 0 THEN 1 ELSE NULL END)/COUNT(Customer_ID)
        ,0) AS unmarried_percent
FROM ctetable
GROUP BY Customer_Status, final_customer_status
;
```

The **OUTPUTS** of the queries in tabular formats :

	Customer_Status	final_customer_status	married	unmarried	married_percent	unmarried_percent
1	Churned	Churned NEW Customer	109	488	18.000000000000	82.000000000000
2	Churned	Churned OLD Customer	560	712	44.000000000000	56.000000000000
3	Joined	Stayed NEW Customer	84	370	19.000000000000	81.000000000000
4	Stayed	Stayed OLD Customer	2649	2071	56.000000000000	44.000000000000

9 in 10 customers (90%) subscribed to phone services.
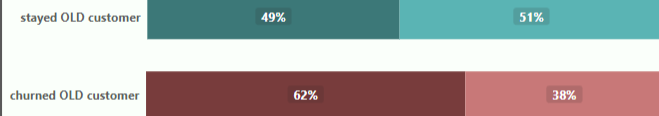
Phone Services ? ● Yes ● No

9.7%

90.3%
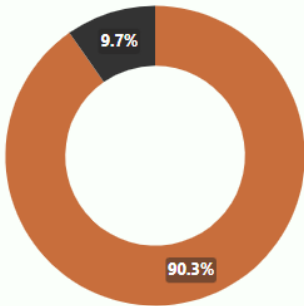
Among them, the percentage of **multiple lines subscribed CHURNED CUSTOMERS** were than the **STAYED CUSTOMERS** counterparts.

Multiple Lines ● Yes ● No   Multiple Lines ● Yes ● No

OLD Customers

| stayed OLD customer | 49% | 51% |
| churned OLD customer | 62% | 38% |

New Customers

| stayed NEW customer | 11% | 89% |
| churned NEW customer | 24% | 76% |

The snapshot below is the **SQL Queries** to pull data from SQL Server that led to this analysis and highlighted this insight.

```sql
-- Start point of churn analysis based on phone-services
-- Customers who subscribed to phone services
WITH ctetable AS (
    SELECT  Phone_Service,COUNT(DISTINCT Customer_ID) AS num_customer
            ,SUM(COUNT(DISTINCT Customer_ID)) OVER() AS total_customer
    FROM dbo.telecom_customer_churn
    GROUP BY Phone_Service
)
SELECT  Phone_Service,num_customer,total_customer
        ,ROUND(100.0*num_customer/total_customer,1) AS PERCENT_
FROM ctetable
;

-- Percentage of multiple line phone services subscriptions
DROP TABLE IF EXISTS #phone_service_table; -- drop if exists a temporary table
WITH ctetable AS
    (SELECT  Customer_ID,Customer_Status
        ,CASE
            WHEN Customer_Status = 'Stayed' AND Tenure_in_Months > 3 THEN 'stayed OLD customer'
            WHEN Customer_Status = 'Churned' AND Tenure_in_Months > 3 THEN 'churned OLD customer'
            WHEN Customer_Status = 'Churned' AND Tenure_in_Months <= 3 THEN 'churned NEW customer'
            WHEN Customer_Status = 'Joined' AND Tenure_in_Months <= 3 THEN 'stayed NEW customer'
            ELSE NULL
        END AS final_customer_status,Phone_Service,Avg_Monthly_Long_Distance_Charges,Multiple_Lines
    FROM dbo.telecom_customer_churn
    WHERE Phone_Service <> 'No')
SELECT
    ctetable.final_customer_status,Multiple_Lines,COUNT(Customer_ID) AS num_customer_phone_service_yes
INTO #phone_service_table           -- create temporary table
FROM ctetable
GROUP BY final_customer_status,Multiple_Lines
ORDER BY final_customer_status,Multiple_Lines
;

SELECT *               -- final query for getting the desired result from the temporary table
    ,ROUND(100.0*num_customer_phone_service_yes
        /SUM(num_customer_phone_service_yes) OVER(PARTITION BY final_customer_status)
    ,1) as percent_multiple_lines_within_status
FROM #phone_service_table;
                        -- End point of churn analysis based on phone-services
```

The **OUTPUTS** of the queries in tabular formats :

Phone_Service	num_customer	total_customer	PERCENT_
Yes	6361	7043	90.300000000000
No	682	7043	9.700000000000

	final_customer_status	Multiple_Lines	num_customer_phone_service_yes	percent_multiple_lines_within_status
1	churned NEW customer	Yes	128	24.200000000000
2	churned NEW customer	No	401	75.800000000000
3	churned OLD customer	No	448	38.300000000000
4	churned OLD customer	Yes	722	61.700000000000
5	stayed NEW customer	Yes	45	10.800000000000
6	stayed NEW customer	No	371	89.200000000000
7	stayed OLD customer	No	2170	51.100000000000
8	stayed OLD customer	Yes	2076	48.900000000000

The distributions of **VARIOUS STATISTICS** of **monthly long-distance charges** **ACROSS** the **CUSTOMER STATUS** are almost same with that of the values of overall **POPULATION**.

Overall (All) Monthly Charges:

avg_
$25.42

max_
$49.99

min_
$1.01

std_
$14.20

The snapshot below is the **SQL Queries** to pull data from SQL Server that led to this analysis and highlighted this insight.

```sql
-- analysis of Avg_Monthly_Long_Distance_Charges based on final status
WITH ctetable AS
    (SELECT  Customer_ID,Customer_Status
        ,CASE
            WHEN Customer_Status = 'Stayed' AND Tenure_in_Months > 3 THEN 'stayed OLD customer'
            WHEN Customer_Status = 'Churned' AND Tenure_in_Months > 3 THEN 'churned OLD customer'
            WHEN Customer_Status = 'Churned' AND Tenure_in_Months <= 3 THEN 'churned NEW customer'
            WHEN Customer_Status = 'Joined' AND Tenure_in_Months <= 3 THEN 'stayed NEW customer'
            ELSE NULL
        END AS final_customer_status,Phone_Service,Avg_Monthly_Long_Distance_Charges,Multiple_Lines
    FROM dbo.telecom_customer_churn
    WHERE Phone_Service <> 'No')
SELECT
    ctetable.final_customer_status, ROUND(AVG(Avg_Monthly_Long_Distance_Charges),2) avg_
    ,ROUND(SQRT(VAR(Avg_Monthly_Long_Distance_Charges)),2) std_,
ROUND(MAX(Avg_Monthly_Long_Distance_Charges),2) max_
    ,ROUND(MIN(Avg_Monthly_Long_Distance_Charges),2) min_
FROM ctetable
GROUP BY final_customer_status

UNION ALL

-- overall Avg_Monthly_Long_Distance_Charges
SELECT
    'All' AS final_customer_status,ROUND(AVG(Avg_Monthly_Long_Distance_Charges),2) avg_
    ,ROUND(SQRT(VAR(Avg_Monthly_Long_Distance_Charges)),2) std_,
ROUND(MAX(Avg_Monthly_Long_Distance_Charges),2) max_
    ,ROUND(MIN(Avg_Monthly_Long_Distance_Charges),2) min_
FROM dbo.telecom_customer_churn
;
```
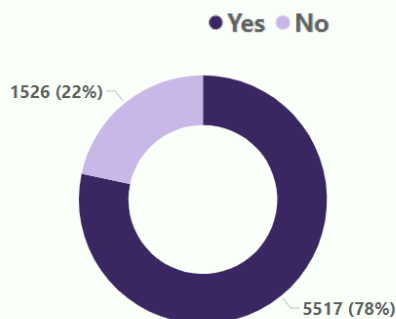
The **OUTPUTS** of the queries in tabular formats :

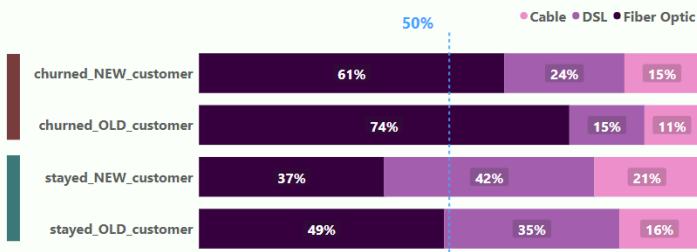|	final_customer_status	avg_	std_	max_	min_
1	stayed OLD customer	25.5	14.19	49.99	1.01
2	churned OLD customer	25.44	14.36	49.98	1.02
3	stayed NEW customer	24.34	14.2	49.91	1.15
4	churned NEW customer	25.58	13.91	49.81	1.13
5	All	25.42	14.2	49.99	1.01

Almost **8** in **10** customers **(78%)** subscribed to **Internet Services**.

Majority of the customers who have **CHURNED subscribed** to internet services through the type **FIBRE-OPTIC.**

● Yes ● No

1526 (22%)

5517 (78%)

FIBRE OPTIC
- **61%** of **churned NEW** customers
- **74%** of **churned OLD** customers

50%

● Cable ● DSL ● Fiber Optic

	Fiber Optic	DSL	Cable
churned_NEW_customer	61%	24%	15%
churned_OLD_customer	74%	15%	11%
stayed_NEW_customer	37%	42%	21%
stayed_OLD_customer	49%	35%	16%

The snapshot below is the **SQL Queries** to pull data from SQL Server that led to this analysis and highlighted this insight.

```sql
-- Internet Services subscriptions
SELECT  Internet_Service,COUNT(Customer_ID) AS num_customer,SUM(COUNT(Customer_ID)) over() AS total_customer
        ,ROUND(100.0*COUNT(Customer_ID)/SUM(COUNT(Customer_ID)) OVER(),0) AS percent_
FROM dbo.telecom_customer_churn
GROUP BY Internet_Service
;

-- churn-rate analysis based on Internet Type
WITH ctetable AS (
    SELECT
        Customer_ID,Internet_Service,Internet_Type
        ,CASE
            WHEN Customer_Status = 'Stayed' AND Tenure_in_Months > 3 THEN 'stayed_OLD_customer'
            WHEN Customer_Status = 'Churned' AND Tenure_in_Months > 3 THEN 'churned_OLD_customer'
            WHEN Customer_Status = 'Churned' AND Tenure_in_Months <= 3 THEN 'churned_NEW_customer'
            WHEN Customer_Status = 'Joined' AND Tenure_in_Months <= 3 THEN 'stayed_NEW_customer'
        ELSE NULL END AS final_customer_status
    FROM dbo.telecom_customer_churn
)
SELECT
    Internet_Type, COUNT(Customer_ID) num_customer
    ,ROUND(100.0*COUNT(CASE WHEN final_customer_status = 'stayed_OLD_customer' THEN 1 ELSE NULL END)
    /SUM(COUNT(CASE WHEN final_customer_status = 'stayed_OLD_customer' THEN 1 ELSE NULL END)) OVER(),0 )AS stayed_OLD_percent
    ,ROUND(100.0*COUNT(CASE WHEN final_customer_status = 'churned_OLD_customer' THEN 1 ELSE NULL END)
    /SUM(COUNT(CASE WHEN final_customer_status = 'churned_OLD_customer' THEN 1 ELSE NULL END)) OVER(),0) AS churned_OLD_percent
    ,ROUND(100.0*COUNT(CASE WHEN final_customer_status = 'churned_NEW_customer' THEN 1 ELSE NULL END)
    /SUM(COUNT(CASE WHEN final_customer_status = 'churned_NEW_customer' THEN 1 ELSE NULL END)) OVER(),0) AS churned_NEW_percent
    ,ROUND(100.0*COUNT(CASE WHEN final_customer_status = 'stayed_NEW_customer' THEN 1 ELSE NULL END)
    /SUM(COUNT(CASE WHEN final_customer_status = 'stayed_NEW_customer' THEN 1 ELSE NULL END)) OVER(),0) AS stayed_NEW_percent
FROM ctetable
WHERE Internet_Service = 'Yes'
GROUP BY Internet_Type
;
```

The **OUTPUTS** of the queries in tabular formats :

	Internet_Service	num_customer	total_customer	percent_
1	Yes	5517	7043	78.000000000000
2	No	1526	7043	22.000000000000

	Internet_Type	num_customer	stayed_OLD_percent	churned_OLD_percent	churned_NEW_percent	stayed_NEW_percent
1	Fiber Optic	3035	49.000000000000	74.000000000000	61.000000000000	37.000000000000
2	Cable	830	16.000000000000	11.000000000000	15.000000000000	21.000000000000
3	DSL	1652	35.000000000000	15.000000000000	24.000000000000	42.000000000000

The distributions of **VARIOUS STATISTICS** of **average monthly downloads (GB)** **ACROSS** the **CUSTOMER STATUS** are almost same with that of the **POPULATION**

GB Downloads

- ● stayed OLD customer
- ● stayed NEW customer
- ● churned OLD customer
- ● churned NEW customer
- ● All

Overall (All) Monthly Downloads (GB):

avg_
26.00

max_
85.00

min_
2.00

std_
19.59

The snapshot below is the **SQL Queries** to pull data from SQL Server that led to this analysis and highlighted this insight.

```sql
-- analysis of Avg_Monthly_GB_Download based on final status
WITH ctetable AS (
SELECT
    Customer_ID,Avg_Monthly_GB_Download
    ,CASE
        WHEN Customer_Status = 'Stayed' AND Tenure_in_Months > 3 THEN 'stayed_OLD_customer'
        WHEN Customer_Status = 'Churned' AND Tenure_in_Months > 3 THEN 'churned_OLD_customer'
        WHEN Customer_Status = 'Churned' AND Tenure_in_Months <= 3 THEN 'churned_NEW_customer'
        WHEN Customer_Status = 'Joined' AND Tenure_in_Months <= 3 THEN 'stayed_NEW_customer'
    ELSE NULL END AS final_customer_status
FROM dbo.telecom_customer_churn
WHERE Internet_Service = 'Yes'
)
SELECT
    final_customer_status,MAX(Avg_Monthly_GB_Download) max_,MIN(Avg_Monthly_GB_Download) min_
    ,AVG(Avg_Monthly_GB_Download) avg_,ROUND(SQRT(VAR(Avg_Monthly_GB_Download)),2) AS std_
FROM ctetable
GROUP BY final_customer_status

UNION ALL
-- overall Avg_Monthly_GB_Download
SELECT
    'All (Overall)' AS final_customer_status,MAX(Avg_Monthly_GB_Download)
max_,MIN(Avg_Monthly_GB_Download) min_
    ,AVG(Avg_Monthly_GB_Download) avg_, ROUND(SQRT(VAR(Avg_Monthly_GB_Download)),2) AS std_
FROM dbo.telecom_customer_churn
;
```
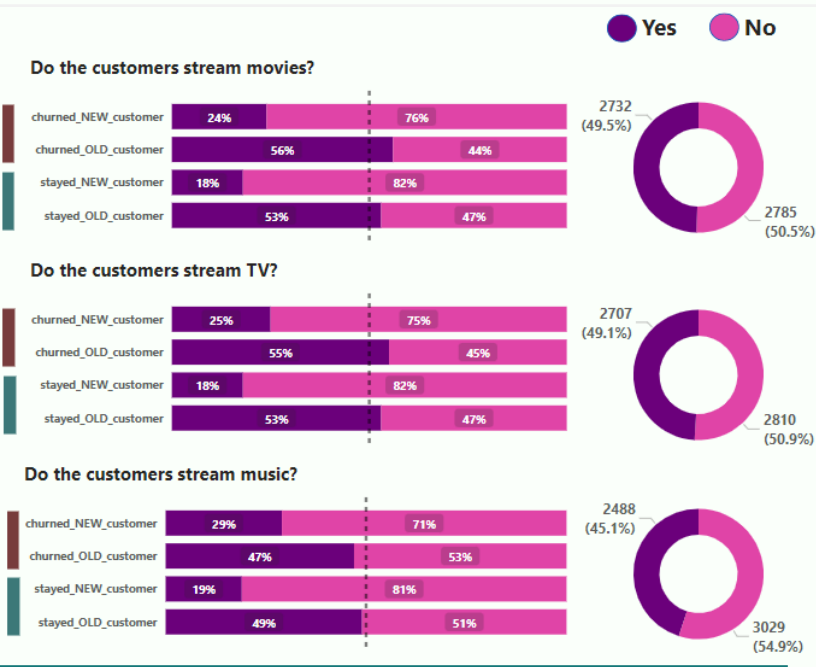
The **OUTPUTS** of the queries in tabular formats :

	final_customer_status	max_	min_	avg_	std_
1	stayed_NEW_customer	85	2	25	20.01
2	churned_OLD_customer	85	2	23	17.84
3	stayed_OLD_customer	85	2	27	20.19
4	churned_NEW_customer	85	2	24	18.27
5	All (Overall)	85	2	26	19.59

Among the **INTERNET SUBSCRIBERS**, the distributions of the **streaming-customers** across the **CHURNED** and **STAYED** statuses are **similar**, and

The overall streaming status **does not** seem to influence the **churn behaviour**

Yes **No**

Do the customers stream movies?

churned_NEW_customer	24%	76%
churned_OLD_customer	56%	44%
stayed_NEW_customer	18%	82%
stayed_OLD_customer	53%	47%

2732 (49.5%)
2785 (50.5%)

Do the customers stream TV?

churned_NEW_customer	25%	75%
churned_OLD_customer	55%	45%
stayed_NEW_customer	18%	82%
stayed_OLD_customer	53%	47%

2707 (49.1%)
2810 (50.9%)

Do the customers stream music?

churned_NEW_customer	29%	71%
churned_OLD_customer	47%	53%
stayed_NEW_customer	19%	81%
stayed_OLD_customer	49%	51%

2488 (45.1%)
3029 (54.9%)

The snapshot to the left is the **SQL Queries** to pull data from SQL Server that led to this analysis and highlighted this insight.

```sql
-- churn analysis based on streaming part-1

SELECT
    COUNT(CASE WHEN Streaming_Movies = 'Yes' THEN 1 ELSE NULL END) AS movies_yes
    ,COUNT(CASE WHEN Streaming_Movies = 'No' THEN 1 ELSE NULL END) AS movies_no
    ,COUNT(CASE WHEN Streaming_Music = 'Yes' THEN 1 ELSE NULL END) AS music_yes
    ,COUNT(CASE WHEN Streaming_Music = 'No' THEN 1 ELSE NULL END) AS music_no
    ,COUNT(CASE WHEN Streaming_TV = 'Yes' THEN 1 ELSE NULL END) AS tv_yes
    ,COUNT(CASE WHEN Streaming_TV = 'No' THEN 1 ELSE NULL END) AS tv_no
    ,COUNT(*)  AS total
FROM dbo.telecom_customer_churn
WHERE Internet_Service = 'Yes'
;

-- churn-rate analysis based on Streaming part-2
WITH ctetable AS (
    SELECT
        Customer_ID,Internet_Service,Streaming_Movies,Streaming_Music,Streaming_TV
        ,CASE
            WHEN Customer_Status = 'Stayed' AND Tenure_in_Months > 3 THEN 'stayed_OLD_customer'
            WHEN Customer_Status = 'Churned' AND Tenure_in_Months > 3 THEN 'churned_OLD_customer'
            WHEN Customer_Status = 'Churned' AND Tenure_in_Months <= 3 THEN 'churned_NEW_customer'
            WHEN Customer_Status = 'Joined' AND Tenure_in_Months <= 3 THEN 'stayed_NEW_customer'
        ELSE NULL END AS final_customer_status
    FROM dbo.telecom_customer_churn
)
SELECT
    final_customer_status
    ,ROUND(100.0*COUNT(CASE WHEN Streaming_Movies = 'Yes' THEN 1 ELSE NULL END)/COUNT(*)
        ,0) AS movies_yes
    ,ROUND(100.0*COUNT(CASE WHEN Streaming_Movies = 'No' THEN 1 ELSE NULL END)/COUNT(*)
        ,0) AS movies_no
    ,ROUND(100.0*COUNT(CASE WHEN Streaming_Music = 'Yes' THEN 1 ELSE NULL END)/COUNT(*)
        ,0) AS music_yes
    ,ROUND(100.0*COUNT(CASE WHEN Streaming_Music = 'No' THEN 1 ELSE NULL END)/COUNT(*)
        ,0) AS music_no
    ,ROUND(100.0*COUNT(CASE WHEN Streaming_TV = 'Yes' THEN 1 ELSE NULL END)/COUNT(*)
        ,0) AS TV_yes
    ,ROUND(100.0*COUNT(CASE WHEN Streaming_TV = 'No' THEN 1 ELSE NULL END)/COUNT(*)
        ,0) AS TV_no
FROM ctetable
WHERE Internet_Service = 'Yes'
GROUP BY final_customer_status
;
```

The **OUTPUTS** of the queries in tabular formats :

movies_yes	movies_no	music_yes	music_no	tv_yes	tv_no	total
2732	2785	2488	3029	2707	2810	5517

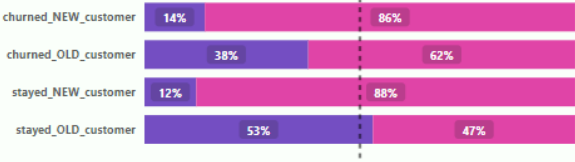| final_customer_status	movies_yes	movies_no	music_yes	music_no	TV_yes	TV_no
stayed_NEW_customer	18.000000000000	82.000000000000	19.000000000000	81.000000000000	18.000000000000	82.000000000000
churned_OLD_customer	56.000000000000	44.000000000000	47.000000000000	53.000000000000	55.000000000000	45.000000000000
stayed_OLD_customer	53.000000000000	47.000000000000	49.000000000000	51.000000000000	53.000000000000	47.000000000000
churned_NEW_customer	24.000000000000	76.000000000000	29.000000000000	71.000000000000	25.000000000000	75.000000000000

Although **MAJORITY** of the customers **DID NOT** subscribe to **additional services**, **HALF** of the **STAYED-OLD-CUSTOMERS SUBSCRIBED** to these **additional services**.
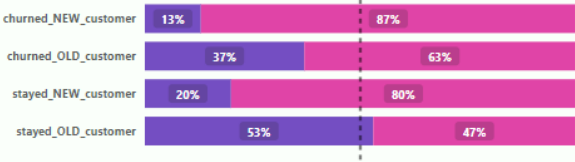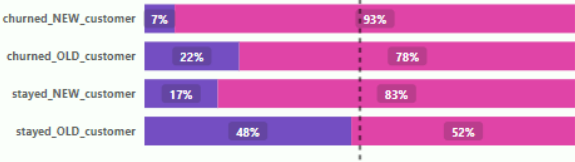
● Yes ● No

Additional Security
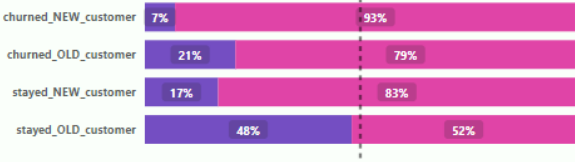
churned_NEW_customer	7% / 93%
churned_OLD_customer	21% / 79%
stayed_NEW_customer	17% / 83%
stayed_OLD_customer	48% / 52%

Additional Protection

churned_NEW_customer	14% / 86%
churned_OLD_customer	38% / 62%
stayed_NEW_customer	12% / 88%
stayed_OLD_customer	53% / 47%

Additional Backup

churned_NEW_customer	13% / 87%
churned_OLD_customer	37% / 63%
stayed_NEW_customer	20% / 80%
stayed_OLD_customer	53% / 47%

Additional Support

churned_NEW_customer	7% / 93%
churned_OLD_customer	22% / 78%
stayed_NEW_customer	17% / 83%
stayed_OLD_customer	48% / 52%

The snapshot below is the **SQL Queries** to pull data from SQL Server that led to this analysis and highlighted this insight.

```sql
-- analysis of additional subscriptions
WITH ctetable AS (
    SELECT
        Customer_ID,Online_Security,Online_Backup,Device_Protection_Plan,Premium_Tech_Support
        ,Streaming_Movies,Streaming_Music,Streaming_TV,Unlimited_Data
        ,CASE
            WHEN Customer_Status = 'Stayed' AND Tenure_in_Months > 3 THEN 'stayed_OLD_customer'
            WHEN Customer_Status = 'Churned' AND Tenure_in_Months > 3 THEN 'churned_OLD_customer'
            WHEN Customer_Status = 'Churned' AND Tenure_in_Months <= 3 THEN 'churned_NEW_customer'
            WHEN Customer_Status = 'Joined' AND Tenure_in_Months <= 3 THEN 'stayed_NEW_customer'
        ELSE NULL END AS final_customer_status
    FROM dbo.telecom_customer_churn
    WHERE Internet_Service = 'Yes'
)
SELECT final_customer_status
    , ROUND(100.0*COUNT(CASE WHEN Online_Security = 'Yes' THEN 1 ELSE NULL END)/COUNT(*),0)
security_yes
    , ROUND(100.0*COUNT(CASE WHEN Online_Security = 'No' THEN 1 ELSE NULL END)/COUNT(*),0) security_no
    , ROUND(100.0*COUNT(CASE WHEN Online_Backup = 'Yes' THEN 1 ELSE NULL END)/COUNT(*),0) backup_yes
    , ROUND(100.0*COUNT(CASE WHEN Online_Backup = 'No' THEN 1 ELSE NULL END)/COUNT(*),0) backup_no
    , ROUND(100.0*COUNT(CASE WHEN Device_Protection_Plan = 'Yes' THEN 1 ELSE NULL END)/COUNT(*),0)
protection_yes
    , ROUND(100.0*COUNT(CASE WHEN Device_Protection_Plan = 'No' THEN 1 ELSE NULL END)/COUNT(*),0)
protection_no
    , ROUND(100.0*COUNT(CASE WHEN Premium_Tech_Support = 'Yes' THEN 1 ELSE NULL END)/COUNT(*),0)
support_yes
    , ROUND(100.0*COUNT(CASE WHEN Premium_Tech_Support = 'No' THEN 1 ELSE NULL END)/COUNT(*),0)
support_no
FROM ctetable
GROUP BY final_customer_status
ORDER BY final_customer_status DESC
```

The **OUTPUTS** of the queries in tabular formats :

final_customer_status	security_yes	security_no	backup_yes	backup_no	protection_yes	protection_no	support_yes	support_no
stayed_OLD_customer	48.000000000000	52.000000000000	53.000000000000	47.000000000000	53.000000000000	47.000000000000	48.000000000000	52.000000000000
stayed_NEW_customer	17.000000000000	83.000000000000	20.000000000000	80.000000000000	12.000000000000	88.000000000000	17.000000000000	83.000000000000
churned_OLD_customer	21.000000000000	79.000000000000	37.000000000000	63.000000000000	38.000000000000	62.000000000000	22.000000000000	78.000000000000
churned_NEW_customer	7.000000000000	93.000000000000	13.000000000000	87.000000000000	14.000000000000	86.000000000000	7.000000000000	93.000000000000

$21.37M
Total Revenue

What's the AVERAGE REVENUE in each category ?

stayed OLD customer	$3,736
churned OLD customer	$2,835
churned NEW customer	$132
stayed NEW customer	$120

As per the ***AVERAGE REVENUE:***
1. OLD customers are **highly valued** regardless of whether they are **CHURNED** or **STAYED**.
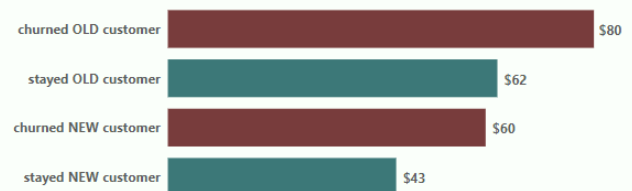**2. Among** the **NEW** customers the **Churned NEW customers** have **higher** average revenue **than Stayed NEW customers**

As per the ***AVERAGE MONTHLY CHARGES:*** **CHURNED** customers are charged **higher** than **STAYED** customers within both **OLD** and **NEW** customers

What's the AVERAGE MONTHLY CHARGES of each category ?

churned OLD customer	$80
stayed OLD customer	$62
churned NEW customer	$60
stayed NEW customer	$43

What's the AVERAGE REFUND of each category ?

$2.30	stayed OLD customer
$2.19	churned OLD customer
$0.24	stayed NEW customer
$0.09	churned NEW customer
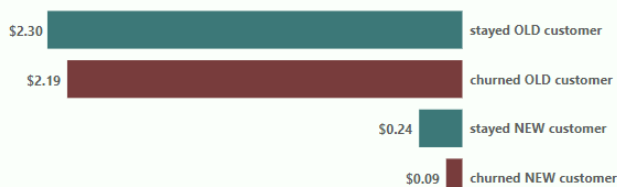
As per the **AVERAGE REFUND:**
- **STAYED** customers received **higher** than **CHURNED** customers within both **OLD** and **NEW** customers.

The following snapshot is the **SQL Query** to pull data from SQL Server that led to this analysis and highlighted this insight.

```
-- analysis of total revenue, monthly charge and refund for each final category
WITH ctetable AS (
    SELECT
        CASE
            WHEN Customer_Status = 'Stayed' AND Tenure_in_Months > 3 THEN 'stayed OLD customer'
            WHEN Customer_Status = 'Churned' AND Tenure_in_Months > 3 THEN 'churned OLD customer'
            WHEN Customer_Status = 'Churned' AND Tenure_in_Months <= 3 THEN 'churned NEW customer'
            WHEN Customer_Status = 'Joined' AND Tenure_in_Months <= 3 THEN 'stayed NEW customer'
            ELSE NULL
        END AS final_customer_status

    ,Monthly_Charge,Total_Charges,Total_Revenue,Total_Extra_Data_Charges,Total_Long_Distance_Charges,Total_Refunds
    FROM dbo.telecom_customer_churn
)
SELECT final_customer_status, ROUND(AVG(Monthly_Charge),2) average_monthly_charge
    ,ROUND(AVG(Total_Revenue),2) average_revenue
    ,ROUND(AVG(Total_Refunds),2) agerage_total_refund
    ,ROUND(SUM(Total_Revenue),2) AS total_revenue
FROM ctetable
GROUP BY final_customer_status
UNION
SELECT 'All(overall)' AS final_customer_status,ROUND(AVG(Monthly_Charge),2) average_monthly_charge
    ,ROUND(AVG(Total_Revenue),2) average_total_revenue
    ,ROUND(AVG(Total_Refunds),2) agerage_total_refund
    ,ROUND(SUM(Total_Revenue),2) AS total_revenue
FROM dbo.telecom_customer_churn
ORDER BY final_customer_status DESC
;
```

The **OUTPUT** of the query in tabular format :

final_customer_status	average_monthly_charge	average_revenue	agerage_total_refund	total_revenue
stayed OLD customer	61.74	3735.68	2.3	17632392.11
stayed NEW customer	42.78	119.56	0.24	54279.75
churned OLD customer	79.83	2834.62	2.19	3605638.68
churned NEW customer	59.54	132.03	0.09	78821.14
All(overall)	63.6	3034.38	1.96	21371131.68

HALF of the customers subscribed to services through **Month-to-Month** contract.

**CHURNED Rate** is higher for customers with **Month-to-Month** Contract

Most of the customers with **Two year** (**Long-term**) Contract are **stayed OLD customers**

What are the contract type of the customers?

Two Year 1883 (27%)

Month-to-Month 3610 (51%)

One Year 1550 (22%)
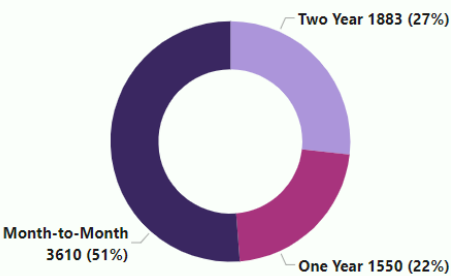
Distributions of various final customer statues for every contract type:

● stayed OLD customer ● stayed NEW customer ● churned OLD customer ● churned NEW customer
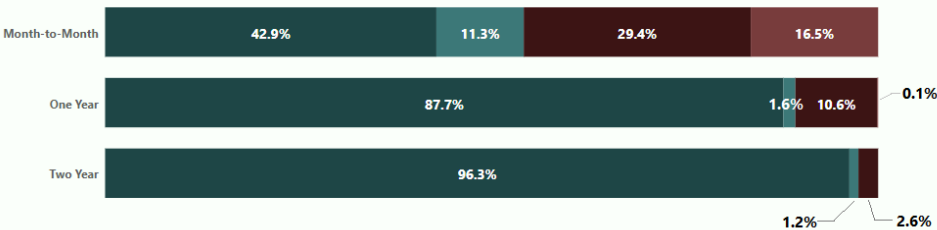
Month-to-Month	42.9%	11.3%	29.4%	16.5%
One Year	87.7%	1.6% 10.6%	0.1%
Two Year	96.3%	1.2% 2.6%

The following snapshot is the **SQL Query** to pull data from SQL Server that led to this analysis and highlighted this insight.

```
-- analysis of churn based on contract type part-1
SELECT contract AS contract_type,COUNT(*) AS num_customer
    ,SUM(COUNT(*)) OVER() AS total_customer
    ,ROUND(100.0*COUNT(*)/SUM(COUNT(*)) OVER(),0) AS contract_to_overall_percent
FROM dbo.telecom_customer_churn
GROUP BY  Contract
;

-- analysis of churn based on contract type part-2
WITH ctetable AS (
    SELECT
            CASE
                WHEN Customer_Status = 'Stayed' AND Tenure_in_Months > 3 THEN 'stayed OLD customer'
                WHEN Customer_Status = 'Churned' AND Tenure_in_Months > 3 THEN 'churned OLD customer'
                WHEN Customer_Status = 'Churned' AND Tenure_in_Months <= 3 THEN 'churned NEW customer'
                WHEN Customer_Status = 'Joined' AND Tenure_in_Months <= 3 THEN 'stayed NEW customer'
                ELSE NULL
            END AS final_customer_status
            ,Customer_ID,Monthly_Charge,Total_Revenue,Contract,Paperless_Billing
    FROM dbo.telecom_customer_churn as tele
)
SELECT Contract AS contract_type, final_customer_status
    ,ROUND(100.0*COUNT(Customer_ID)
        /SUM(COUNT(Customer_ID)) OVER(PARTITION BY Contract)
    ,2) AS status_to_contract_type_percent
FROM ctetable
GROUP BY contract, final_customer_status
ORDER BY contract, final_customer_status
;
```

The **OUTPUT** of the query in tabular format :

contract_type	num_customer	total_customer	contract_to_overall_percent
Month-to-Month	3610	7043	51.000000000000
One Year	1550	7043	22.000000000000
Two Year	1883	7043	27.000000000000

contract_type	final_customer_status	status_to_contract_type_percent
Month-to-Month	churned NEW customer	16.480000000000
Month-to-Month	churned OLD customer	29.360000000000
Month-to-Month	stayed NEW customer	11.300000000000
Month-to-Month	stayed OLD customer	42.850000000000
One Year	churned NEW customer	0.130000000000
One Year	churned OLD customer	10.580000000000
One Year	stayed NEW customer	1.550000000000
One Year	stayed OLD customer	87.740000000000
Two Year	churned OLD customer	2.550000000000
Two Year	stayed NEW customer	1.170000000000
Two Year	stayed OLD customer	96.280000000000

Almost **HALF** of the **churned** customers are because of **COMPETITOR's** influence.
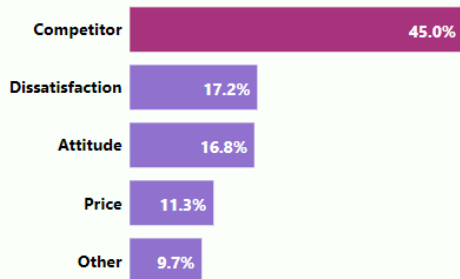
The following snapshot is the **SQL Query** to pull data from SQL Server that led to this analysis and insight on the churn categories.

```sql
-- Analysis of churn based on the churn category
SELECT
    Churn_Category
    ,COUNT(Customer_ID) num_customer_churned
    ,ROUND(100.0*COUNT(Customer_ID)
        /SUM(COUNT(Customer_ID)) OVER()
    ,1) AS percent_of_total_churned_customer
FROM dbo.telecom_customer_churn
WHERE Customer_Status = 'Churned'
GROUP BY Churn_Category
ORDER BY COUNT(Customer_ID) DESC
;
```

The **OUTPUT** of the above query in tabular format :

| Churn_Category	num_customer_churned	percent_of_total_churned_customer
Competitor	841	45.000000000000
Dissatisfaction	321	17.200000000000
Attitude	314	16.800000000000
Price	211	11.300000000000
Other	182	9.700000000000

The snapshot at the bottom-left is the **SQL Query** to pull data from SQL Server that led to this analysis and insight on the reasons for each churn category.

```sql
-- Analysis of churn based on reasons in each churn category
SELECT
    Churn_Category,Churn_Reason
    ,COUNT(Customer_ID) num_customer_churned
    , SUM(COUNT(Customer_ID))
        OVER(PARTITION BY Churn_Category)
        AS total_churn_customer_each_category
    ,ROUND(100.0*COUNT(Customer_ID)
        /SUM(COUNT(Customer_ID))
        OVER(PARTITION BY Churn_Category)
    ,1) AS percent_in_each_churn_category
FROM dbo.telecom_customer_churn
WHERE Customer_Status = 'Churned'
GROUP BY Churn_Category, Churn_Reason
ORDER BY
    Churn_Category
    ,COUNT(Customer_ID) DESC
;
```
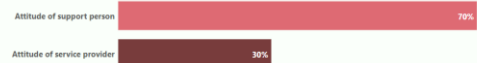
REASONS for **churn** based on **COMPETITOR's** influence:
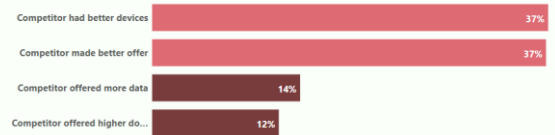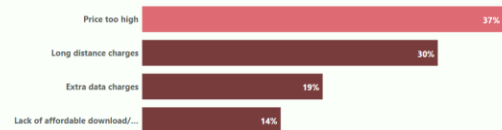

REASONS for **churn** based on **DISSATISFACTION**:
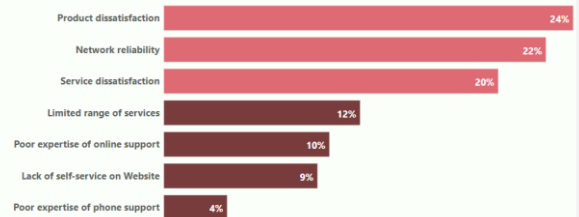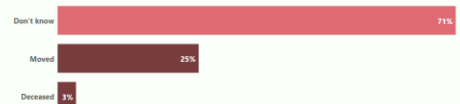

REASONS for **churn** based on **ATTITUDE** of the employees:

REASONS for **churn** based on **PRICE** of the services:

Customers churned for REASONS **OTHER** than the specified:

The **OUTPUT** of the query to the left is in tabular format as follows:

Churn_Category	Churn_Reason	num_customer_churned	total_churn_customer_each_category	percent_in_each_churn_category
Attitude	Attitude of support person	220	314	70.100000000000
Attitude	Attitude of service provider	94	314	29.900000000000
Competitor	Competitor had better devices	313	841	37.200000000000
Competitor	Competitor made better offer	311	841	37.000000000000
Competitor	Competitor offered more data	117	841	13.900000000000
Competitor	Competitor offered higher download speeds	100	841	11.900000000000
Dissatisfaction	Product dissatisfaction	77	321	24.000000000000
Dissatisfaction	Network reliability	72	321	22.400000000000
Dissatisfaction	Service dissatisfaction	63	321	19.600000000000
Dissatisfaction	Limited range of services	37	321	11.500000000000
Dissatisfaction	Poor expertise of online support	31	321	9.700000000000
Dissatisfaction	Lack of self-service on Website	29	321	9.000000000000
Dissatisfaction	Poor expertise of phone support	12	321	3.700000000000
Other	Don't know	130	182	71.400000000000
Other	Moved	46	182	25.300000000000
Other	Deceased	6	182	3.300000000000
Price	Price too high	78	211	37.000000000000
Price	Long distance charges	64	211	30.300000000000
Price	Extra data charges	39	211	18.500000000000
Price	Lack of affordable download/upload speed	30	211	14.200000000000

Thank You

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