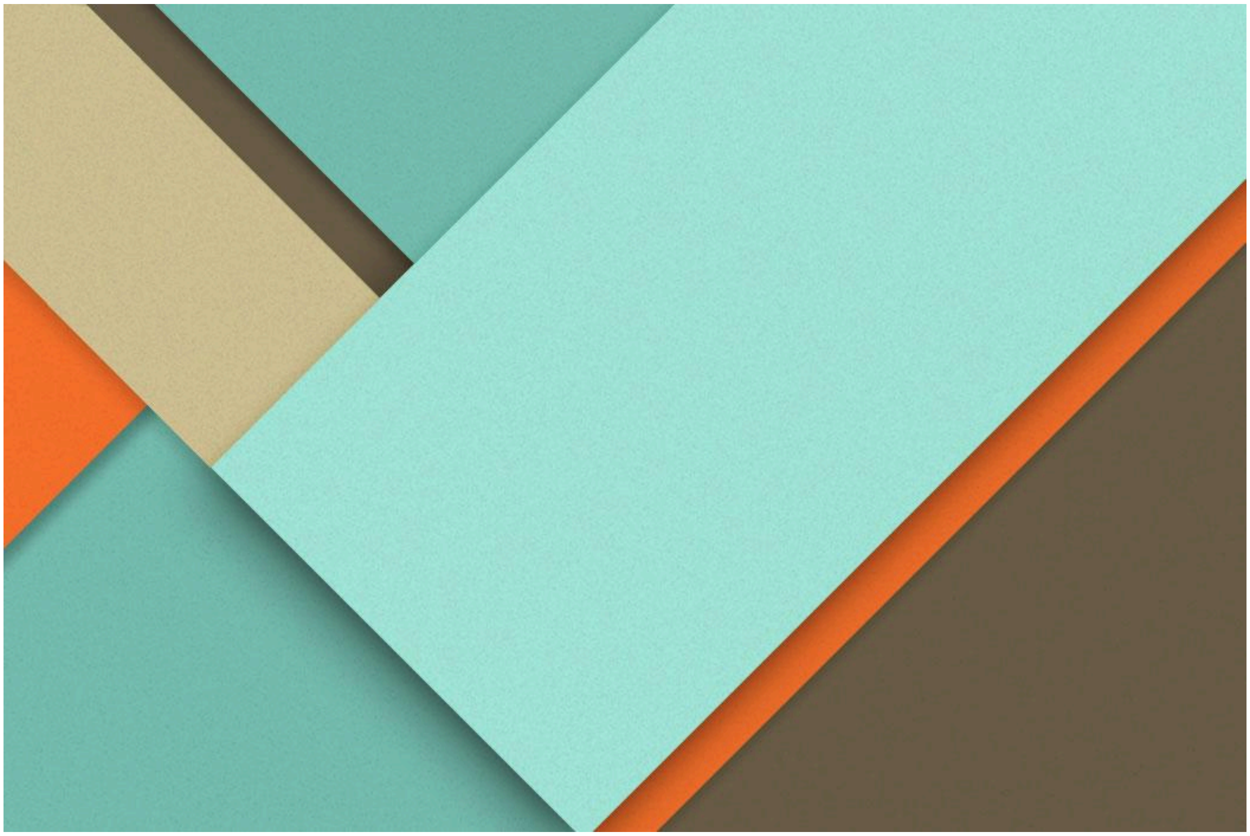


Retail Customer Retention Analytics – TESCO

Mahesh Katula

Overview

TESCO, a retail leader in the UK, operates across multiple cities through superstores, express outlets, and online channels. With growing competition and changing customer expectations, customer retention has become increasingly difficult. Although TESCO has access to rich data on customer transactions, store performance, and loyalty programs, its current reporting system lacks the analytical depth needed to:

● Understand why customers are churning? (Customer churn, the rate at which customers stop doing business with a company)

● Identify high-value customers and those at risk.

● Evaluate the impact of loyalty tiers and promotions.

● Guide store-specific retention strategies.

Goals

Develop a robust, Interactive Customer Retention Analytics Dashboard in Power BI using the provided data, which will:

● Consolidate customer demographics, transaction history, store performance, and loyalty program usage.

● Enable dynamic segmentation of high-value, repeat, and churned customers.

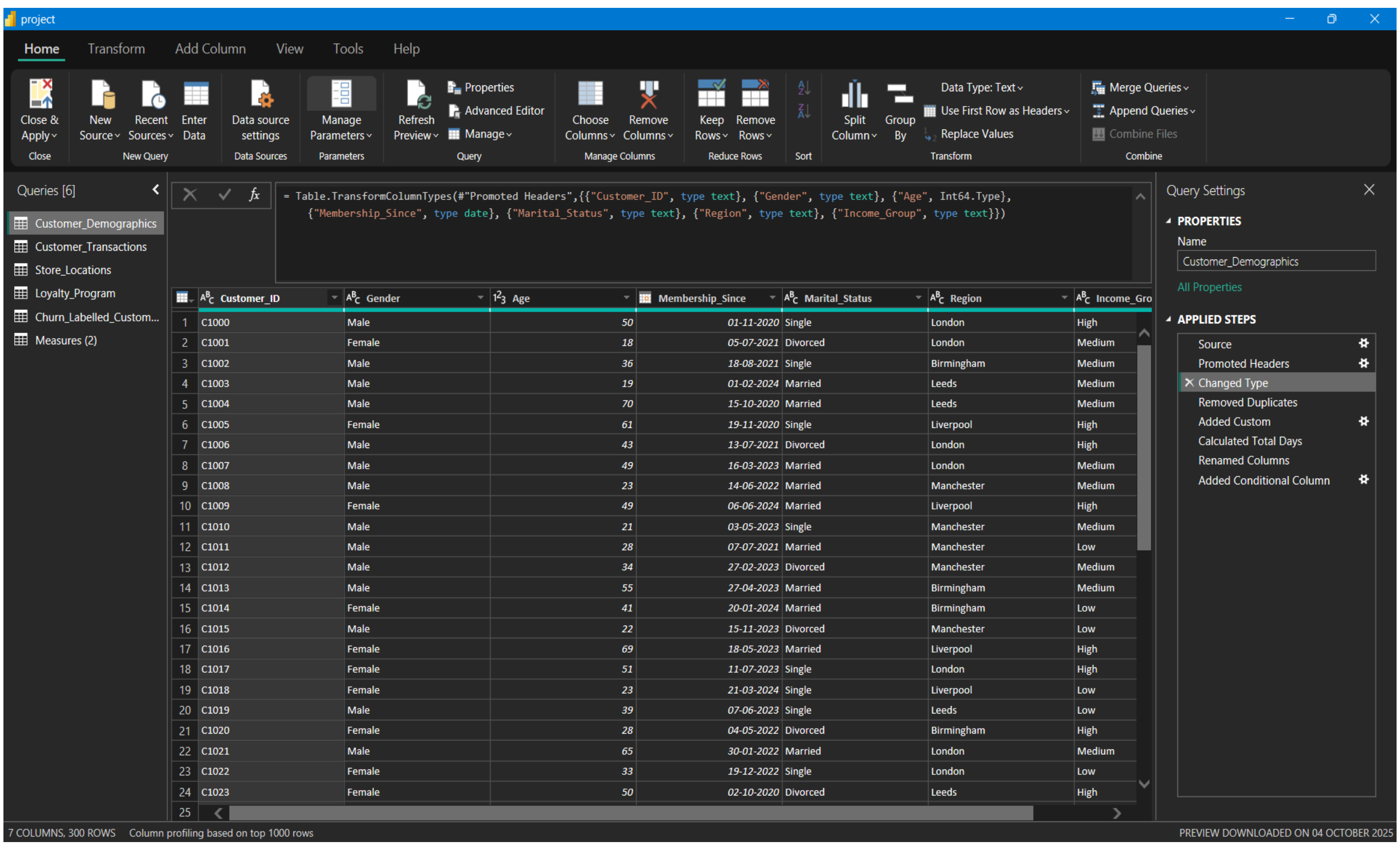
● Offer actionable insights for improving retention, loyalty program effectiveness, and regional store strategies.

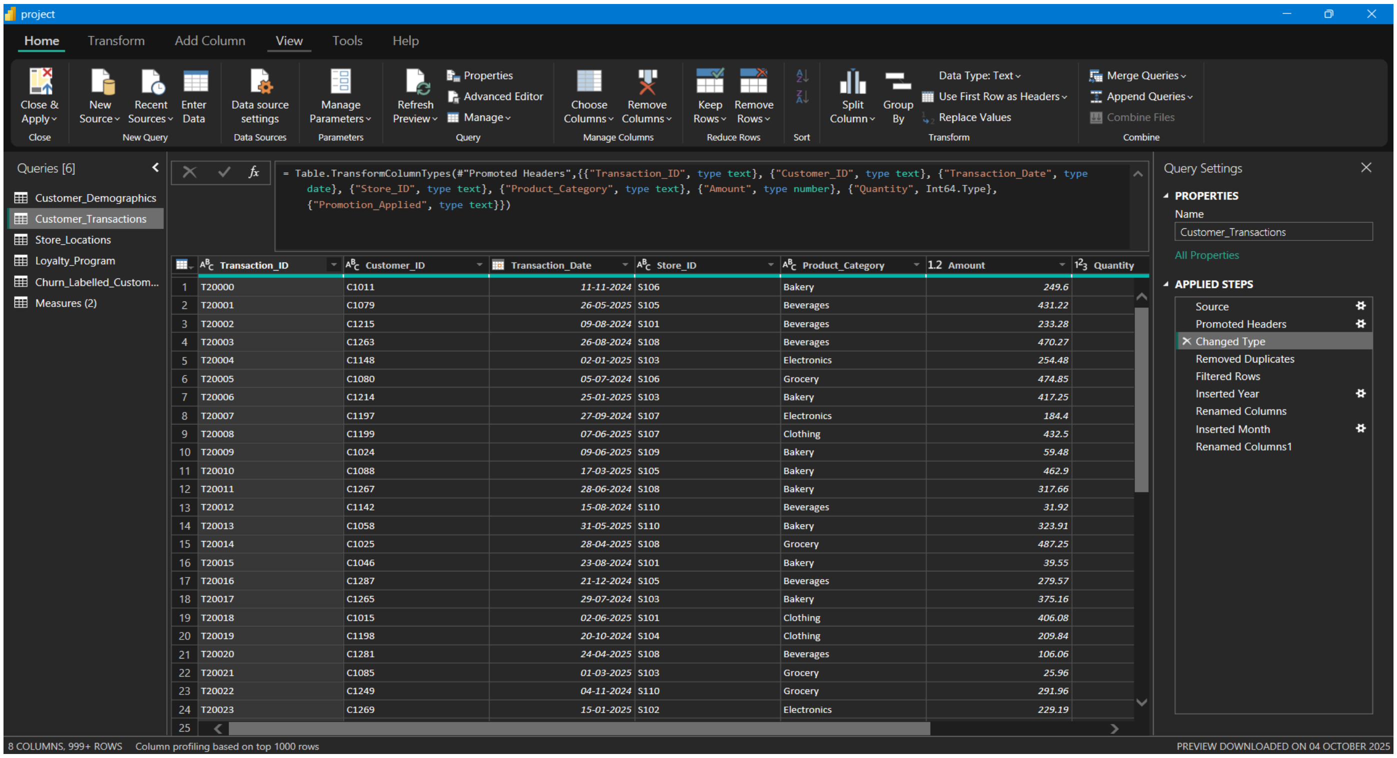
Task 1: Data Modeling and Cleaning :

Use Power Query Editor to load and transform the datasets :

To ensure the integrity and reliability of the dataset for analysis, the following data cleaning tasks were performed:

1. **Duplicate Removal:** All duplicate rows were identified and removed based on key identifier columns (including Customer_ID and Store_ID) to prevent skewed results and ensure each entity is represented uniquely.
2. **Data Type Formatting:** Columns were systematically formatted to their correct data types. This included converting date-related strings into standardized date formats and ensuring that columns intended for numerical analysis (such as Amount and Points) were converted to numeric types.
3. **Handling Missing Values:** A review of missing (null) values was conducted. Based on the analysis, appropriate strategies, such as filtering out incomplete records or replacing nulls with a valid placeholder (e.g., zero, mean, or "Unknown"), were applied to maintain dataset completeness.




project
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Add Column
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Help
Queries [6]
Customer_Demographics
Customer_Transactions
Store_Locations
Loyalty_Program
Churn_Labelled_Custom...
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= Table.TransformColumnTypes(#"Promoted Headers",{{"Transaction_ID", type text}, {"Customer_ID", type text}, {"Transaction_Date", type date}, {"Store_ID", type text}, {"Product_Category", type text}, {"Amount", type number}, {"Quantity", Int64.Type}, {"Promotion_Applied", type text}})
Transaction_ID | Customer_ID | Transaction_Date | Store_ID | Product_Category | Amount | Quantity
1 T20000 C1011 11-11-2024 S106 Bakery 249.6
2 T20001 C1079 26-05-2025 S105 Beverages 431.22
3 T20002 C1215 09-08-2024 S101 Beverages 233.28
4 T20003 C1263 26-08-2024 S108 Beverages 470.27
5 T20004 C1148 02-01-2025 S103 Electronics 254.48
6 T20005 C1080 05-07-2024 S106 Grocery 474.85
7 T20006 C1214 25-01-2025 S103 Bakery 417.25
8 T20007 C1197 27-09-2024 S107 Electronics 184.4
9 T20008 C1199 07-06-2025 S107 Clothing 432.5
10 T20009 C1024 09-06-2025 S109 Bakery 59.48
11 T20010 C1088 17-03-2025 S105 Bakery 462.9
12 T20011 C1267 28-06-2024 S108 Bakery 317.66
13 T20012 C1142 15-08-2024 S110 Beverages 31.92
14 T20013 C1058 31-05-2025 S110 Bakery 323.91
15 T20014 C1025 28-04-2025 S108 Grocery 487.25
16 T20015 C1046 23-08-2024 S101 Bakery 39.55
17 T20016 C1287 21-12-2024 S105 Beverages 279.57
18 T20017 C1265 29-07-2024 S103 Bakery 375.16
19 T20018 C1015 02-06-2025 S101 Clothing 406.08
20 T20019 C1198 20-10-2024 S104 Clothing 209.84
21 T20020 C1281 24-04-2025 S108 Beverages 106.06
22 T20021 C1085 01-03-2025 S103 Grocery 25.96
23 T20022 C1249 04-11-2024 S110 Grocery 291.96
24 T20023 C1269 15-01-2025 S102 Electronics 229.19
Query Settings
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Name
Customer_Transactions
All Properties
APPLIED STEPS
Source
Promoted Headers
Changed Type
Removed Duplicates
Filtered Rows
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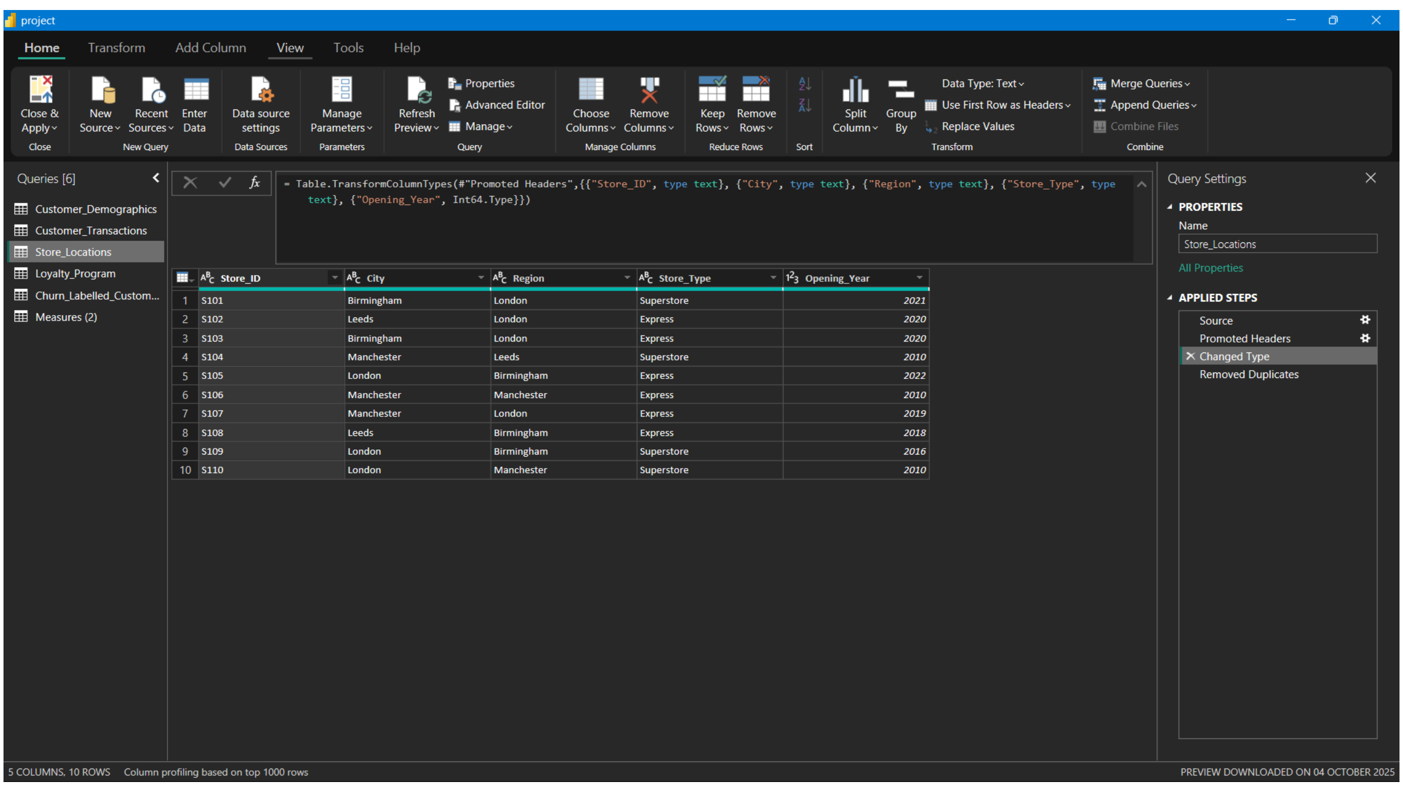
Renamed Columns
Inserted Month
Renamed Columns1
8 COLUMNS, 999+ ROWS Column profiling based on top 1000 rows
PREVIEW DOWNLOADED ON 04 OCTOBER 2025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Transform
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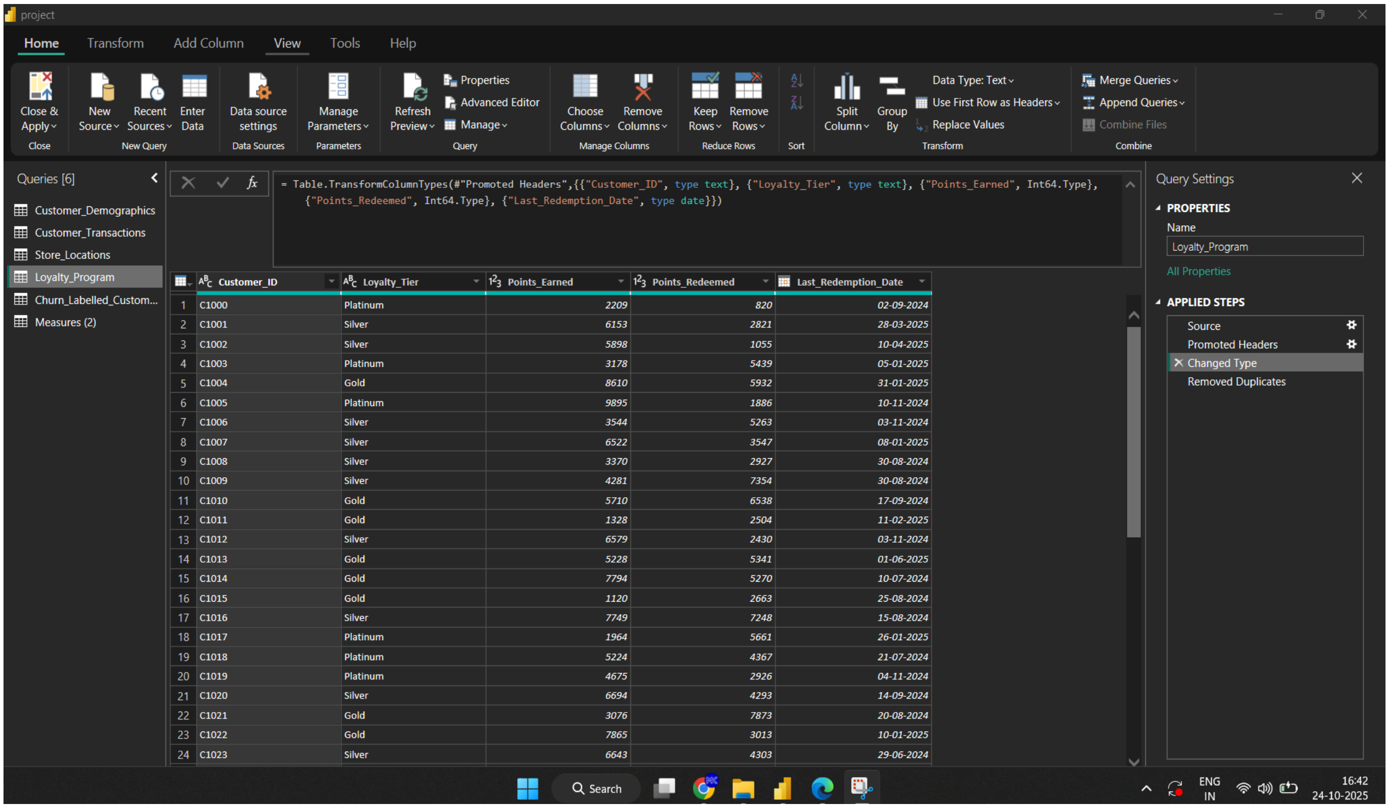
Queries [6]
Customer_Demographics
Customer_Transactions
Store_Locations
Loyalty_Program
Churn_Labelled_Custom...
Measures (2)
= Table.TransformColumnTypes(#"Promoted Headers",{{"Store_ID", type text}, {"City", type text}, {"Region", type text}, {"Store_Type", type text}, {"Opening_Year", Int64.Type}})
Store_ID | City | Region | Store_Type | Opening_Year
1 S101 Birmingham London Superstore 2021
2 S102 Leeds London Express 2020
3 S103 Birmingham London Express 2020
4 S104 Manchester Leeds Superstore 2010
5 S105 London Birmingham Express 2022
6 S106 Manchester Manchester Express 2010
7 S107 Manchester London Express 2019
8 S108 Leeds Birmingham Express 2018
9 S109 London Birmingham Superstore 2016
10 S110 London Manchester Superstore 2010
Query Settings
PROPERTIES
Name
Store_Locations
All Properties
APPLIED STEPS
Source
Promoted Headers
Changed Type
Removed Duplicates
5 COLUMNS, 10 ROWS Column profiling based on top 1000 rows
PREVIEW DOWNLOADED ON 04 OCTOBER 2025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Help
Close & Apply
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Enter Data
Data source settings
Manage Parameters
Refresh Preview
Properties
Advanced Editor
Manage
Choose Columns
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Keep Rows
Remove Rows
Split Column
Group By
Data Type: Text
Use First Row as Headers
Replace Values
Merge Queries
Append Queries
Combine Files
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Customer_Transactions
Store_Locations
Loyalty_Program
Churn_Labelled_Custom...
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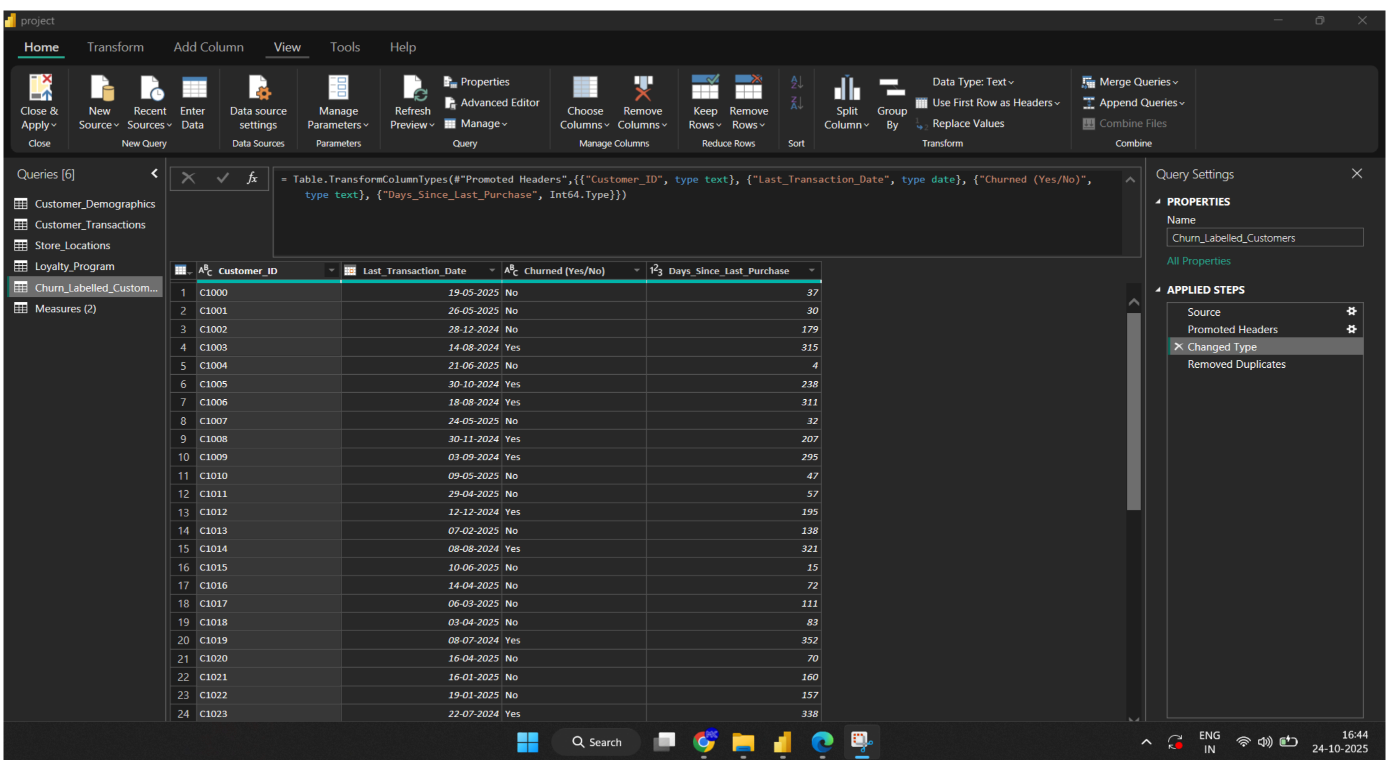
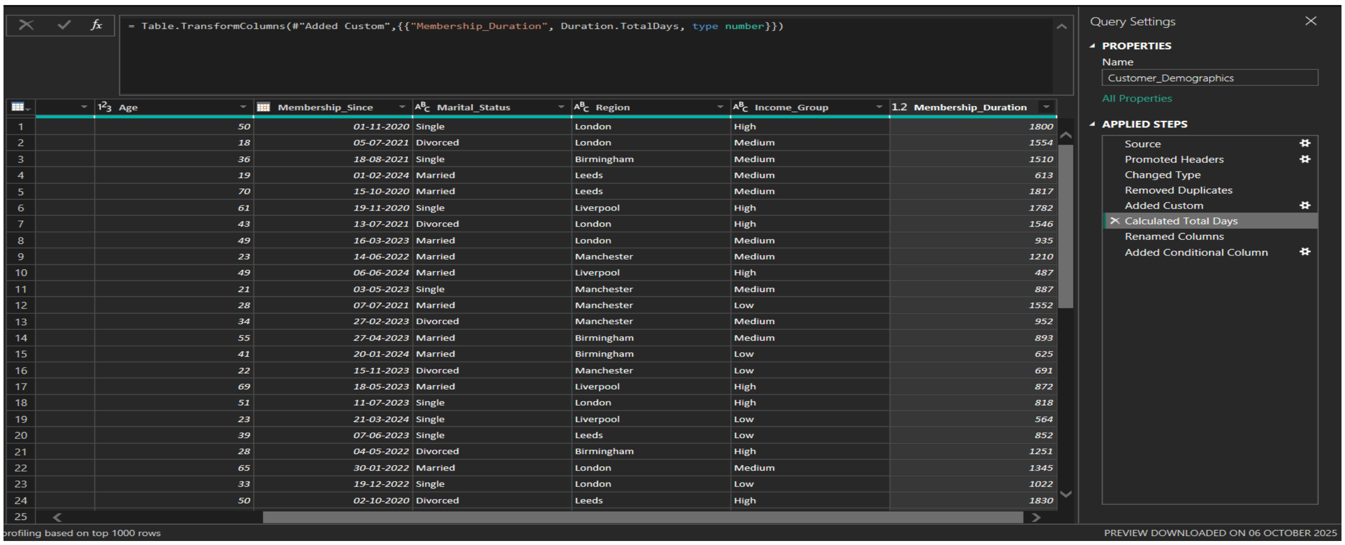
= Table.TransformColumnTypes(#"Promoted Headers",{{"Customer_ID", type text}, {"Loyalty_Tier", type text}, {"Points_Earned", Int64.Type}, {"Points_Redeemed", Int64.Type}, {"Last_Redemption_Date", type date}})
Customer_ID | Loyalty_Tier | Points_Earned | Points_Redeemed | Last_Redemption_Date
1 C1000 Platinum 2209 820 02-09-2024
2 C1001 Silver 6153 2821 28-03-2025
3 C1002 Silver 5898 1055 10-04-2025
4 C1003 Platinum 3178 5439 05-01-2025
5 C1004 Gold 8610 5932 31-01-2025
6 C1005 Platinum 9895 1886 10-11-2024
7 C1006 Silver 3544 5263 03-11-2024
8 C1007 Silver 6522 3547 08-01-2025
9 C1008 Silver 3370 2927 30-08-2024
10 C1009 Silver 4281 7354 30-08-2024
11 C1010 Gold 5710 6538 17-09-2024
12 C1011 Gold 1328 2504 11-02-2025
13 C1012 Silver 6579 2430 03-11-2024
14 C1013 Gold 5228 5341 01-06-2025
15 C1014 Gold 7794 5270 10-07-2024
16 C1015 Gold 1120 2663 25-08-2024
17 C1016 Silver 7749 7248 15-08-2024
18 C1017 Platinum 1964 5661 26-01-2025
19 C1018 Platinum 5224 4367 21-07-2024
20 C1019 Platinum 4675 2926 04-11-2024
21 C1020 Silver 6694 4293 14-09-2024
22 C1021 Gold 3076 7873 20-08-2024
23 C1022 Gold 7865 3013 10-01-2025
24 C1023 Silver 6643 4303 29-06-2024
Query Settings
PROPERTIES
Name
Loyalty_Program
All Properties
APPLIED STEPS
Source
Promoted Headers
Changed Type
Removed Duplicates
Search
ENG IN
16:42
24-10-2025


project
Home
Transform
Add Column
View
Tools
Help
Queries [6]
Customer_Demographics
Customer_Transactions
Store_Locations
Loyalty_Program
Churn_Labelled_Custom...
Measures (2)
= Table.TransformColumnTypes(#"Promoted Headers",{{"Customer_ID", type text}, {"Last_Transaction_Date", type date}, {"Churned (Yes/No)", type text}, {"Days_Since_Last_Purchase", Int64.Type}})
Customer_ID | Last_Transaction_Date | Churned (Yes/No) | Days_Since_Last_Purchase
1 C1000 19-05-2025 No 37
2 C1001 26-05-2025 No 30
3 C1002 28-12-2024 No 179
4 C1003 14-08-2024 Yes 315
5 C1004 21-06-2025 No 4
6 C1005 30-10-2024 Yes 238
7 C1006 18-08-2024 Yes 311
8 C1007 24-05-2025 No 32
9 C1008 30-11-2024 Yes 207
10 C1009 03-09-2024 Yes 295
11 C1010 09-05-2025 No 47
12 C1011 29-04-2025 No 57
13 C1012 12-12-2024 Yes 195
14 C1013 07-02-2025 No 138
15 C1014 08-08-2024 Yes 321
16 C1015 10-06-2025 No 15
17 C1016 14-04-2025 No 72
18 C1017 06-03-2025 No 111
19 C1018 03-04-2025 No 83
20 C1019 08-07-2024 Yes 352
21 C1020 16-04-2025 No 70
22 C1021 16-01-2025 No 160
23 C1022 19-01-2025 No 157
24 C1023 22-07-2024 Yes 338
Query Settings
PROPERTIES
Name
Churn_Labelled_Customers
All Properties
APPLIED STEPS
Source
Promoted Headers
Changed Type
Removed Duplicates
Search
ENG IN
16:44
24-10-2025

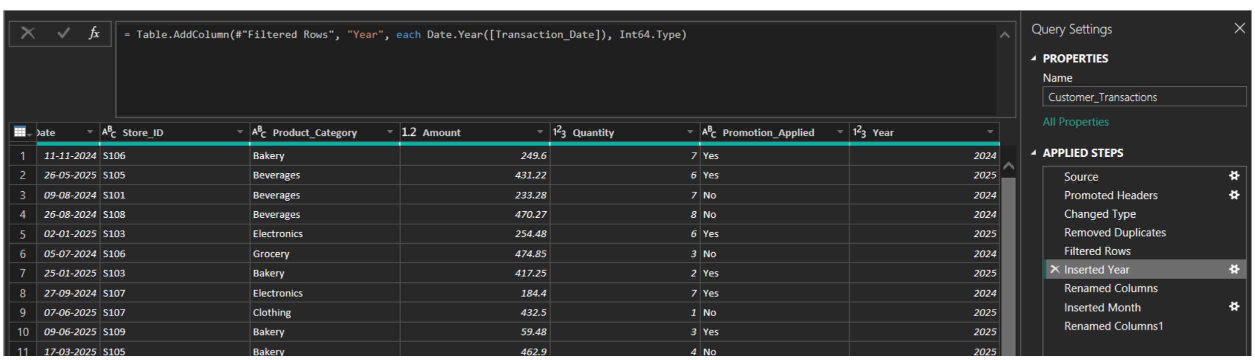
Create calculated columns:

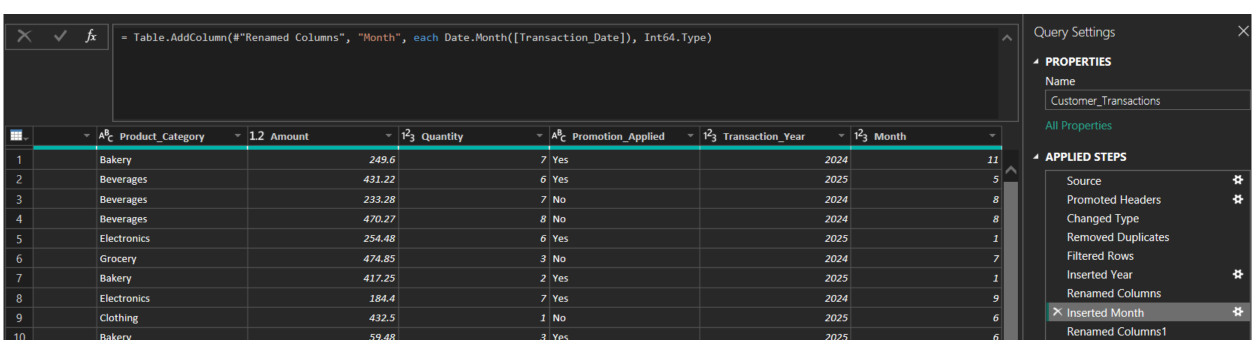
Membership_Duration = Today - Membership_Since

```
= Table.AddColumn(#"Removed Duplicates", "Membership_Duration", each Date.From(DateTime.LocalNow()) - [Membership_Since])
```



Add a Transaction_Year and Transaction_Month column from Transaction_Date

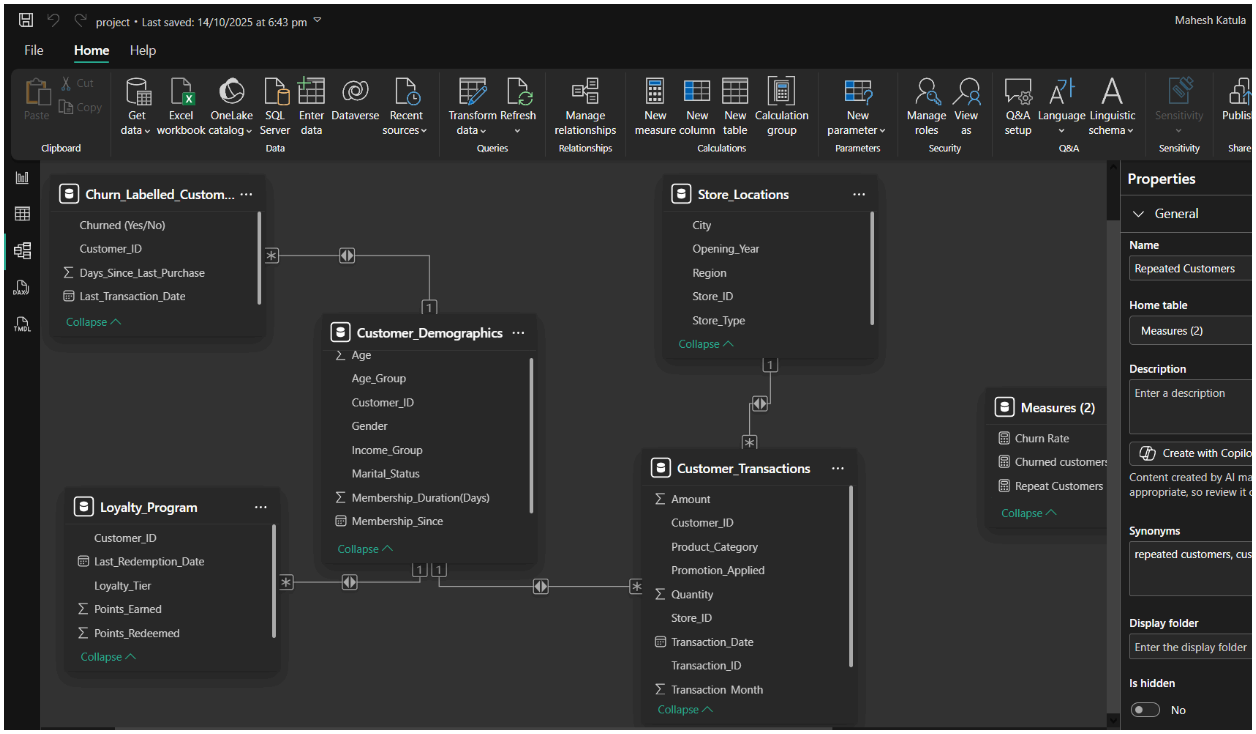




Creating a basic Data Model view

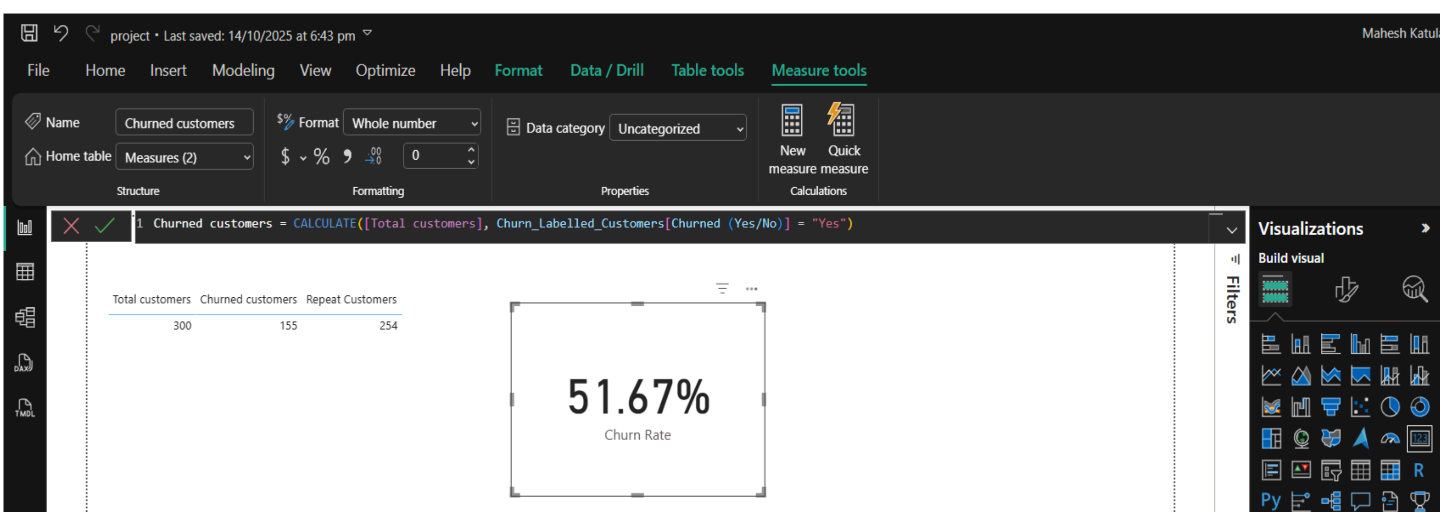
○ One-to-Many: Customer_Demographics → Transactions, Loyalty_Program, Churn_Labelled_Customers

○ Many-to-One: Transactions → Store_Locations

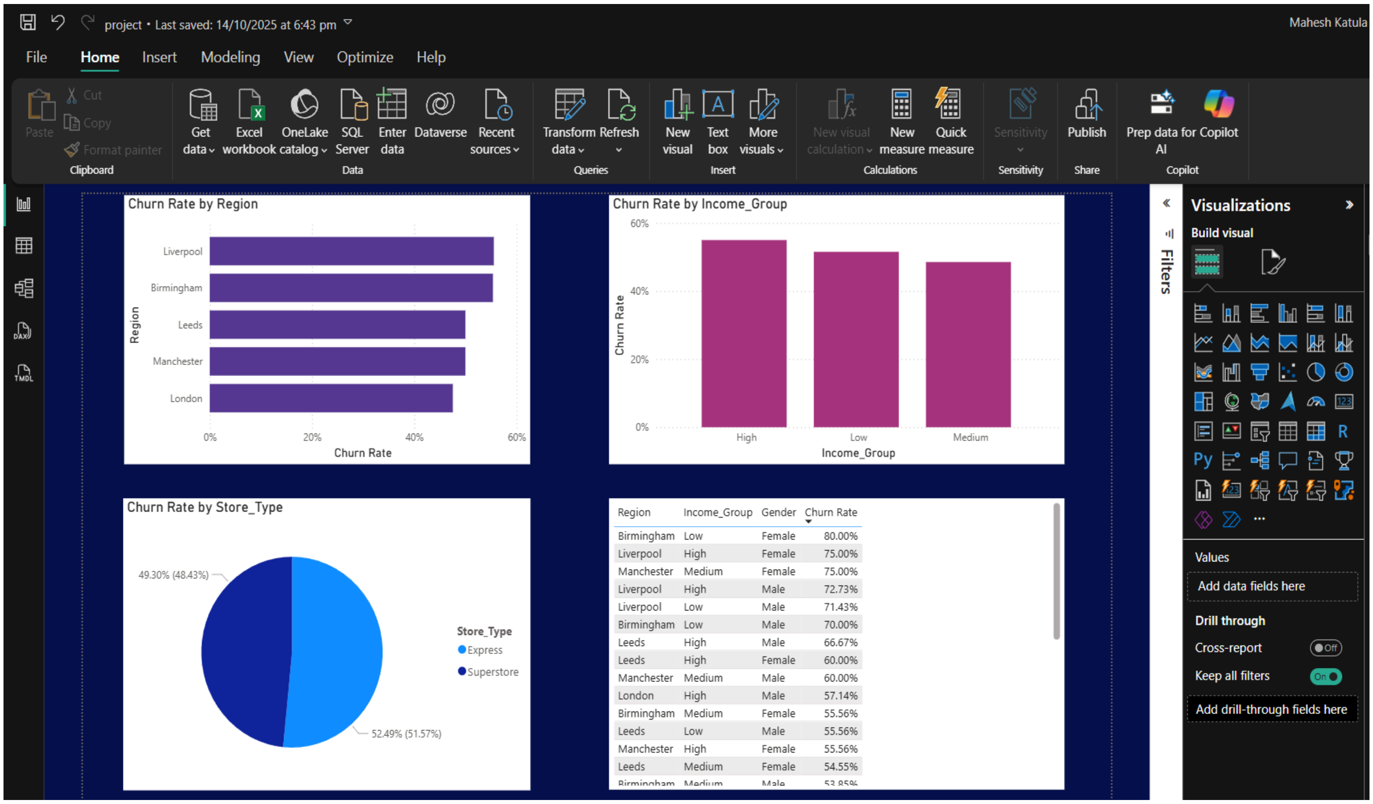


Task 2: Churn and Retention Metrics :

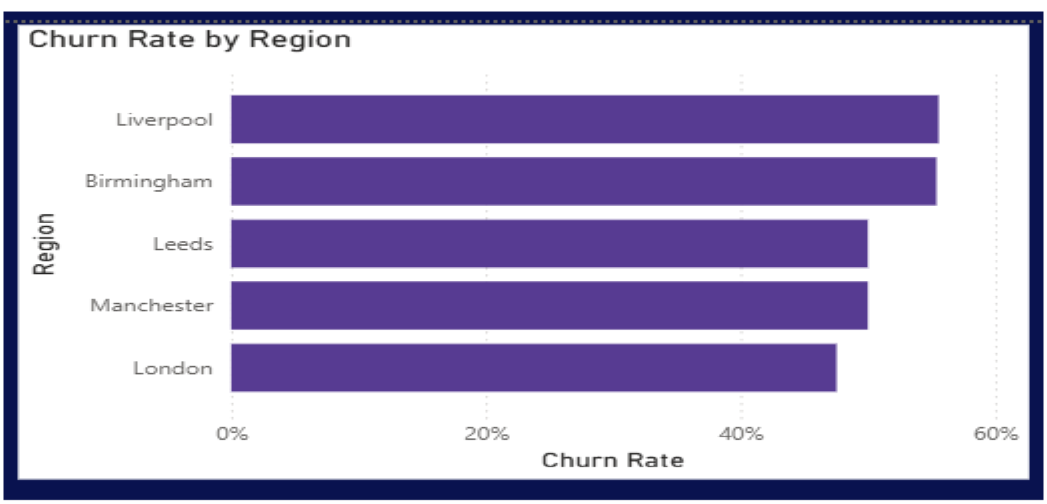
Create a Churn Rate card: (Churned Customers / Total Customers) * 100



Visualize churn rate by: ○ Region ○ Income Group ○ Store Type ○ Identify top 5 segments with highest churn %



○ Churn rate by Region

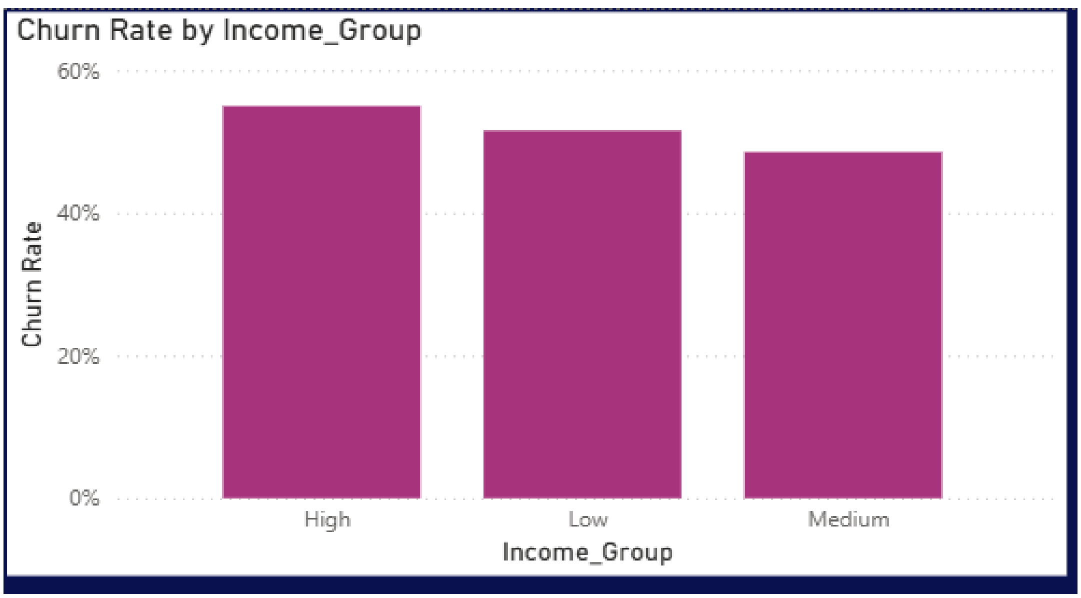


Key Insights from the Chart:

- **Highest Churn: Liverpool** and **Birmingham** have the highest churn rates, both appearing to be approximately 55%.
- **Mid-level Churn: Leeds** and **Manchester** have slightly lower but still high churn rates, both around 50%.
- **Lowest Churn (of this group): London** has the lowest churn rate among the regions shown, at approximately 47% or 48%.

In summary, the visual indicates that churn is a significant problem in all five regions (with all rates being close to 50% or higher), but it is most severe in Liverpool and Birmingham.

○ Churn rate by Income Group

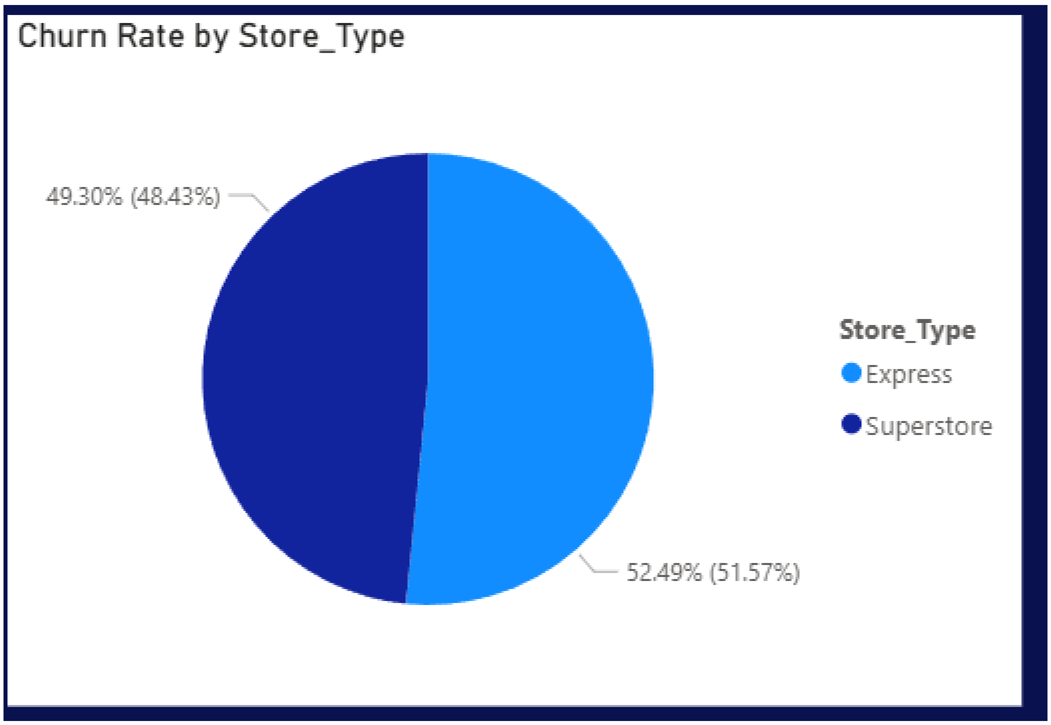


Key Insights from the Chart:

- **Highest Churn:** The **"High"** income group has the highest churn rate, at approximately 55%.
- **Mid-level Churn:** The **"Low"** income group has the next highest churn rate, at just over 50%.
- **Lowest Churn:** The **"Medium"** income group has the lowest churn rate of the three, at approximately 48%.

In summary, this chart indicates that customers in the "High" income group are the most likely to churn, while those in the "Medium" income group are the least likely (though all groups have a high churn rate close to 50%).

○ Churn rate by Store Type



Key Insights:

- **Express (Light Blue):** This store type has a **churn rate of 52.49%**. These churned customers make up **51.57%** of the total churn.
- **Superstore (Dark Blue):** This store type has a **churn rate of 49.30%**. These churned customers make up **48.43%** of the total churn.

In summary, the churn rates for both store types are very high and relatively close (around 50%). The "Express" stores have a slightly higher churn rate than the "Superstores," and they also account for a slightly larger portion of the total churn.

○ Identify top 5 segments with highest churn % :

Region	Income_Group	Store_Type	Gender	Churn Rate
Manchester	Medium	Superstore	Female	100.00%
Birmingham	Low	Express	Female	87.50%
Liverpool	High	Superstore	Female	87.50%
Birmingham	Low	Superstore	Female	83.33%
Liverpool	Low	Express	Male	80.00%
Leeds	High	Superstore	Male	75.00%
Liverpool	Low	Superstore	Male	75.00%
Manchester	Medium	Express	Female	75.00%
Birmingham	Low	Superstore	Male	71.43%
Leeds	High	Express	Male	71.43%
Liverpool	High	Express	Female	70.00%
Liverpool	High	Express	Male	70.00%
Birmingham	Low	Express	Male	66.67%
Leeds	High	Express	Female	66.67%
Manchester	Medium	Express	Male	64.29%

The analysis reveals several critical segments that are driving churn. The top 5 highest-risk groups are:

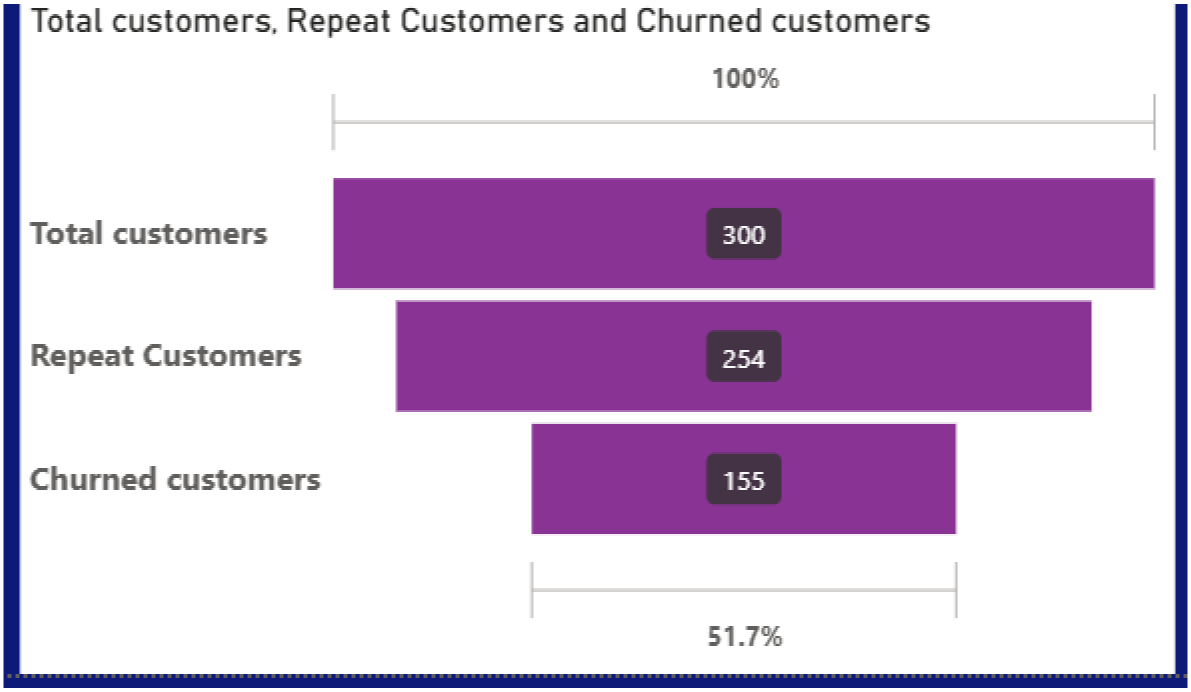
1. **Females** in the **Medium** income group shopping at **Superstores** in **Manchester** (100.00%)
2. **Females** in the **Low** income group shopping at **Express** stores in **Birmingham** (87.50%)
3. **Females** in the **High** income group shopping at **Superstores** in **Liverpool** (87.50%)
4. **Females** in the **Low** income group shopping at **Superstores** in **Birmingham** (83.33%)
5. **Males** in the **Low** income group shopping at **Express** stores in **Liverpool** (80.00%)

A significant pattern emerges from this data: **Female customers constitute four of our top five most at-risk segments**.

The 100% churn rate in the Manchester-based segment is a critical red flag. Furthermore, the Birmingham and Liverpool regions appear twice each within this top 5, indicating that retention issues are particularly severe in specific customer profiles within those areas.

These findings suggest we should prioritize immediate retention strategies targeting these specific high-risk female segments and investigate the root causes of dissatisfaction at the identified store types and regions.

Create funnel chart: Total Customers ⟶ Repeat ⟶ Churned



1. **Total Customers:** The funnel begins with a total of **300** customers, representing 100% of the customer pool for this analysis.
2. **Repeat Customers:** From this initial group, **254** customers (or 84.7%) became repeat customers, which shows a strong initial retention and engagement rate.
3. **Churned Customers:** The final stage of the funnel shows that **155** customers were ultimately churned.

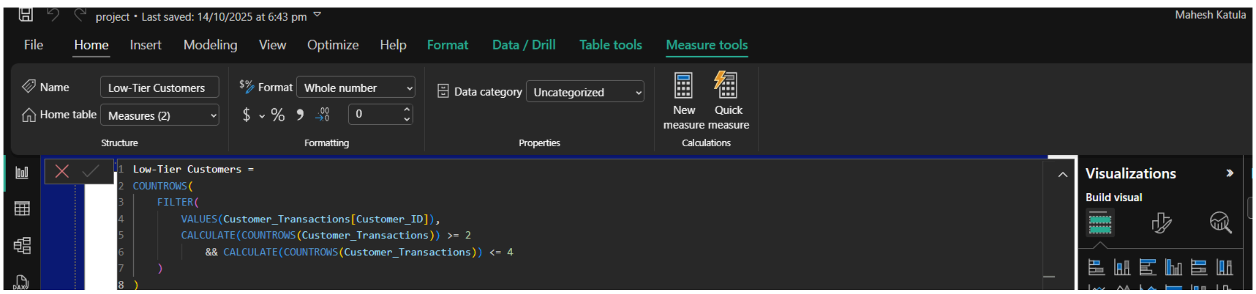
Summary Observation:

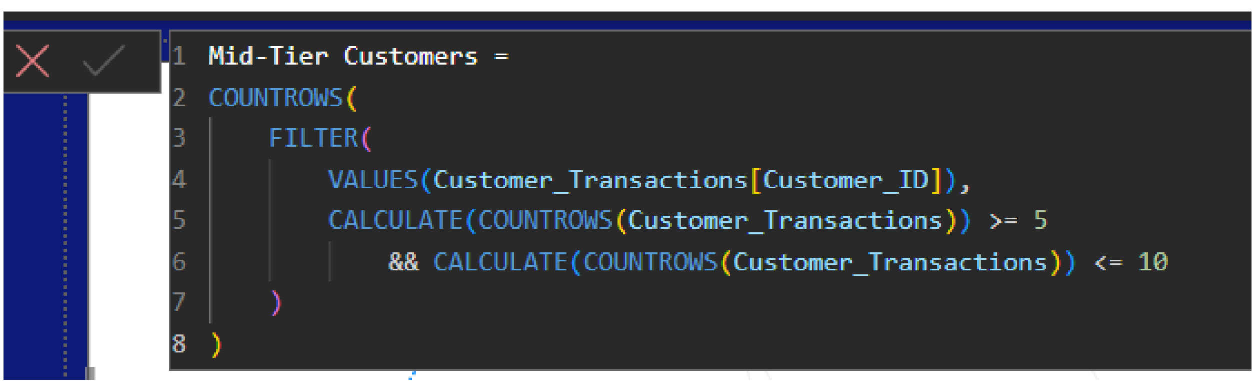
This visual provides a clear picture of our retention and churn. The key takeaway is that while we are effective at converting new customers into repeat customers (84.7% rate), we are losing a significant portion of our overall base.

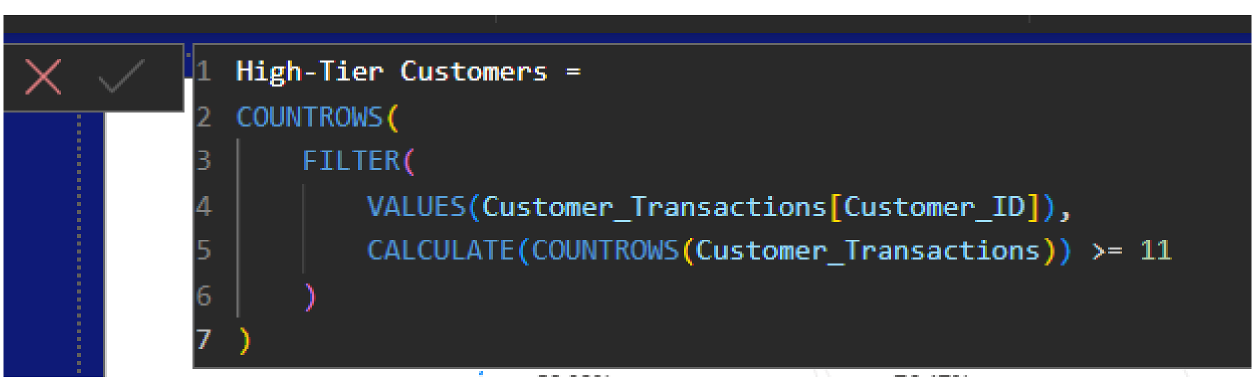
The churn rate, calculated against the total initial customer pool, is **51.7%** (155 churned out of 300 total). This indicates that more than half of our customers are leaving, highlighting a critical need for long-term retention strategies, even for customers who have already become "repeat" buyers.

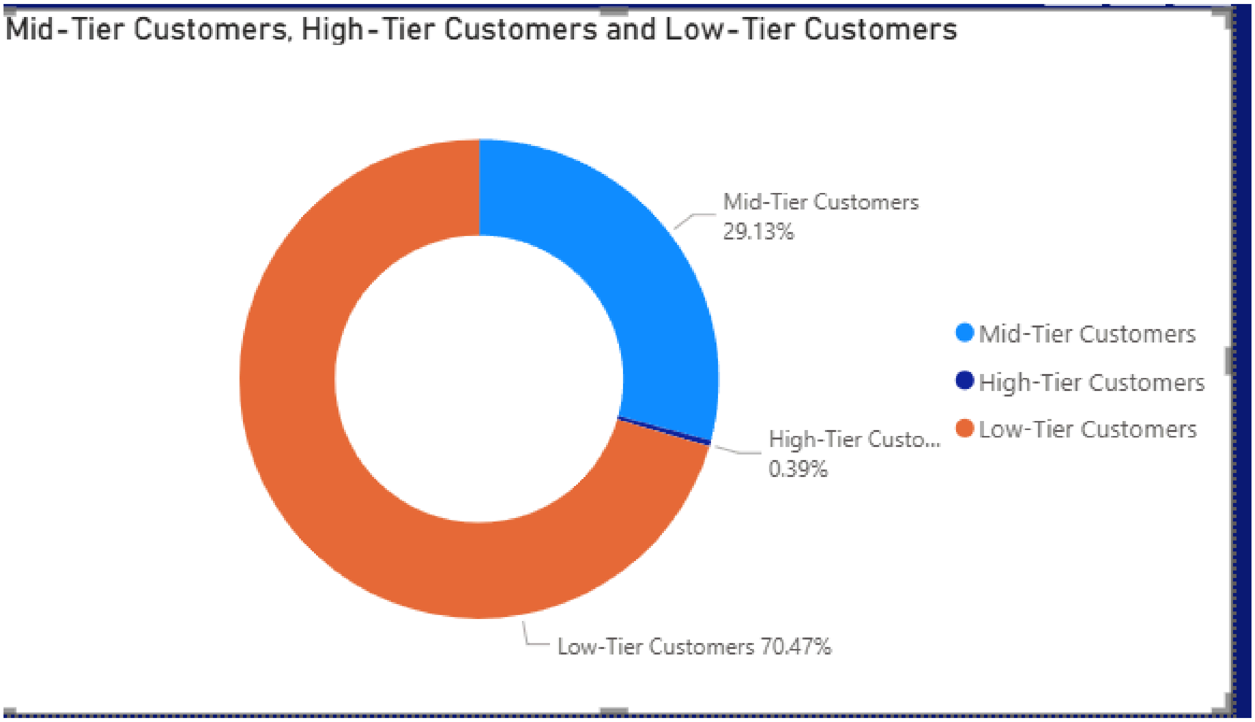
Task 3: Repeat Purchase Analysis

Create a measure: Low-Tier Customers: (2-4 purchases) Mid-Tier Customers: (5-10 purchases) High-Tier Customers: (11+ purchases)



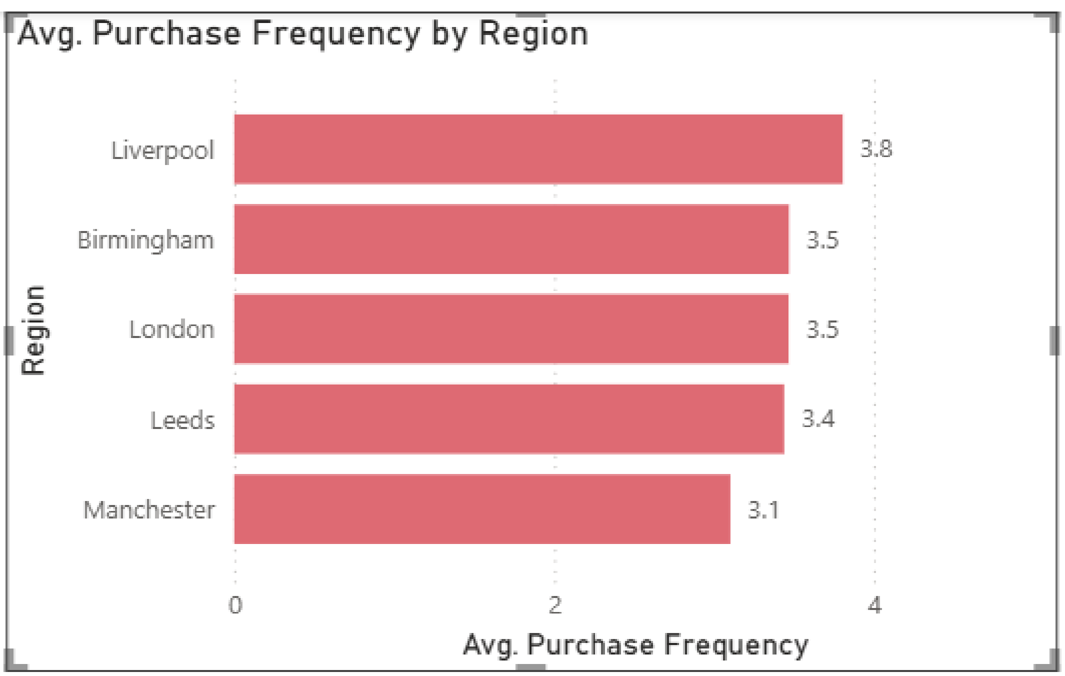






Compare avg. purchase frequency by:

○ Region



Liverpool has the highest average purchase frequency, with customers making an average of **3.8** purchases.

Birmingham and **London** are tied for the second-highest frequency, with an average of **3.5** purchases each.

Leeds follows closely, with an average of **3.4** purchases.

Manchester has the lowest average purchase frequency among this group, with customers making an average of **3.1** purchases.

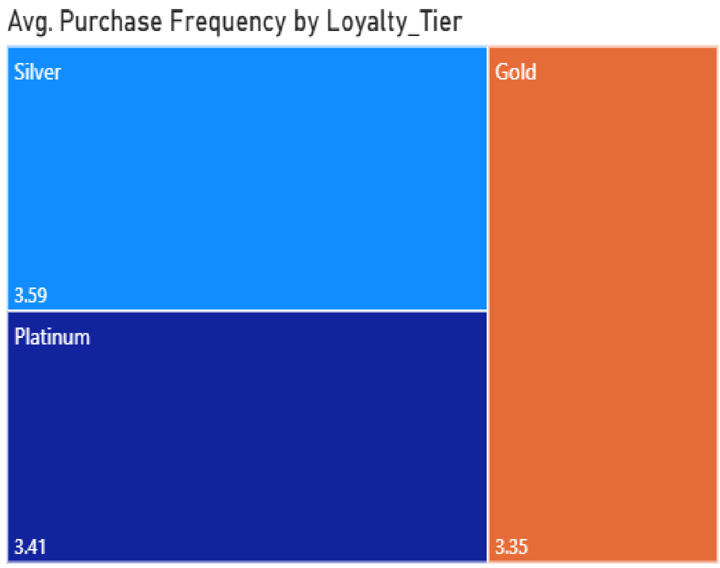
○ Age Group

Age_Group	Avg. Purchase Frequency
18-30	3.18
31-40	3.38
41-50	3.42
51-60	3.37
61-70	3.88

- **Highest Frequency:** The **"61-70"** age group has the highest average purchase frequency, at **3.88**.
- **Lowest Frequency:** The **"18-30"** age group has the lowest average purchase frequency, at **3.18**.
- **Mid-range Frequency:** The middle age groups ("31-40", "41-50", and "51-60") all have very similar purchase frequencies, ranging from **3.37** to **3.42**. The "41-50" group is the highest among these three.

In summary, the average purchase frequency generally increases with age, with the oldest group (61-70) purchasing the most often and the youngest group (18-30) purchasing the least often.

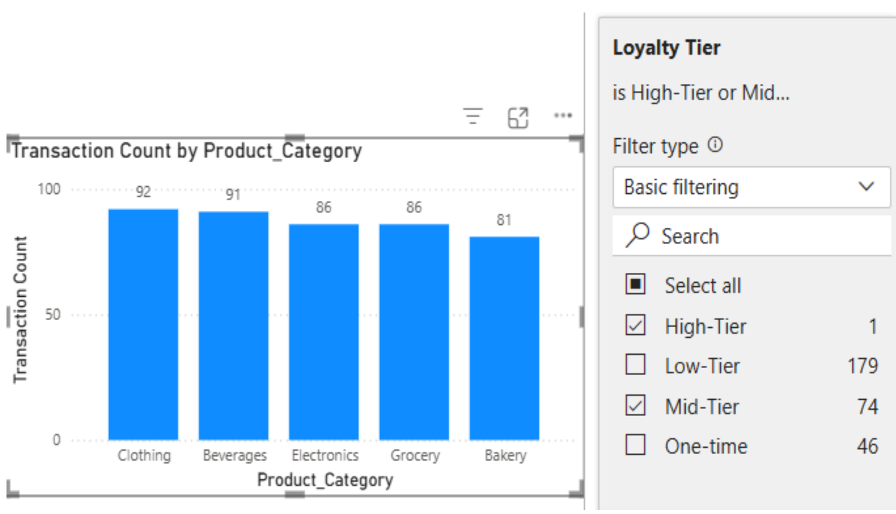
○ Loyalty Tier



1. **Silver (Light Blue):** This is the largest segment, indicating that **Silver** tier customers have the highest average purchase frequency at **3.59**.
2. **Platinum (Dark Blue):** This is the second-largest segment, with an average purchase frequency of **3.41**.
3. **Gold (Orange):** This is the smallest segment, representing the lowest average purchase frequency of the three tiers at **3.35**.

In summary, the visual shows that Silver-tier customers purchase the most frequently, followed by Platinum, and then Gold.

Identify product categories most frequently bought by loyal customers



- **Most Popular: Clothing** is the most frequently purchased category, with **92** transactions.
- **Second Most Popular: Beverages** is a close second, with **91** transactions.
- **Middle Tier: Electronics** and **Grocery** are tied, both having **86** transactions.
- **Least Popular: Bakery** has the lowest number of transactions in this group, with **81**.

In summary, all five categories have a relatively high and similar number of transactions, with Clothing and Beverages being the most popular.

Task 4: Promotion & Loyalty Impact

Create Measure:

○ % of transactions where promotion was applied

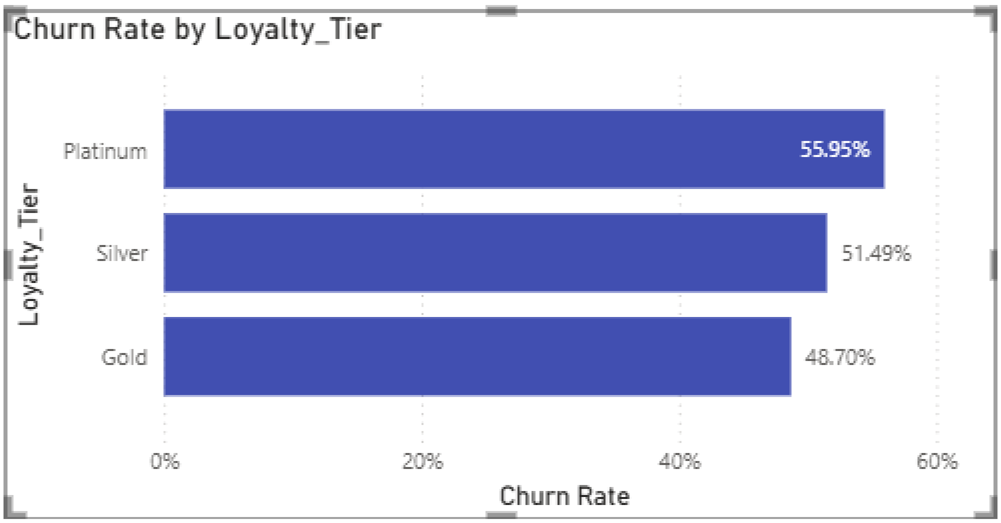
```
% of Transactions with Promotion =
DIVIDE(
    CALCULATE(
        COUNTROWS(Customer_Transactions),
        Customer_Transactions[Promotion_Applied] = "Yes"
    ),
    COUNTROWS(Customer_Transactions)
)
```

○ Avg. purchase amount with vs without promotion

```
Promo Avg. Purchase =
CALCULATE(
    AVERAGE(Customer_Transactions[Amount]),
    Customer_Transactions[Promotion_Applied] = "Yes"
)
```

```
Non-Promo Avg. Purchase =
CALCULATE(
    AVERAGE(Customer_Transactions[Amount]),
    Customer_Transactions[Promotion_Applied] = "No"
)
```

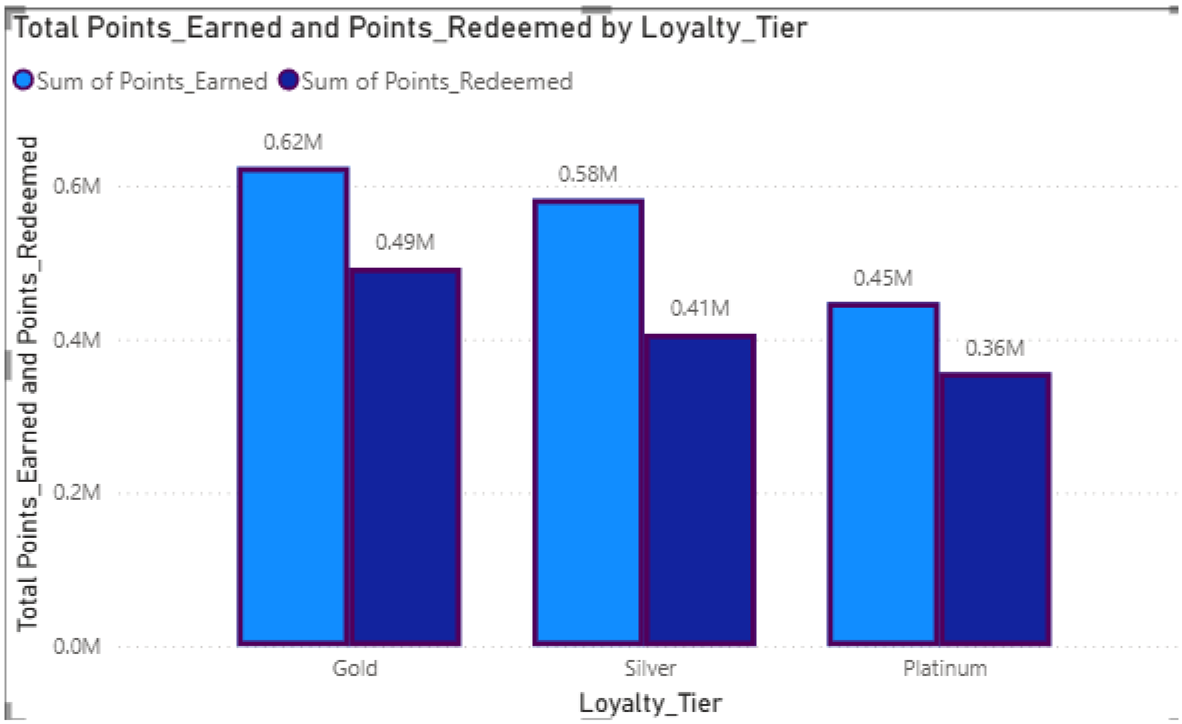
Compare churn rate across loyalty tiers :



- **Platinum** tier customers have the highest churn rate at **55.95%**.
- **Silver** tier customers have the next highest churn rate at **51.49%**.
- **Gold** tier customers have the lowest churn rate of the three, at **48.70%**.

In summary, the chart shows that churn is highest among Platinum members and lowest among Gold members.

Show Points Earned vs Redeemed by Tier using clustered column chart :



1. **Gold Tier:** This group is the most active in the loyalty program. They have the highest number of points both earned (0.62M) and redeemed (0.49M).
2. **Silver Tier:** This group is in the middle, having earned 0.58M points and redeemed 0.41M.
3. **Platinum Tier:** This group shows the lowest engagement with the points system, having earned the least (0.45M) and redeemed the least (0.36M).

Overall Observation: Across all three loyalty tiers, more points are consistently earned than are redeemed. The level of engagement with the points system (both earning and spending) directly corresponds with the tier, with Gold being the most engaged and Platinum the least.

Recommend how to improve redemption and retention :

1. Re-evaluate the Platinum Tier Value Proposition

Problem: Our "Platinum" members are leaving at the highest rate (55.95%) because they are the *least* engaged with the points system. This implies the perks of being "Platinum" are not valuable enough to keep them.

Recommendation: We must immediately re-assess the benefits for our Platinum tier. Since they are not engaging with points, they may value tangible, immediate perks more. Consider offering:

- **Non-point-based rewards:** Free shipping, exclusive early access to new **Clothing** collections, or a complimentary **Beverage** per store visit.
- **Proactive "At-Risk" Offers:** Target this 55.95% group with a special "We value you" offer, designed to remind them of their status and prevent churn.

2. Create Targeted Redemption Campaigns for Popular Products

Problem: Customers are earning far more points than they redeem, and we know they buy **Clothing** and **Beverages** most frequently.

Recommendation: Connect the unredeemed points to the products they already love. Launch marketing campaigns with a clear call to action:

- *"You have [X] points! Use them for $10 off any purchase in our **Clothing** department this weekend."*
- *"Redeem 200 points at checkout to get a free **Beverage** or **Bakery** item."*

This makes the points feel tangible and valuable by tying them to a desired product, which will increase redemption rates.

3. Launch a "Platinum Rescue" Redemption Campaign

Problem: Platinum members are the least engaged *and* churn the most. We need to solve both problems at once.

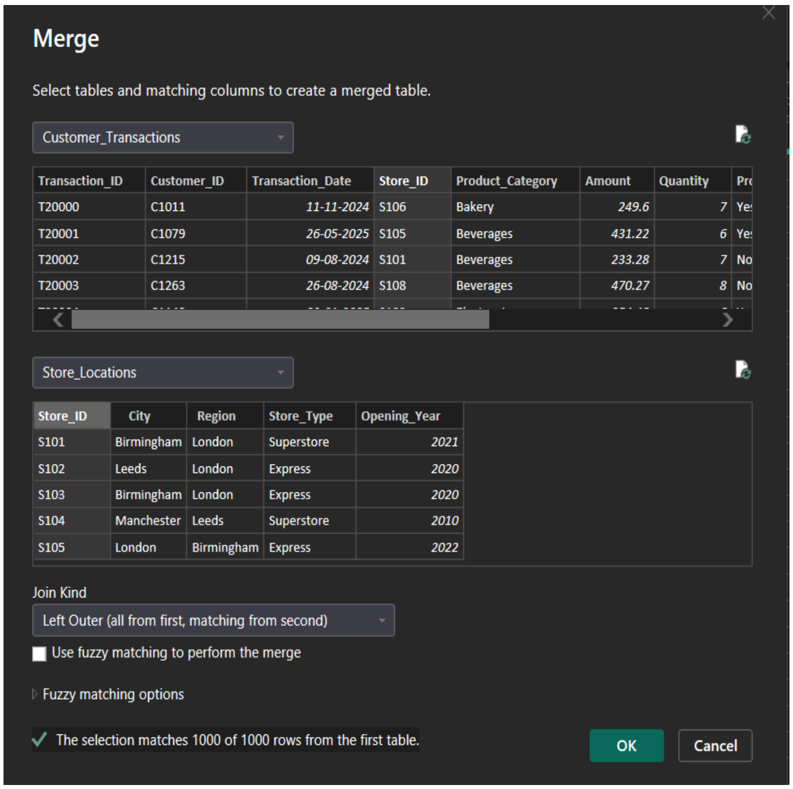
Recommendation: Create a high-value, exclusive redemption offer *only* for Platinum members. Since they have the lowest redemption, the value proposition must be high:

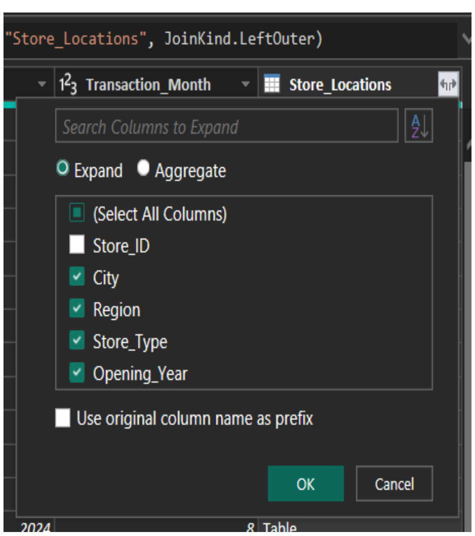
- *"As a Platinum member, your points are worth 2x more for the next 30 days."*
- *"An exclusive offer for our Platinum members: Redeem your points on any **Electronics** purchase and get an instant 25% discount."*

This strategy serves two purposes: it makes them feel valued for their status and gives them a compelling, time-sensitive reason to engage with the loyalty program, which the data shows is a key factor in retention.

Task 5: Store Performance vs Retention

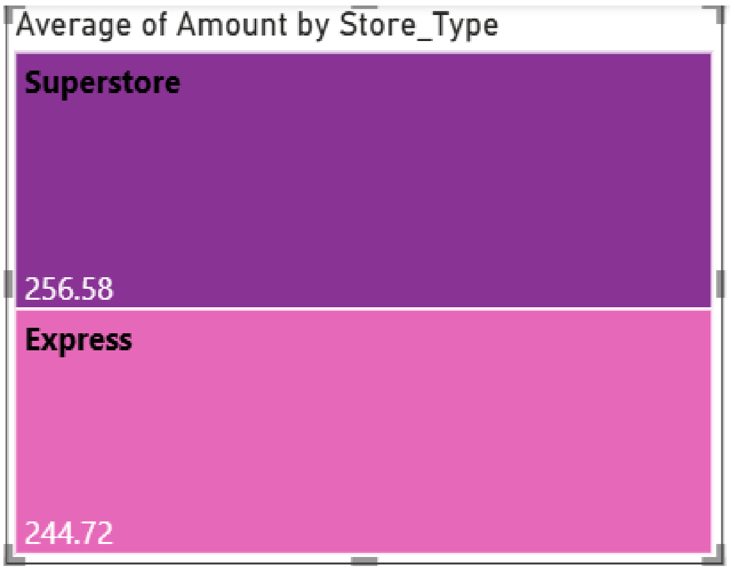
Merge Store_ID from transactions with Store_Locations





Visualize:

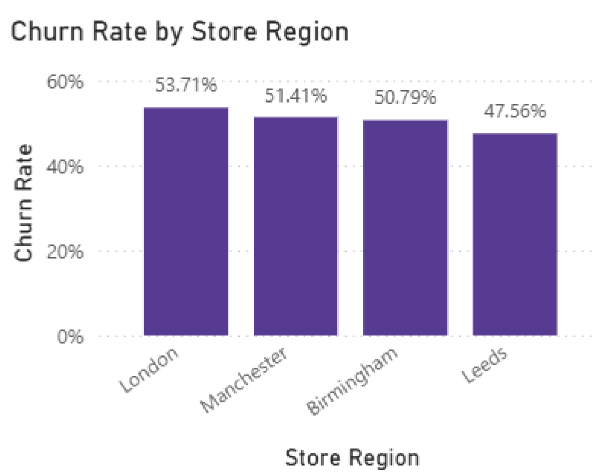
○ Avg. transaction amount by store type



- **Superstore (Purple):** This segment has the higher average transaction amount, at **256.58**.
- **Express (Pink):** This segment has a slightly lower average transaction amount, at **244.72**.

In summary, customers at Superstores spend slightly more on average per transaction than customers at Express stores.

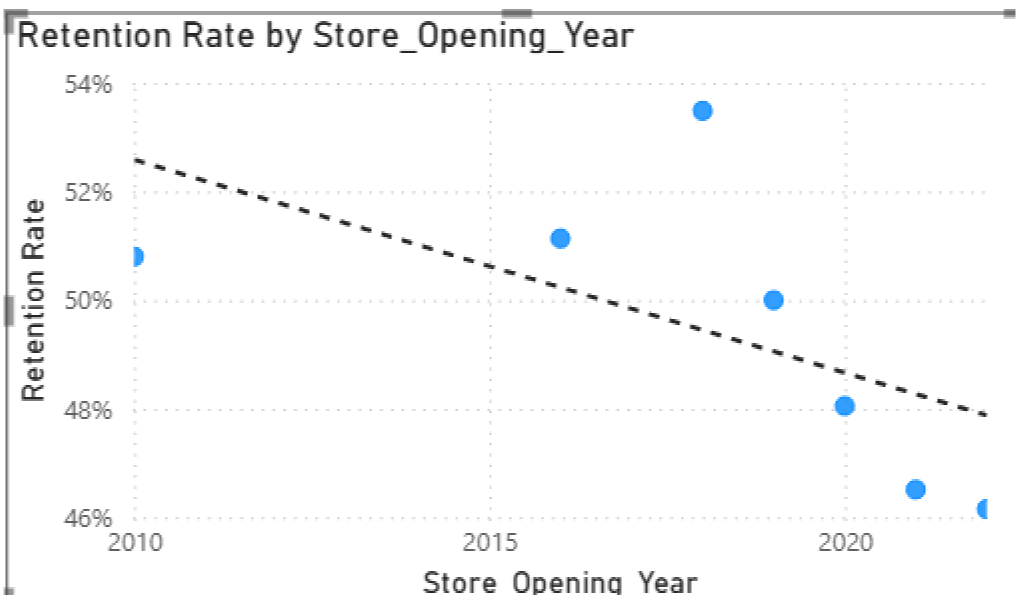
○ Churn rate by store region



- **London** has the highest churn rate at **53.71%**.
- **Manchester** and **Birmingham** have very similar, high churn rates at **51.41%** and **50.79%**, respectively.
- **Leeds** has the lowest churn rate of the group, at **47.56%**.

In summary, all four regions are experiencing a high churn rate, at or above 47.5%, with London showing the most significant problem.

○ Correlation between store opening year and retention



The downward-sloping trend line indicates a **negative correlation**. This means that, on average, **stores opened more recently have a lower customer retention rate** compared to stores that were opened in earlier years (like 2010).

Suggest where to run store-specific campaigns :

Based on these findings, I recommend three distinct, targeted campaigns:

1. The "London Rescue" Campaign (Retention Focus)

- **Where:** All stores (both Superstore and Express) in the **London region**.

- **Why:** London has the highest churn rate at 53.71%. We are losing customers here faster than anywhere else and must act aggressively to stop the bleeding.
- **Campaign Idea:** A geo-targeted "We Value Our London Customers" campaign. Offer bonus loyalty points for their next visit, launch a region-exclusive promotion, or send "we miss you" offers to customers who haven't shopped in 30 days.

2. The "New Store Loyalty" Campaign (Loyalty Focus)

- **Where:** All stores opened in the last 3-5 years (e.g., stores from **2019, 2020, 2021, etc.**).
- **Why:** The scatter plot shows a clear trend that our newer stores are failing to retain customers. We need to build loyalty from the ground up in these locations.
- **Campaign Idea:** An in-store campaign focused on loyalty program sign-ups. Offer an immediate incentive (e.g., "10% off today when you join") and a clear reward for their second and third visits to build an early habit of retention.

3. The "Superstore Upsell" Campaign (Value Focus)

- **Where:** All **Superstores**, with a special focus on those in high-churn regions like London and Manchester.
- **Why:** Customers are already willing to spend more at Superstores. We can leverage this to increase basket value while simultaneously offering a reward that improves loyalty.
- **Campaign Idea:** A store-specific promotion like "Spend £75, get a £5 voucher for your next visit" or "Buy 2, Get 1 Free" on high-margin categories. This increases the average transaction value and provides a strong incentive to return, directly fighting churn.

Task 6: Customer Value (CLV) Analysis

Calculate CLV = Total Amount Spent / Membership Duration (in years)

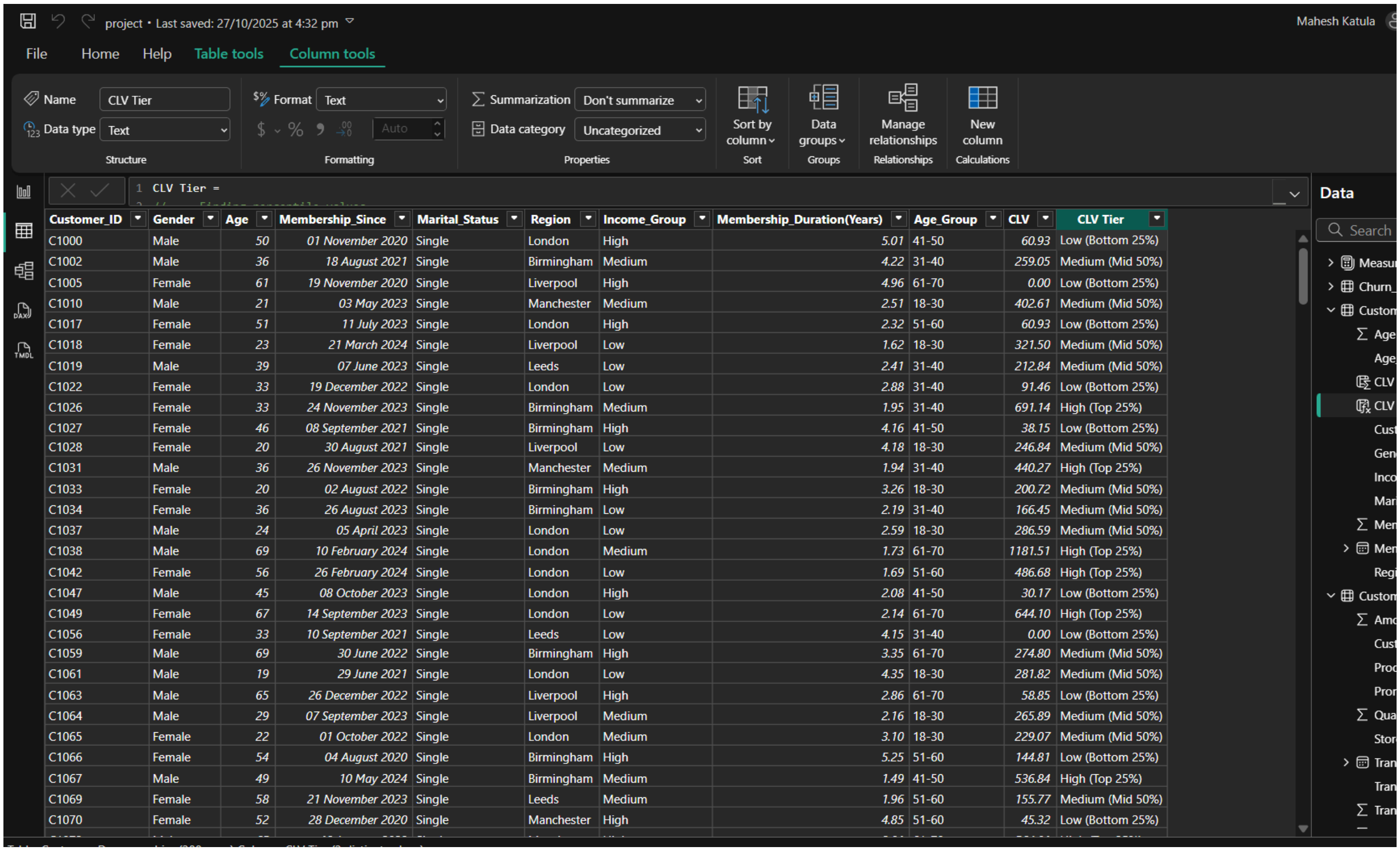
```
CLV =
DIVIDE(
    CALCULATE(SUM(Customer_Transactions[Amount])) + 0,
    Customer_Demographics[Membership_Duration(Years)], 0
)
```

`... + 0` (The Numerator): Adding `+ 0` to the `SUM(...)` is a classic DAX method. It *coerces* (forces) any `BLANK()` value to become a `0`. This solves the problem for non-purchasing customers.

`... , 0)` (The Alternate Result): The `DIVIDE` function can take a third argument, which is the "result to return if division by zero occurs." By adding `, 0` at the end, we are telling DAX, "If the membership duration is 0, just return 0 instead of blank."

Segment customers into: ○ Low (Bottom 25%) ○ Medium (Mid 50%) ○ High (Top 25%)

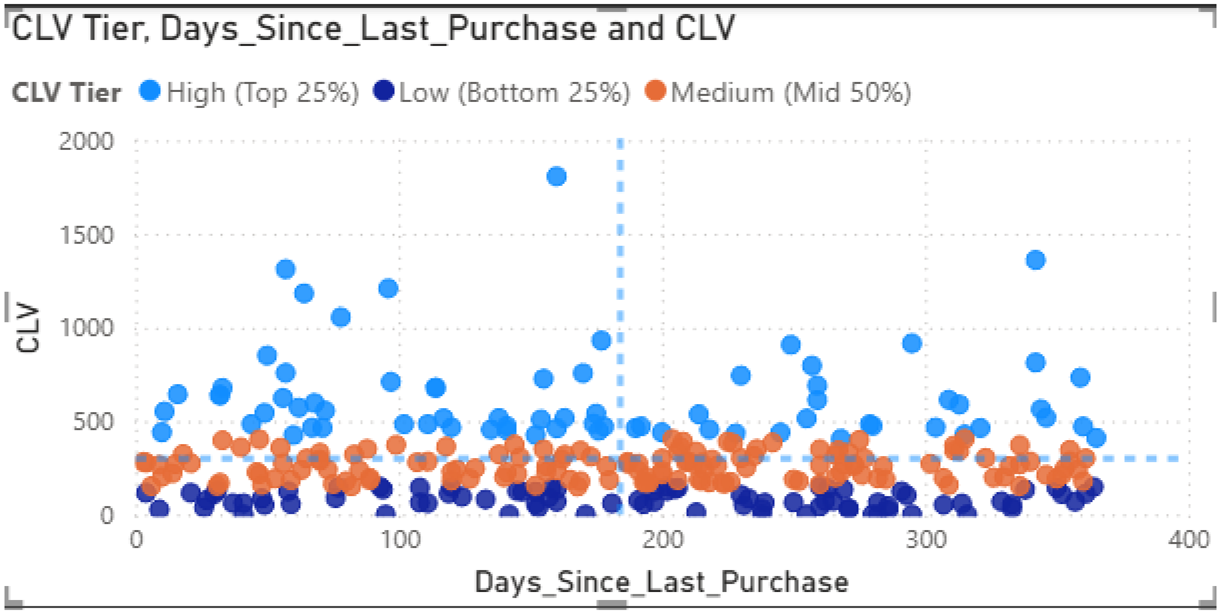
```
CLV Tier =
// --- Finding percentile values ---
VAR P25 =
    CALCULATE(
        PERCENTILEX.INC('Customer_Demographics', 'Customer_Demographics'[CLV], 0.25),
        ALL('Customer_Demographics'), // <-- The secret: tells DAX to look at the WHOLE table
        'Customer_Demographics'[CLV] > 0 // For new cus/cus without purchase CLV value is 0
    )
VAR P75 =
    CALCULATE(
        PERCENTILEX.INC('Customer_Demographics', 'Customer_Demographics'[CLV], 0.75),
        ALL('Customer_Demographics'), // <-- The secret: tells DAX to look at the WHOLE table
        'Customer_Demographics'[CLV] > 0 // For new cus/cus without purchase CLV value is 0
    )

// --- CLV for the current row ---
VAR CurrentCustomerCLV = 'Customer_Demographics'[CLV]

// --- Assign the tier ---
RETURN
    SWITCH(
        TRUE(),
        CurrentCustomerCLV >= P75, "High (Top 25%)",
        CurrentCustomerCLV >= P25, "Medium (Mid 50%)",
        "Low (Bottom 25%)"
    )
```



Customer_ID	Gender	Age	Membership_Since	Marital_Status	Region	Income_Group	Membership_Duration(Years)	Age_Group	CLV	CLV Tier
C1000	Male	50	01 November 2020	Single	London	High	5.01	41-50	60.93	Low (Bottom 25%)
C1002	Male	36	18 August 2021	Single	Birmingham	Medium	4.22	31-40	259.05	Medium (Mid 50%)
C1005	Female	61	19 November 2020	Single	Liverpool	High	4.96	61-70	0.00	Low (Bottom 25%)
C1010	Male	21	03 May 2023	Single	Manchester	Medium	2.51	18-30	402.61	Medium (Mid 50%)
C1017	Female	51	11 July 2023	Single	London	High	2.32	51-60	60.93	Low (Bottom 25%)
C1018	Female	23	21 March 2024	Single	Liverpool	Low	1.62	18-30	321.50	Medium (Mid 50%)
C1019	Male	39	07 June 2023	Single	Leeds	Low	2.41	31-40	212.84	Medium (Mid 50%)
C1022	Female	33	19 December 2022	Single	London	Low	2.88	31-40	91.46	Low (Bottom 25%)
C1026	Female	33	24 November 2023	Single	Birmingham	Medium	1.95	31-40	691.14	High (Top 25%)
C1027	Female	46	08 September 2021	Single	Birmingham	High	4.16	41-50	38.15	Low (Bottom 25%)
C1028	Female	20	30 August 2021	Single	Liverpool	Low	4.18	18-30	246.84	Medium (Mid 50%)
C1031	Male	36	26 November 2023	Single	Manchester	Medium	1.94	31-40	440.27	High (Top 25%)
C1033	Female	20	02 August 2022	Single	Birmingham	High	3.26	18-30	200.72	Medium (Mid 50%)
C1034	Female	36	26 August 2023	Single	Birmingham	Low	2.19	31-40	166.45	Medium (Mid 50%)
C1037	Male	24	05 April 2023	Single	London	Low	2.59	18-30	286.59	Medium (Mid 50%)
C1038	Male	69	10 February 2024	Single	London	Medium	1.73	61-70	1181.51	High (Top 25%)
C1042	Female	56	26 February 2024	Single	London	Low	1.69	51-60	486.68	High (Top 25%)
C1047	Male	45	08 October 2023	Single	London	High	2.08	41-50	30.17	Low (Bottom 25%)
C1049	Female	67	14 September 2023	Single	London	Low	2.14	61-70	644.10	High (Top 25%)
C1056	Female	33	10 September 2021	Single	Leeds	Low	4.15	31-40	0.00	Low (Bottom 25%)
C1059	Male	69	30 June 2022	Single	Birmingham	High	3.35	61-70	274.80	Medium (Mid 50%)
C1061	Male	19	29 June 2021	Single	London	Low	4.35	18-30	281.82	Medium (Mid 50%)
C1063	Male	65	26 December 2022	Single	Liverpool	High	2.86	61-70	58.85	Low (Bottom 25%)
C1064	Male	29	07 September 2023	Single	Liverpool	Medium	2.16	18-30	265.89	Medium (Mid 50%)
C1065	Female	22	01 October 2022	Single	London	Medium	3.10	18-30	229.07	Medium (Mid 50%)
C1066	Female	54	04 August 2020	Single	Birmingham	High	5.25	51-60	144.81	Low (Bottom 25%)
C1067	Male	49	10 May 2024	Single	Birmingham	Medium	1.49	41-50	536.84	High (Top 25%)
C1069	Female	58	21 November 2023	Single	Leeds	Medium	1.96	51-60	155.77	Medium (Mid 50%)
C1070	Female	52	28 December 2020	Single	Manchester	High	4.85	51-60	45.32	Low (Bottom 25%)

Visualize:

○ CLV vs Days Since Last Purchase



Top-Left (High CLV, Low Days): **"Champions"**

- *Insight:* These are your best customers. They have high value and have purchased recently. Your goal is to keep them happy.

Top-Right (High CLV, High Days): **"At-Risk Champions"**

- *Insight:* This is your most critical group. They are high-value customers who haven't bought anything in a while. They are at high risk of churning.
- *Action:* Target them immediately with a "we miss you" campaign or a special offer to bring them back.

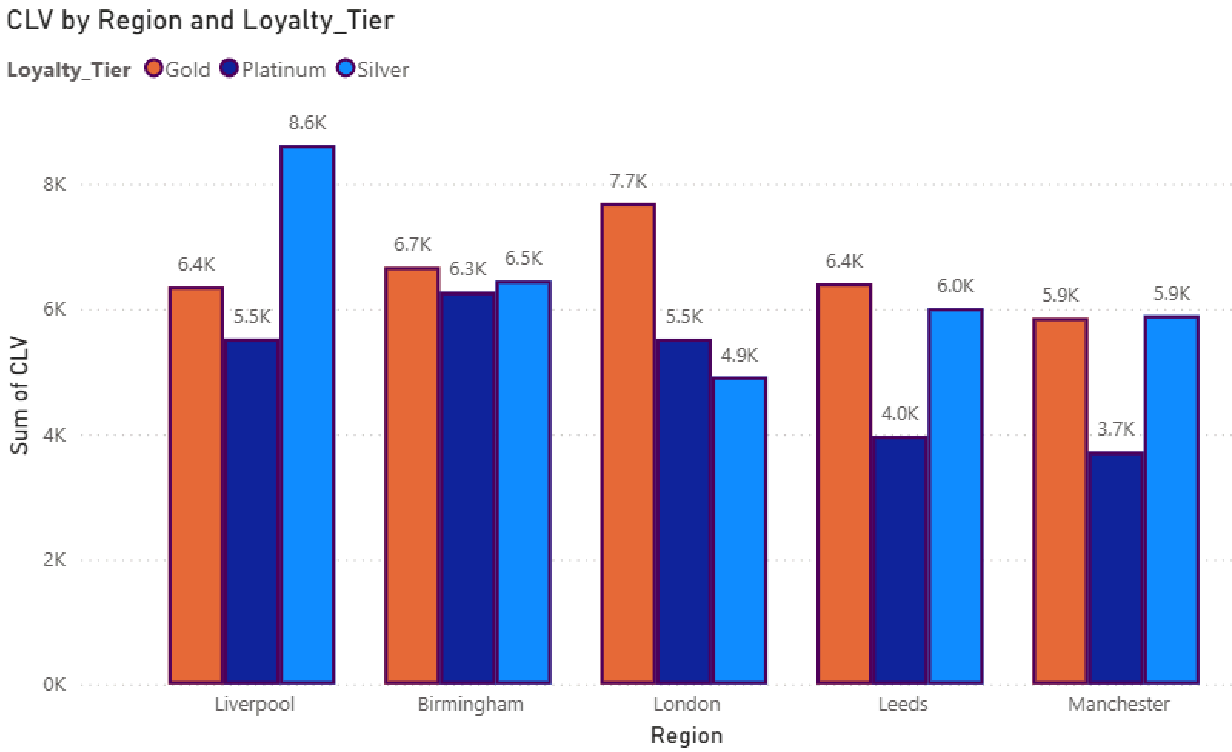
Bottom-Left (Low CLV, Low Days): **"New Customers / Potential"**

- *Insight:* These are new or low-value customers who are actively purchasing.
- *Action:* Your goal is to increase their average order value and nurture them into becoming "Champions."

Bottom-Right (Low CLV, High Days): **"Lost / Churned"**

- *Insight:* These are low-value customers who are inactive. They have likely churned.
- *Action:* It's generally not worth spending much to re-acquire this group. Focus your efforts on the other three.

○ CLV by Loyalty Tier and Region



<u>Insights</u> :

Highest Value Segment: The single most valuable customer segment on the entire chart is **Silver** in **Liverpool**, with a CLV of **8.6K**. This is a significant outlier.

Second Highest Value Segment: The next most valuable segment is **Gold** in **London**, with a CLV of **7.7K**.

The Platinum Problem: A key insight is the consistent underperformance of the **Platinum** tier. In four out of the five regions (all except Birmingham), the Platinum tier has the *lowest* CLV.

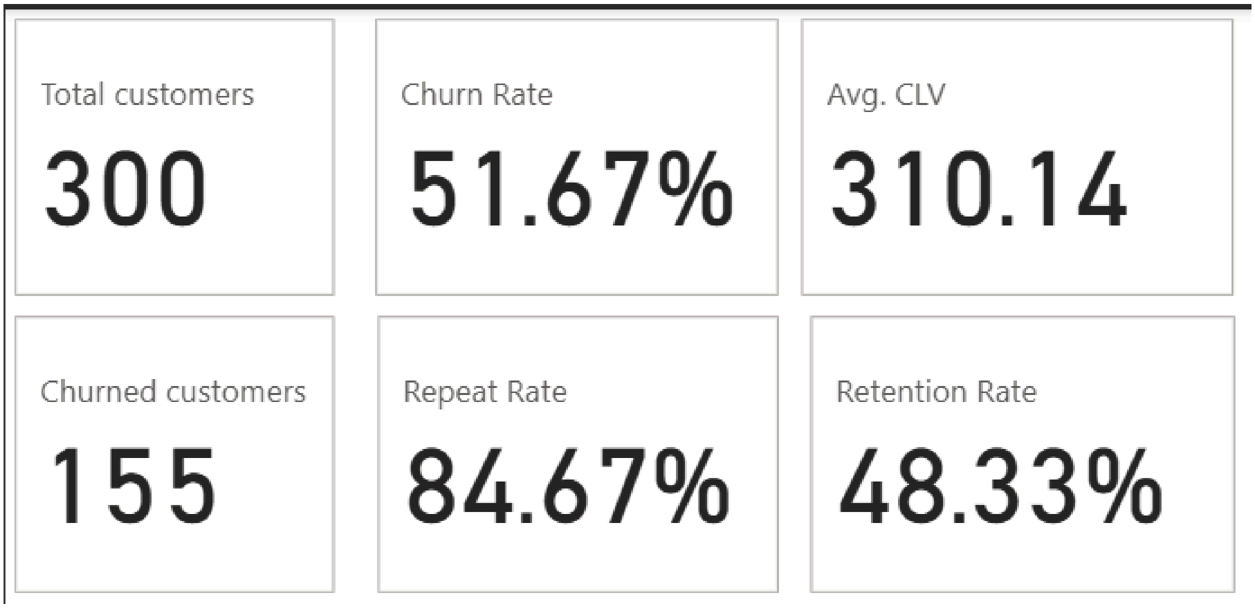
Lowest Value Segments: The two worst-performing segments are both Platinum: **Manchester Platinum** (3.7K) and **Leeds Platinum** (4.0K).

Most Consistent Region: Birmingham shows the most balanced and consistently high CLV across all three tiers (6.7K, 6.3K, 6.5K), with very little variation between them.

Task 7: Final Dashboard and Executive summary

Create a multi-page Power BI report:

Overview KPIs (Churn, CLV, Repeat Rate) :



Dashboard Summary

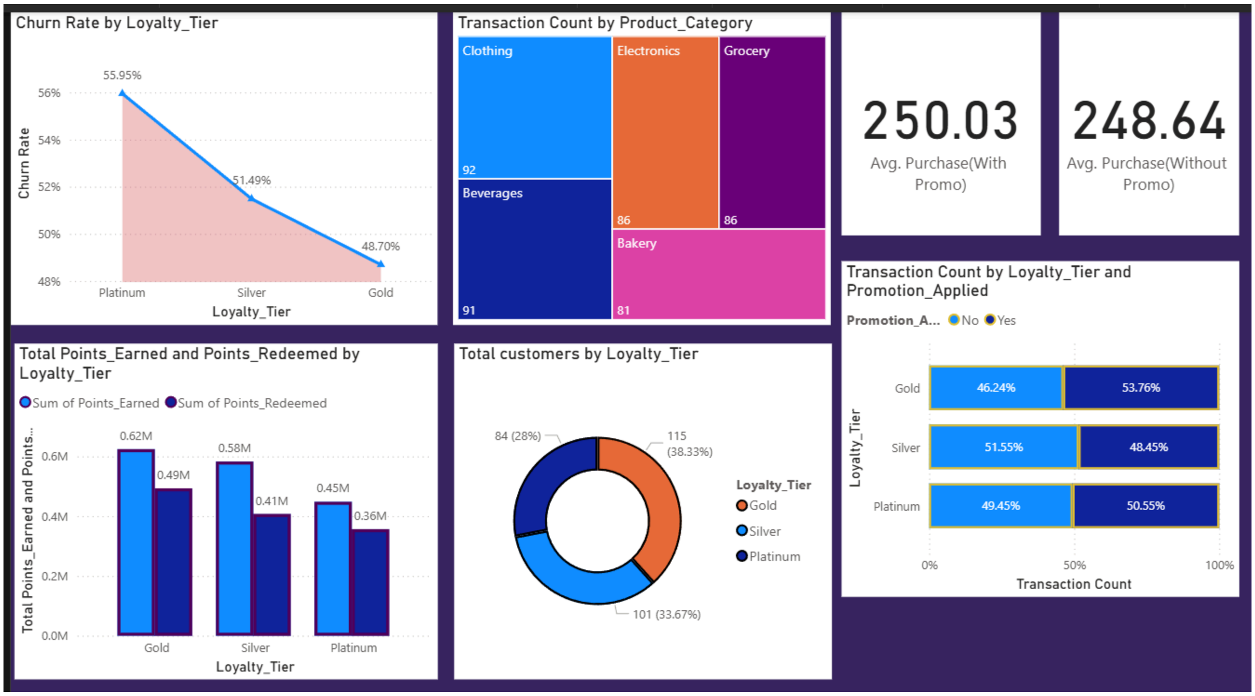
This dashboard provides a high-level overview of key customer performance indicators (KPIs) for a specific cohort.

Key Metrics Displayed:

- **Total Customers:** 300
- **Churned Customers:** 155
- **Churn Rate:** 51.67%
- **Retention Rate:** 48.33%
- **Repeat Rate:** 84.67%
- **Average CLV :** 310.14

This analysis covers a cohort of 300 total customers, highlighting critical metrics for loyalty and value. The dashboard indicates a significant churn challenge, with 155 customers having left, resulting in a **Churn Rate of 51.67%**. This is directly mirrored by the **Retention Rate of 48.33%**. Despite the high churn, the data also shows a strong **Repeat Rate of 84.67%** among the customers who were retained. Financially, the **Average CLV** for this group is **310.14**.

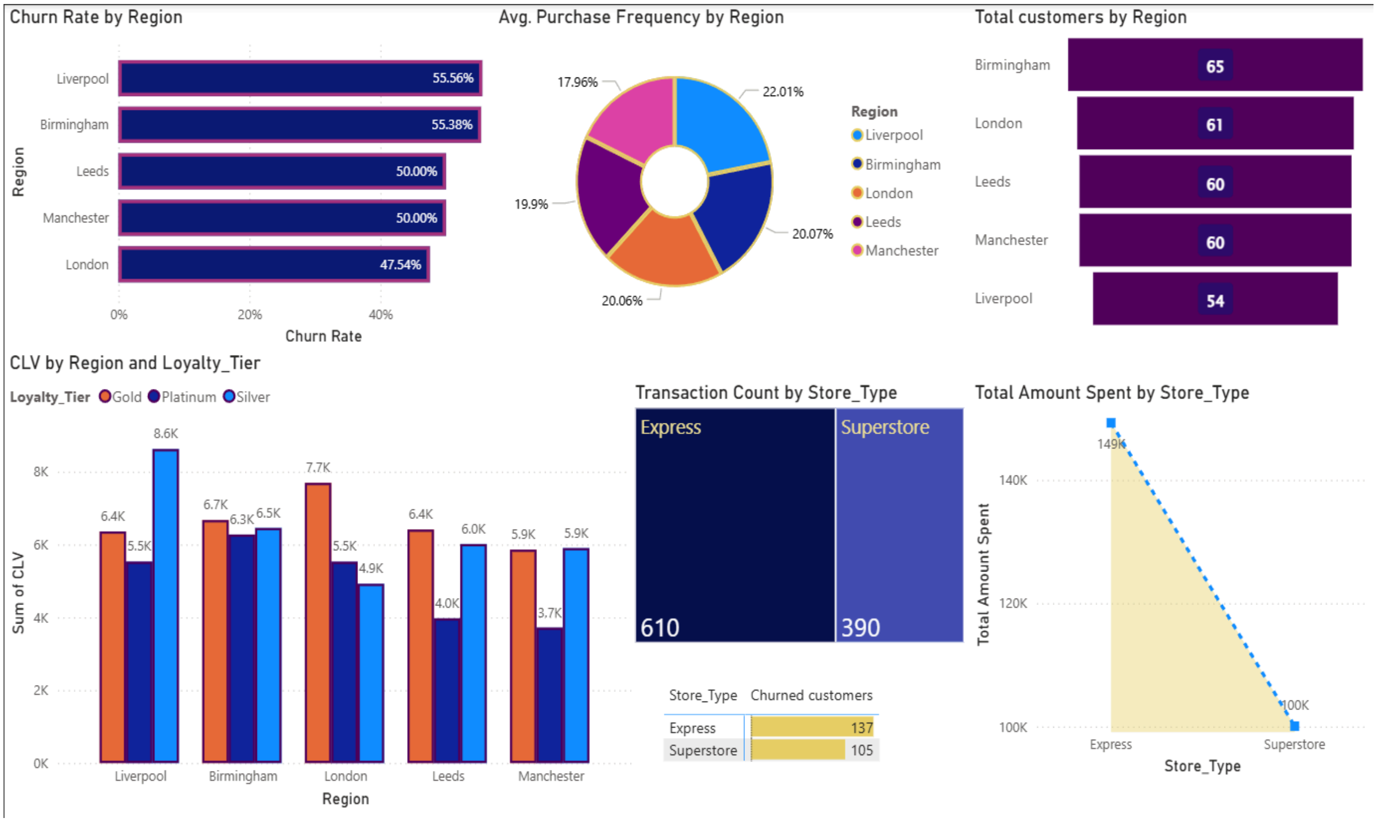
Loyalty & Promotion Impact :



Key Insights

- **Churn Rate by Loyalty_Tier:** Shows a counter-intuitive trend where the top-tier **Platinum** members churn the most (55.95%), while the base-tier **Gold** members are the most loyal (48.70% churn).
- **Total Points (Earned vs. Redeemed):** Reinforces the churn data. Gold members are the most engaged (earning 0.62M, redeeming 0.49M), while Platinum members are the least engaged.
- **Total Customers by Loyalty_Tier:** The customer base is fairly distributed, with Gold (38.33%) as the largest segment and Platinum (28%) as the smallest.
- **Average Purchase (With vs. Without Promo):** Demonstrates that promotions are largely ineffective at increasing spending, adding only 1.39 to the average purchase.
- **Transaction Count by Product_Category:** Indicates a balanced product interest from customers, with Clothing (92) and Beverages (91) being the most frequently purchased categories.
- **Transaction Count by Loyalty_Tier and Promotion_Applied:** Shows that promotion usage is nearly identical across all three tiers, hovering around 46-52%.

Store and Region Insights :



The analysis reveals that regional performance varies dramatically. Liverpool (55.56%) and Birmingham (55.38%) suffer from the highest customer churn rates, while London (47.54%) performs the best in retention. Despite high churn, Liverpool boasts the single most valuable customer segment (Silver tier, 8.6K CLV). This suggests that even high-risk regions contain highly valuable customer groups.

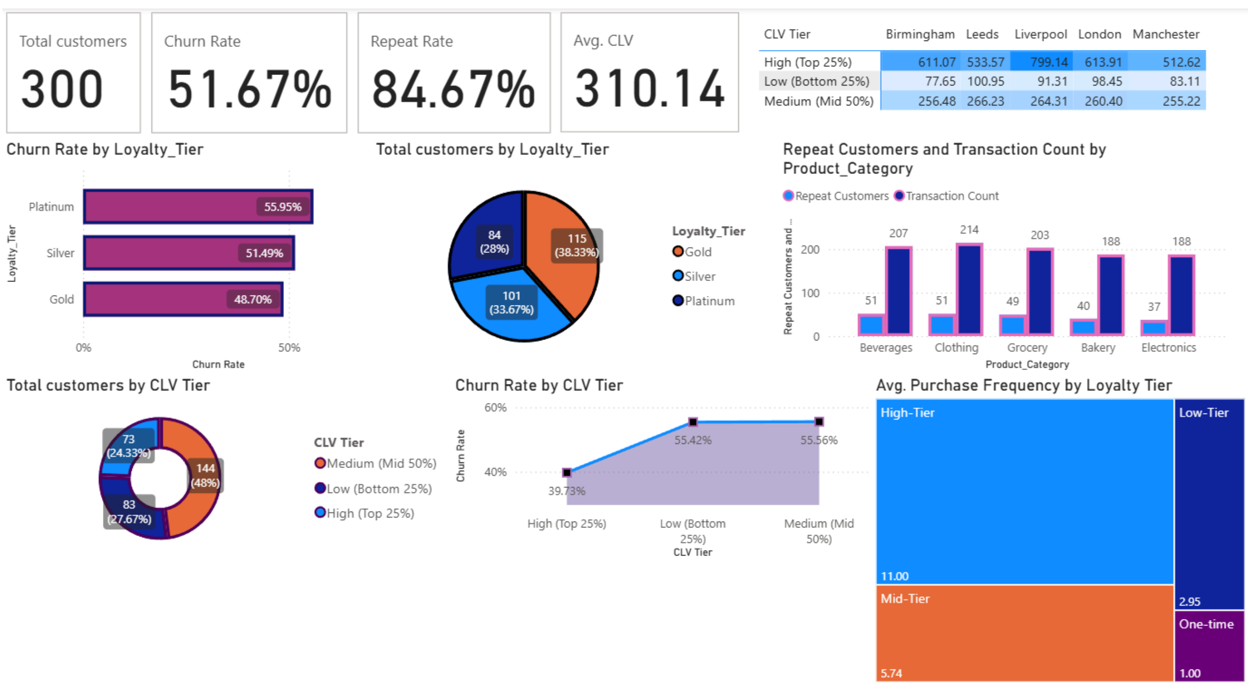
In the store-type analysis, Express stores are the clear engine for volume and revenue, driving 610 transactions and 146K in spending, compared to the Superstore's 390 transactions and 100K in spending. However, this high volume comes with a retention cost, as Express stores also account for a higher number of churned customers (137) than Superstores (105).

Key Insights

- Regional Churn: Liverpool and Birmingham are critical problem areas, with churn rates significantly above 50%. London is the strongest-performing region in terms of customer retention.

- Customer Distribution: The total customer base is fairly evenly distributed across all five regions, indicating the high churn rates are not simply due to a larger customer pool.
- CLV & Loyalty: The 'CLV by Region' chart shows that the 'Platinum' tier is not always the most valuable. In several regions (like London and Leeds), 'Gold' and 'Silver' tiers contribute more to Customer Lifetime Value, with Liverpool's 'Silver' tier being the highest single segment on the chart.
- Store Type Performance (Express): Express stores are the primary driver of transactions (610) and total spending (146K).
- Store Type Risk (Express): This high traffic comes at a cost. Express stores also have a higher absolute number of churned customers (137) compared to Superstores (105), suggesting a more transactional and less "sticky" customer relationship.

Customer Segmentation (Churned, Repeat, High-Value) :

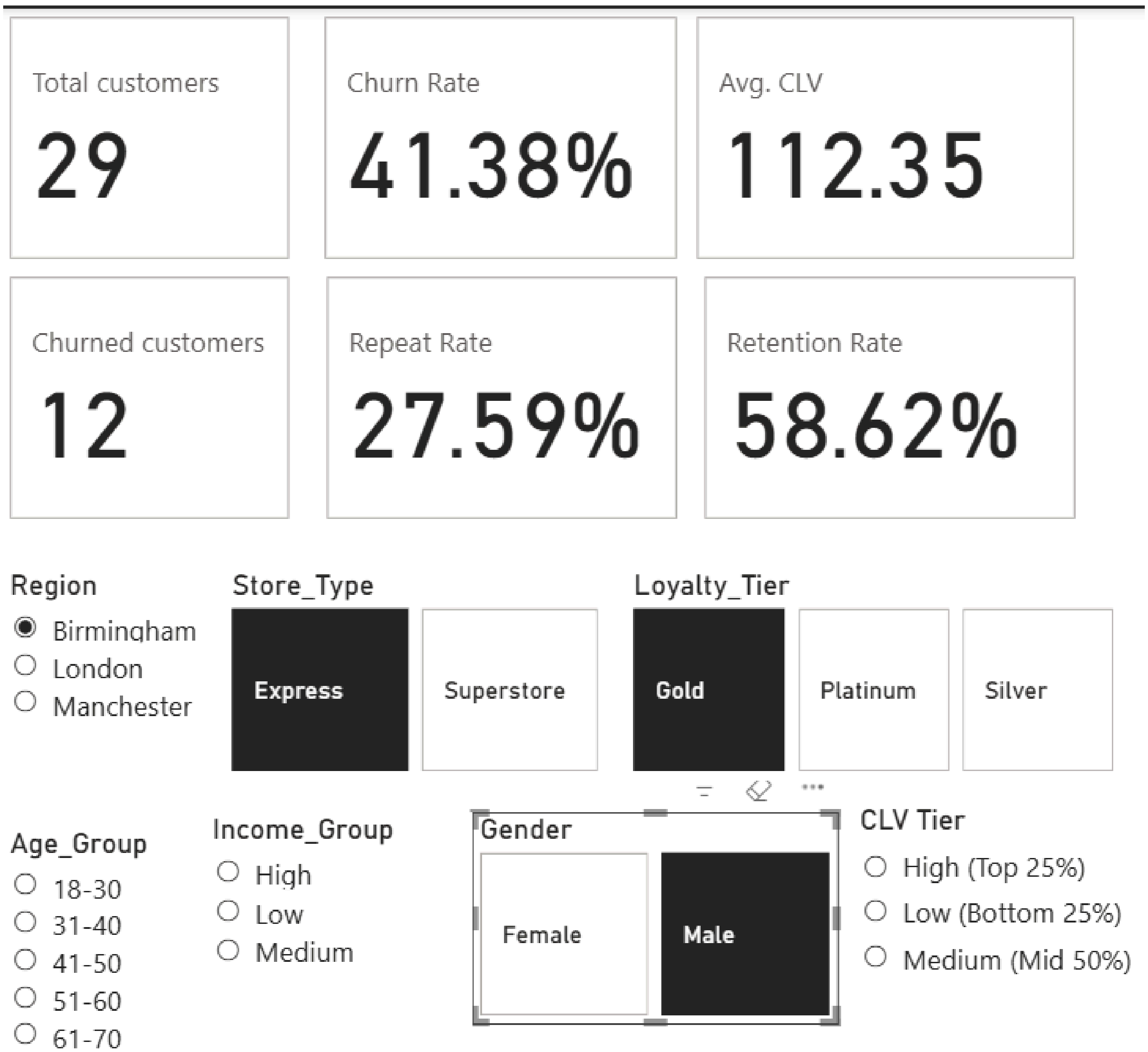


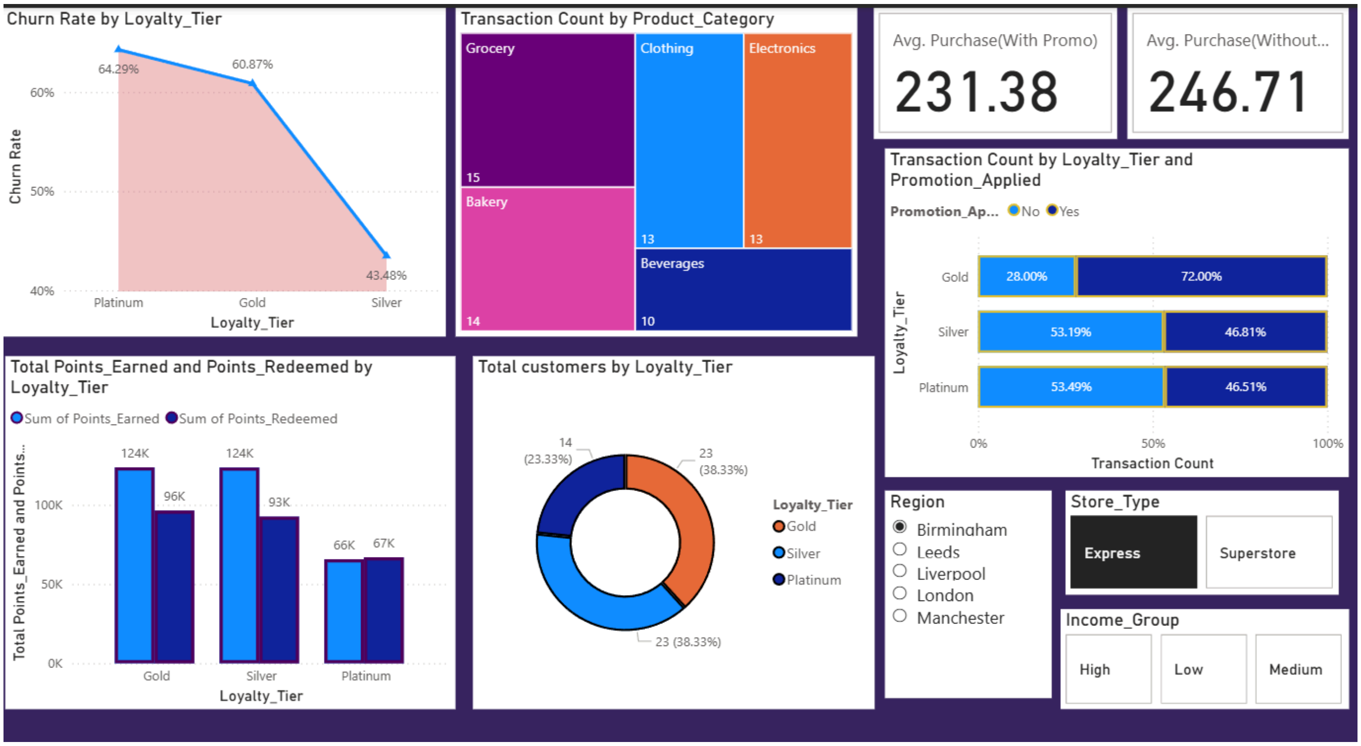
Key Insights by Chart

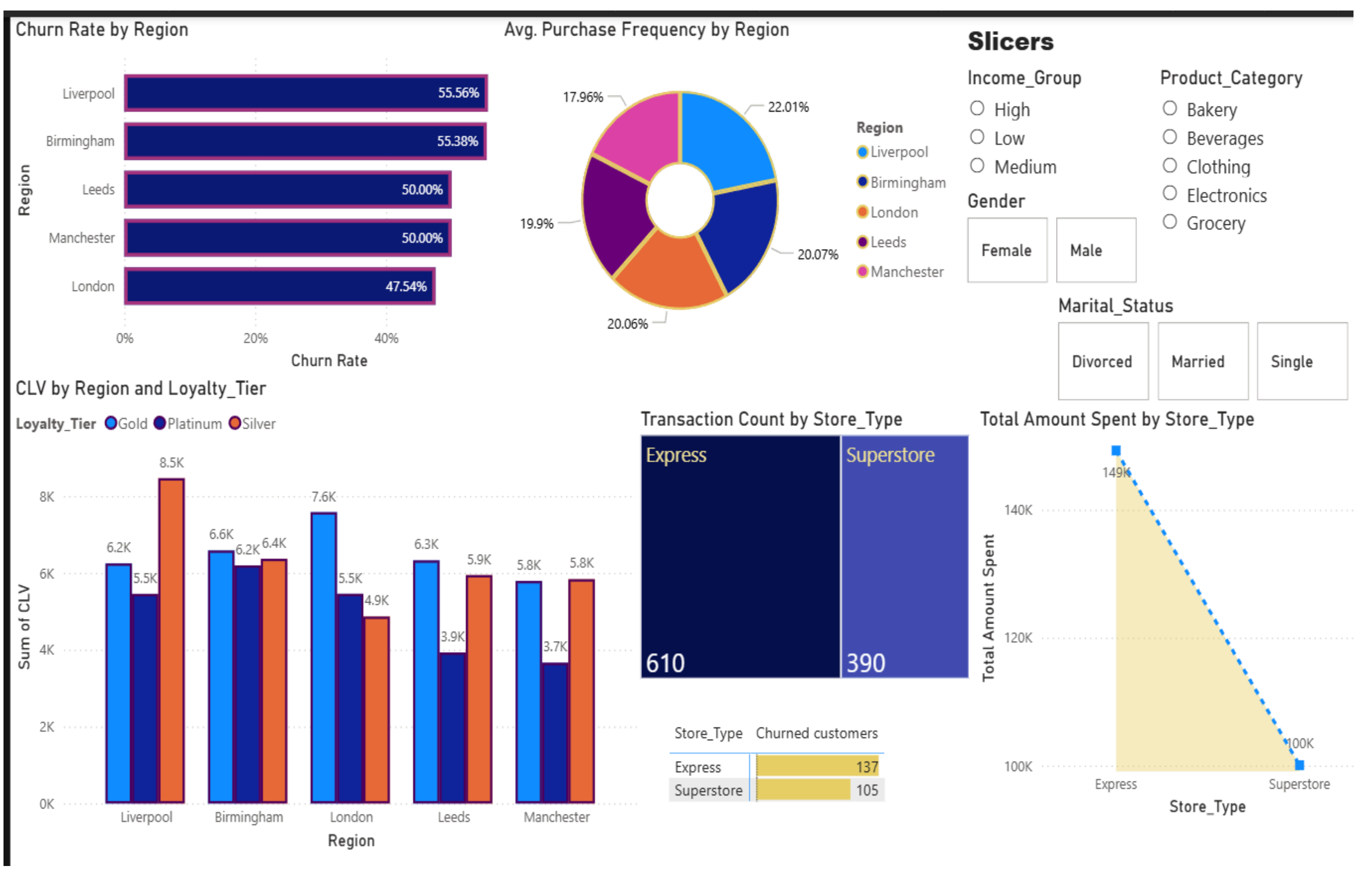
- **Churn Rate by CLV Tier:** This shows the *opposite* trend. The "High (Top 25%)" CLV customers are the most loyal (39.73% churn), while "Medium" and "Low" CLV groups are churning at over 55%.
- **Avg. Purchase Frequency:** High-tier customers (11.00) are significantly more active than mid-tier (5.74) and low-tier (2.95) customers.

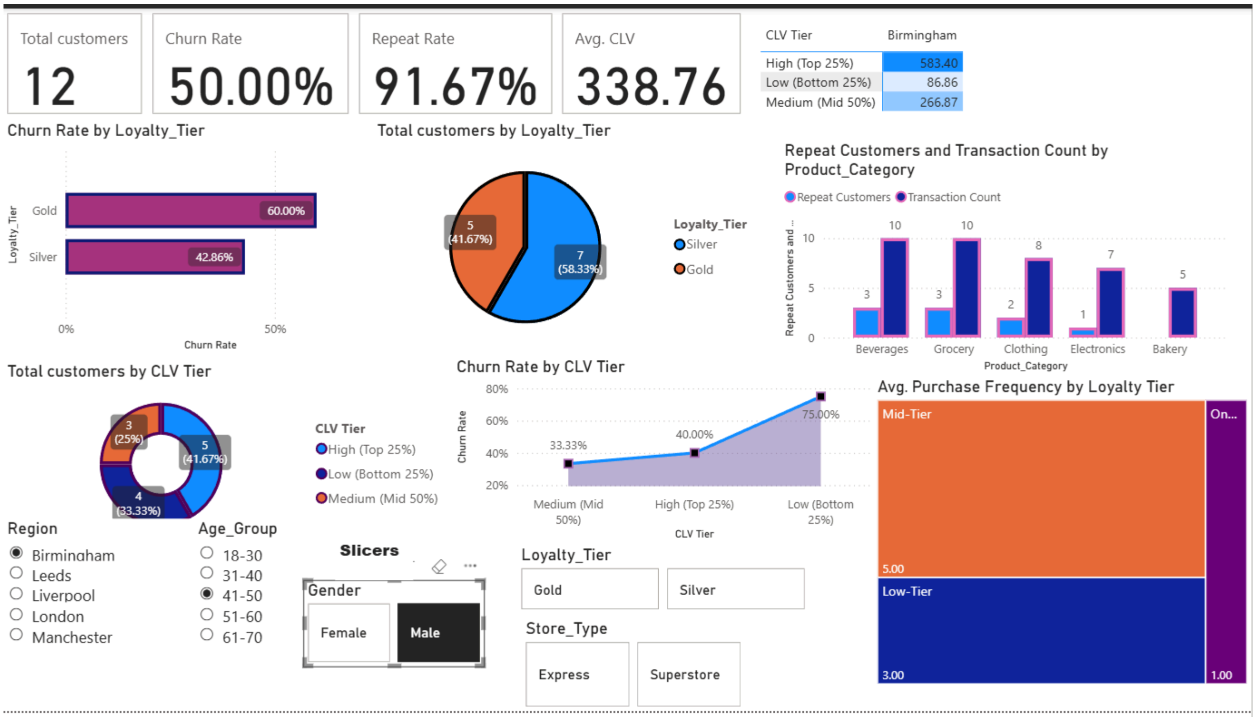
- **Product Categories:** Clothing (214) and Grocery (203) are the primary drivers for transactions and repeat customers.

Add slicers: Region, Income Group, Loyalty Tier, Store Type :




Churn Rate by Loyalty_Tier
64.29%
60.87%
43.48%
Churn Rate
Platinum
Gold
Silver
Loyalty_Tier
Transaction Count by Product_Category
Grocery 15
Clothing 13
Electronics 13
Bakery 14
Beverages 10
Avg. Purchase(With Promo)
231.38
Avg. Purchase(Without...
246.71
Transaction Count by Loyalty_Tier and Promotion_Applied
Promotion_Ap... No Yes
Gold 28.00% 72.00%
Silver 53.19% 46.81%
Platinum 53.49% 46.51%
Loyalty_Tier
Transaction Count
Total Points_Earned and Points_Redeemed by Loyalty_Tier
Sum of Points_Earned Sum of Points_Redeemed
Gold 124K 96K
Silver 124K 93K
Platinum 66K 67K
Total Points_Earned and Points...
Loyalty_Tier
Total customers by Loyalty_Tier
14 (23.33%)
23 (38.33%)
23 (38.33%)
Loyalty_Tier
Gold
Silver
Platinum
Region
Birmingham
Leeds
Liverpool
London
Manchester
Store_Type
Express
Superstore
Income_Group
High
Low
Medium


Churn Rate by Region
Liverpool 55.56%
Birmingham 55.38%
Leeds 50.00%
Manchester 50.00%
London 47.54%
Region
Churn Rate
Avg. Purchase Frequency by Region
17.96%
22.01%
19.9%
20.07%
20.06%
Region
Liverpool
Birmingham
London
Leeds
Manchester
Slicers
Income_Group
High
Low
Medium
Product_Category
Bakery
Beverages
Clothing
Electronics
Grocery
Gender
Female
Male
Marital_Status
Divorced
Married
Single
CLV by Region and Loyalty_Tier
Loyalty_Tier Gold Platinum Silver
Sum of CLV
Liverpool 6.2K 5.5K 8.5K
Birmingham 6.6K 6.2K 6.4K
London 7.6K 5.5K 4.9K
Leeds 6.3K 3.9K 5.9K
Manchester 5.8K 3.7K 5.8K
Region
Transaction Count by Store_Type
Express 610
Superstore 390
Store_Type Churned customers
Express 137
Superstore 105
Total Amount Spent by Store_Type
149K
100K
Total Amount Spent
Express
Superstore
Store_Type



To enhance the dashboard's interactivity, a set of slicers has been implemented. These slicers allow for dynamic filtering of all visuals on the pages, enabling a deeper analysis of specific segments. The dashboards can now be filtered by:

- Region
- Store Type
- Loyalty Tier
- CLV Tier
- Age Group
- Gender
- Marital Status

Summarizing the top 3 recommendations:

Top 3 recommendations:

Based on the insights, here are the three most urgent, high-impact recommendations:

1- **Fix the Inverted Loyalty Program:** The **Platinum tier is failing**. The visuals show this tier has the **highest churn rate (55.95%)**, the **lowest CLV** in most regions, and the **lowest engagement** with the points system. Tesco must immediately re-evaluate the Platinum value proposition. We recommend shifting its perks away from points (which they don't use) and toward tangible, immediate benefits like free delivery, exclusive access to **Clothing** or **Beverage** partner products, or in-store "skip the queue" perks.

2- **Launch Hyper-Targeted "Rescue Campaigns":** The data identifies segments with 100% churn. The immediate priority is a segment identified in the table analysis: **Females with Medium Income shopping at Superstores in Manchester**. A second priority, **Aged 31-40 in Liverpool and Leeds**. We must launch targeted marketing campaigns to these specific, high-risk groups *now* to prevent further losses.

3- **Prioritize High-Risk, High-Value Locations:** The **London** region has the highest churn (53.7%) but also contains one of the highest CLV segments ("London Gold"). This combination of high value and high risk makes London the #1 priority for regional intervention. Separately, we must launch a "New Store Loyalty Onboarding" program, as the scatter plot shows a clear trend of **lower retention at newer stores**.

What should TESCO do to retain more customers?

To retain more customers, Tesco must move from a one-size-fits-all approach to a deeply segmented strategy focused on demonstrated value and engagement.

- **Make the Loyalty Program Valuable:** As established, the Platinum tier is broken. The program must be redesigned so that the "best" tier *feels* the most valued. Since the "Gold" tier is the most engaged with points, keep their points-based rewards. For Platinum, add experiential benefits that don't require them to bank and redeem points.
- **Drive Point Redemption:** The data shows a large gap between points earned and redeemed. It also shows that **Clothing** and **Beverages** are the most popular transaction categories. Tesco should launch campaigns that directly link points to these popular items (e.g., "Use 500 points for £5 off any Clothing purchase"). This increases engagement, which is correlated with retention.
- **Segment by Behavior, Not Just Tier:** We know the **"61-70" age group** has the highest purchase frequency, and the **"Silver"** loyalty tier (in Liverpool) has the highest CLV. We should be targeting these groups with "thank you" offers and incentives to protect their high-value, high-frequency behavior.
- **Fix Leaky Store Locations:** Implement the "London Rescue" and "New Store Loyalty" campaigns recommended above. The data on store-opening years shows that customer loyalty is not being successfully transferred to new locations.

Where should they focus next?

1. **Immediate Focus (Next 3 Months): The Platinum Tier.** This is the most urgent problem. The company is losing its highest-designated customers at a faster rate than any other group. The immediate focus must be on redesigning the Platinum tier's benefits to stop this high-value churn.
2. **Secondary Focus (Next 6 Months): High-Value, High-Risk Segments.** Focus retention efforts on the segments with the highest CLV that are in high-churn regions. The data identifies these as **"Liverpool Silver" (8.6K CLV)** and **"London Gold" (7.7K CLV)**. These are the most valuable customer groups; protect them at all costs.
3. **Long-Term Focus (Next 12 Months): New Stores & Inconsistent Regions.** The long-term focus should be on standardizing the customer experience to fix the two biggest inconsistencies:
   - **New Stores:** Implement a new, standard onboarding process for all stores opened since 2019 to reverse the trend of low retention.
   - **Underperforming Regions:** Analyze why regions like **Manchester** and **Leeds** have the lowest CLV segments (e.g., "Manchester Platinum" at 3.7K). This will require a deeper, region-specific analysis.

Task 8: Video explanation: Expressing the finding and actionable insights

Drive Link :

https://drive.google.com/file/d/1dqVPpB4avuPCHDjwI0mK_5PcmDv8wGy2/view?usp=sharing

BI_Project_Video.mp4