

Banking (GP02)

Case Study: Unlocking Financial Insights in Banking

26.71K

Average of LoanAmount

23.79K

Average of Balance

583.04

Average of CreditScore

500.56

Average of TransactionID

Year

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2023

2024

BranchCode

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1

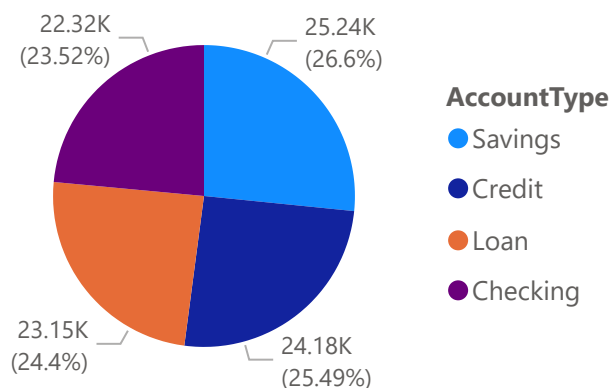
2

Currency

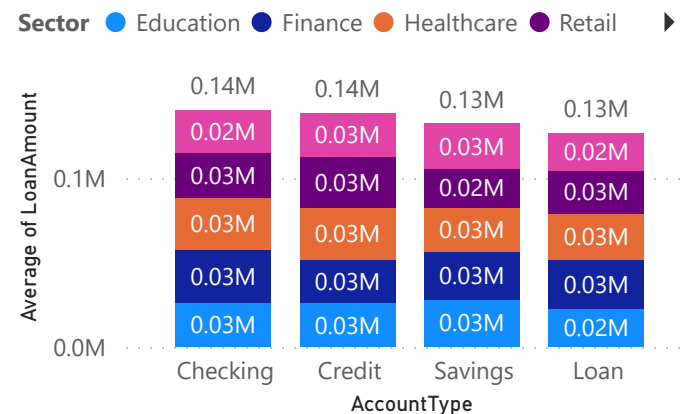
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EUR

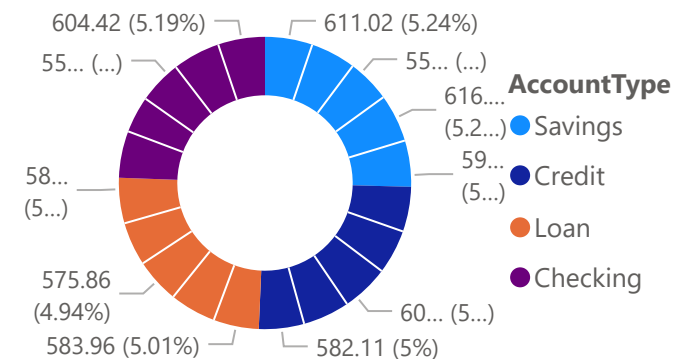
Average of Balance by AccountType



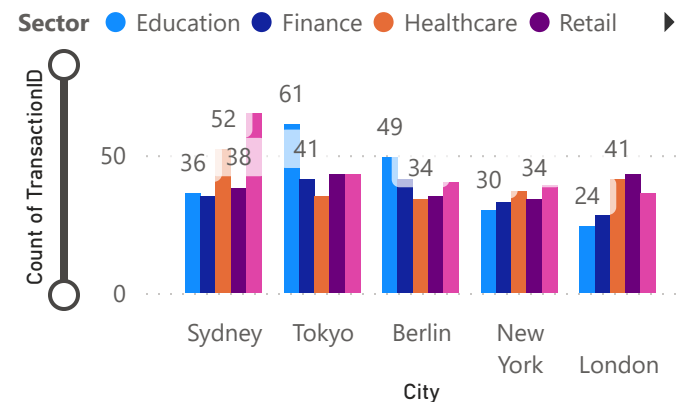
Average of LoanAmount by AccountType and Sector



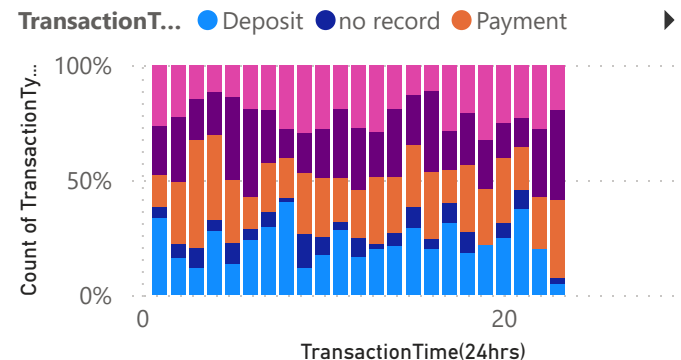
Average of CreditScore by AccountType and Sector



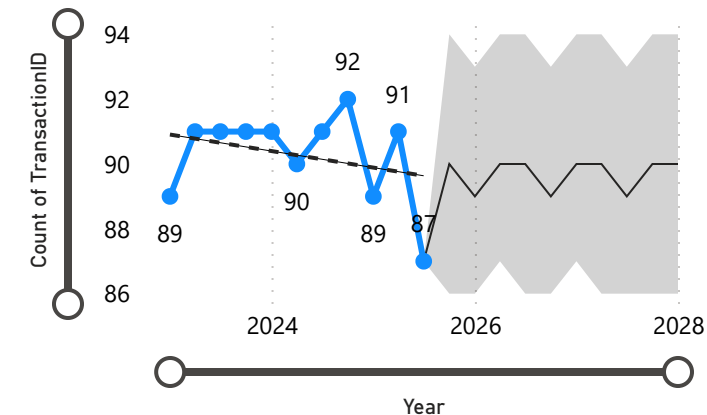
Count of TransactionID by City and Sector



Count of TransactionType by TransactionTime(24hrs) and TransactionType



Count of TransactionID by Year and Quarter



AccountType

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Checking

Credit

TransactionType

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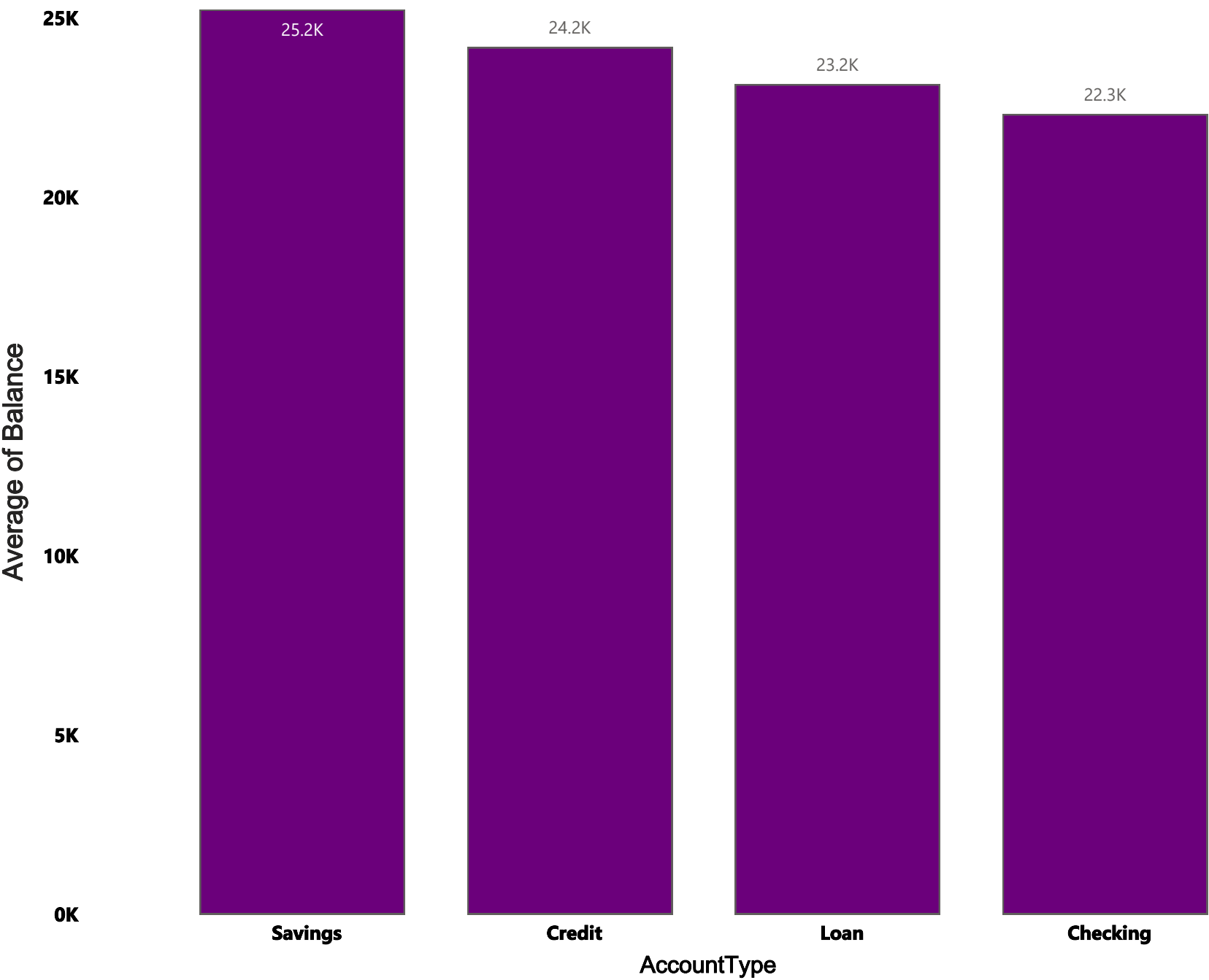
Deposit

no record

6.- Analysis of Account Balances

- Calculate the average account balance for each account type.
Which account type has the highest average balance?

Average of Balance by Account Type



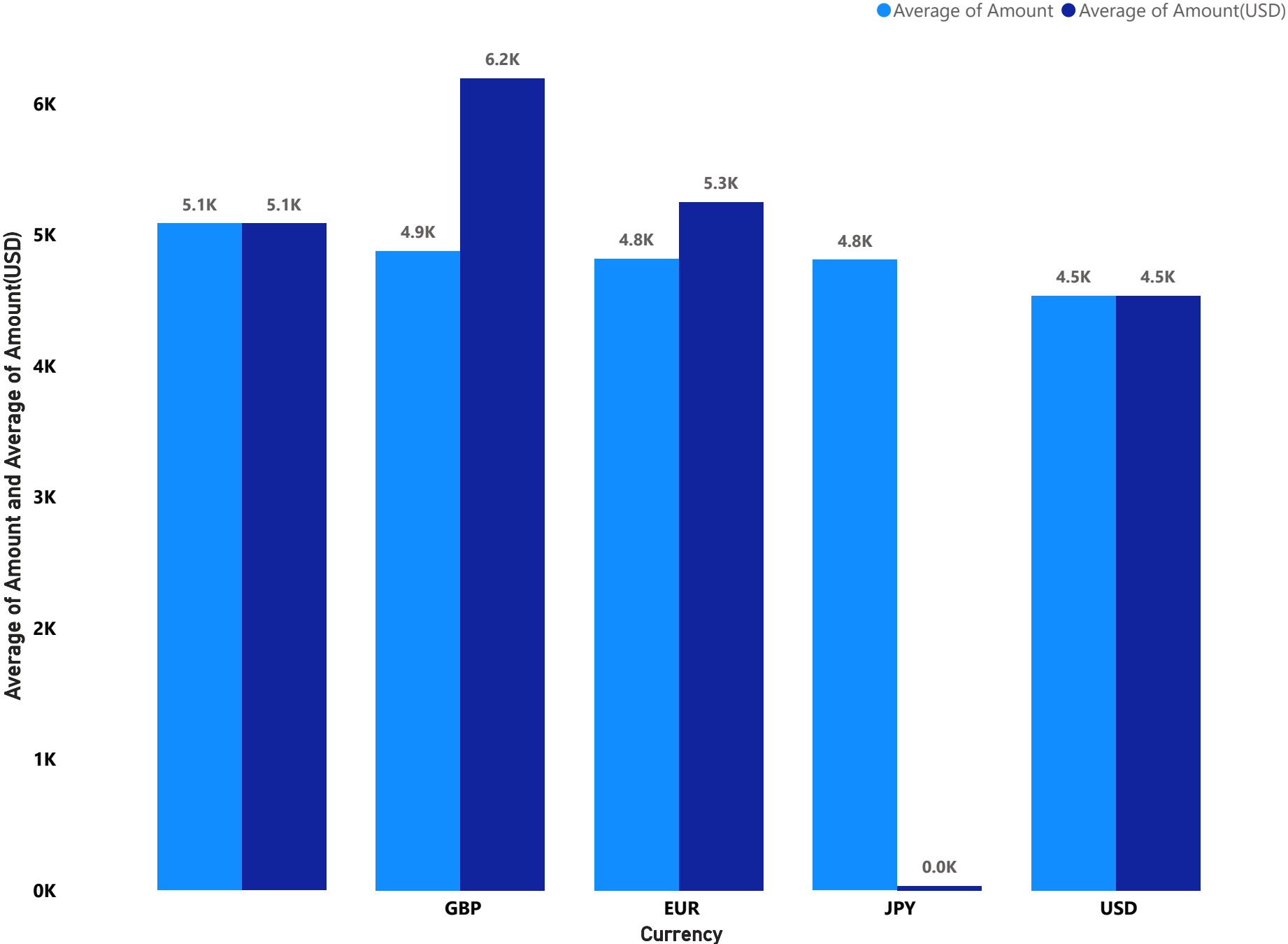
Insights : According to the question, we have plotted the bar graph between average of balance and account type. We found Savings account have highest average with an average of 25.2K

7.- Currency Exchange Rate Impact

Analyze the impact of currency exchange rates on transaction amounts.

Convert all transactions to a standard currency for comparison.

Average of Amount and Average of Amount(USD) by Currency

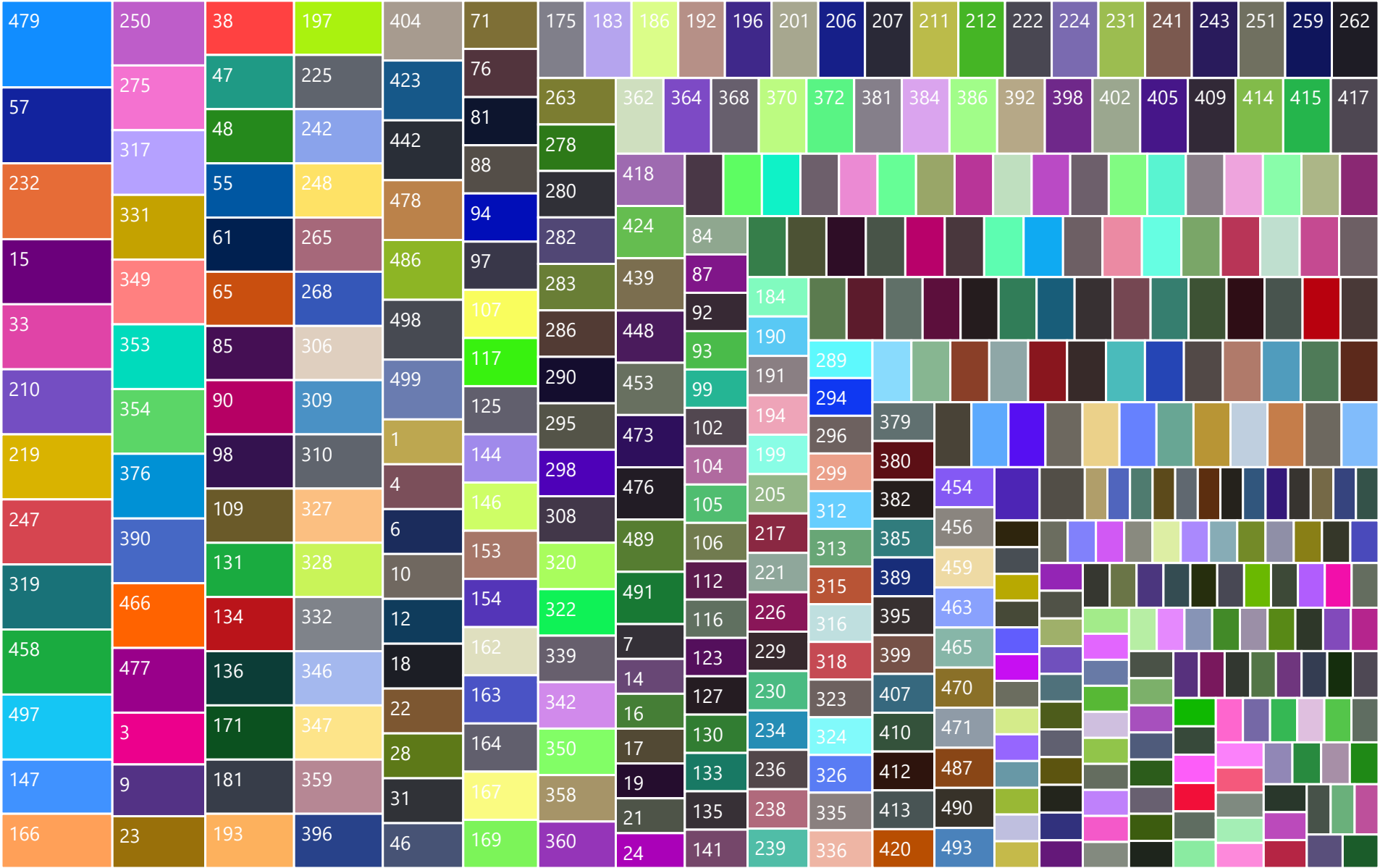


Insights : For this problem, we have taken distinct currency values which are present in our dataset. We then formed a new column named Amount(USD) where the amount was converted to USD equivalent. Now, the bar graph was plotted against the average of amount and the amount in USD.

8.- Branch Activity Analysis

Investigate which branch (identified by 'BranchCode') has the highest number of transactions.

Count of TransactionID by BranchCode

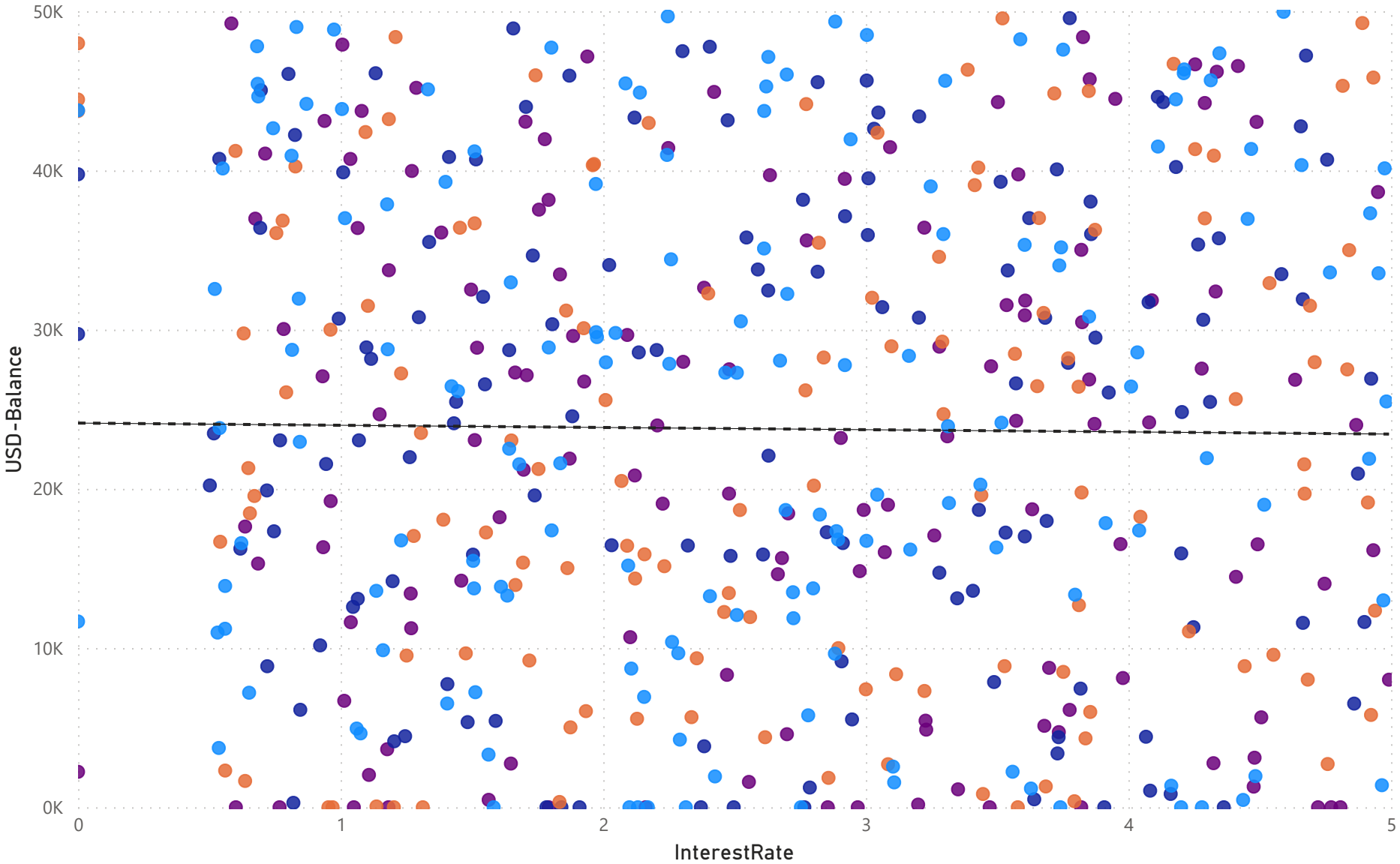


9.- Interest Rate and Balance Correlation

Using DAX, analyze the correlation between interest rates and account balances. Does a higher interest rate correlate with higher balances?

AccountType, InterestRate and USD-Balance

AccountType ● Checking ● Credit ● Loan ● Savings



Max of InterestRate and Max of USD-Balance correlation for TransactionDate, MIN and MAX



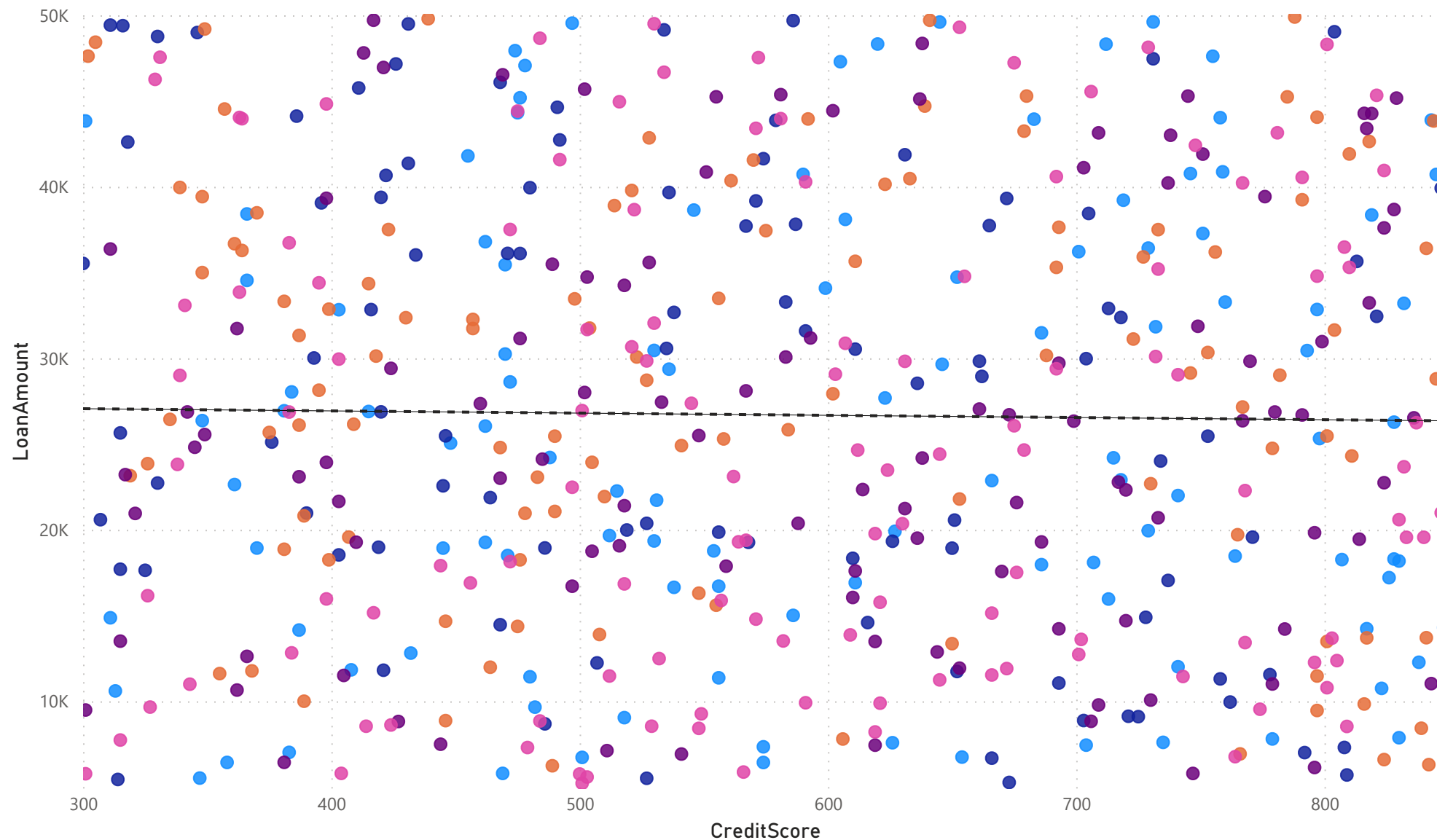
Insights : In order to determine the correlation between interest rates and account balances, we need to plot a scatter graph between the variables. On observing the graph we can see that the data is unevenly scattered which signifies that there is almost no correlation between the variables taken into account.

10.-Loan Amount and Credit Score Relation

Examine the relationship between loan amount and credit score. Do higher credit scores correlate with larger loan amounts?

Se

Sector ● Education ● Finance ● Healthcare ● Retail ● Technology



CreditScore and LoanAmount correlation for TransactionDate, MIN and MAX



Insights : In order to determine the relation between Credit score and loan amount, we need to plot a scatter plot to study the distribution of data. We observe that the data is scattered across the domain of the plot which can be considered to be uneven. Hence, we can conclude that the variables taken into account are not related to higher extent.

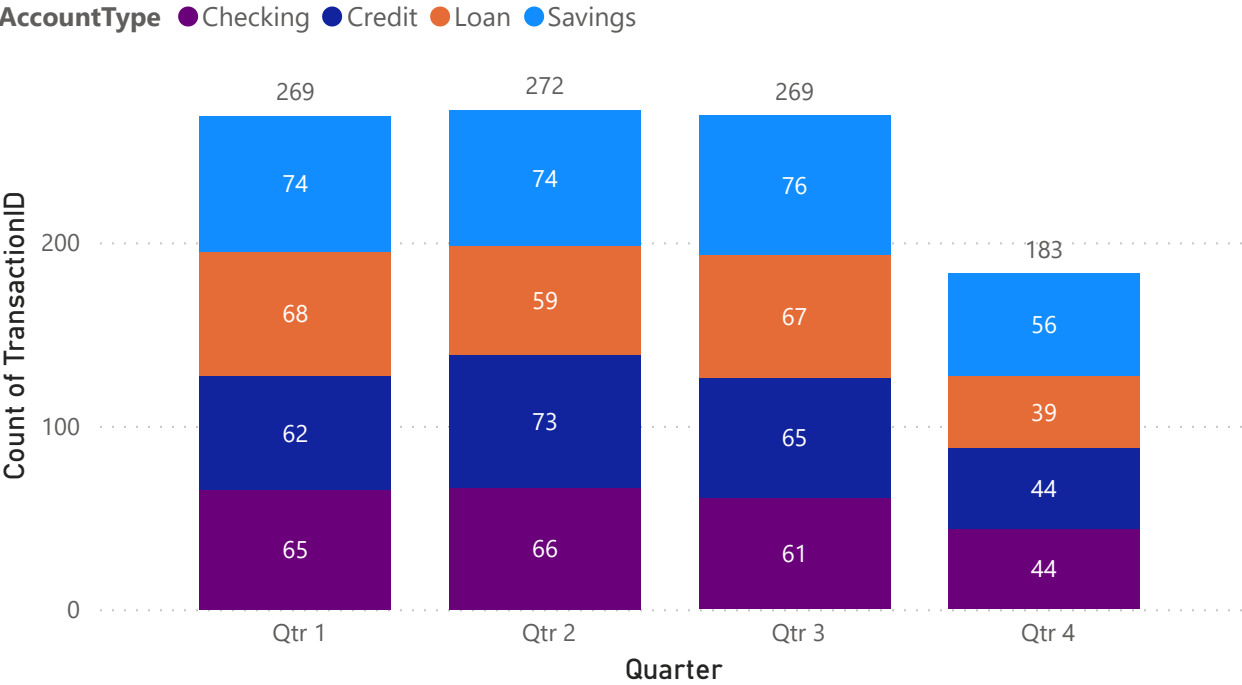
11.- Transaction Trends Over Time

Analyze transaction trends over time. Are there any noticeable patterns or seasonal fluctuations?

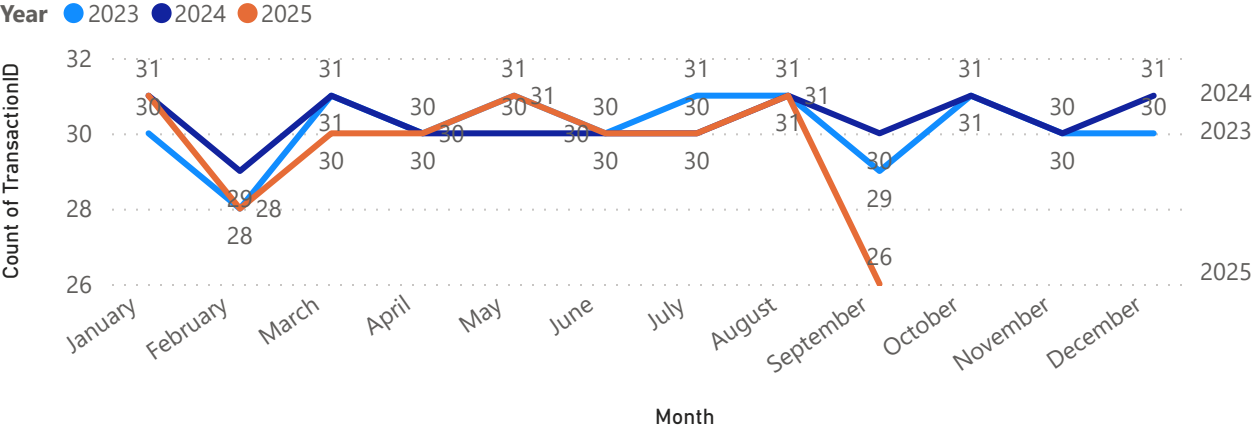
Insights : To study the trends, we have plotted a line graph which gives us insights of the transactions on a monthly basis. Also a bar graph has been plotted to study transactional data according to type and year.

Year	Count of TransactionID	Year
2023	362	--
2024	364	
2025	267	2023
Total	993	2024

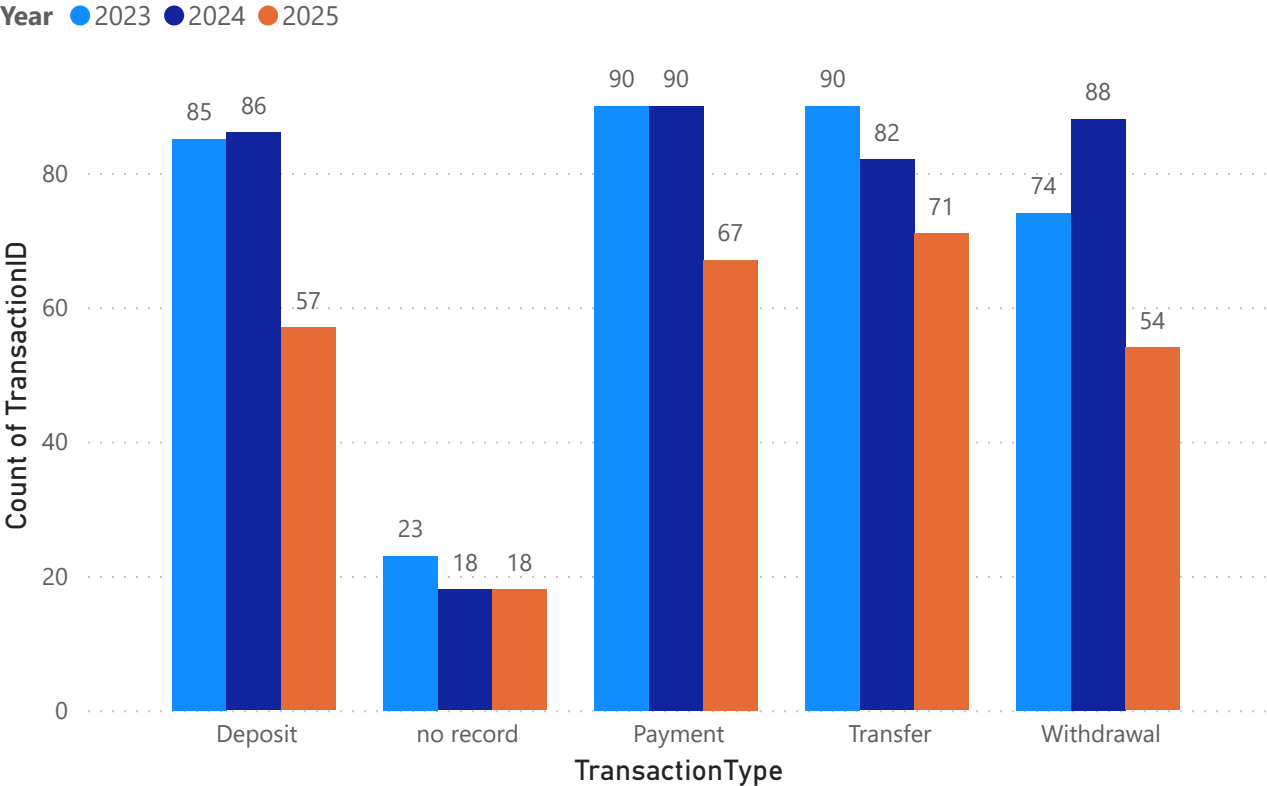
Count of TransactionID by Quarter and AccountType



Count of TransactionID by Month and Year



Count of TransactionID by TransactionType and Year



12.- Customer Loyalty Analysis

Calculate the duration of each account's relationship with the bank (from 'OpeningDate' to the most recent transaction date). Who are the longest-standing customers?

Insights : To determine longest standing customers, we need to get difference between the latest transaction date and the opening date. In order to summarize the data, the difference between years of these values were taken into consideration. The data was then sorted in descending order according to the

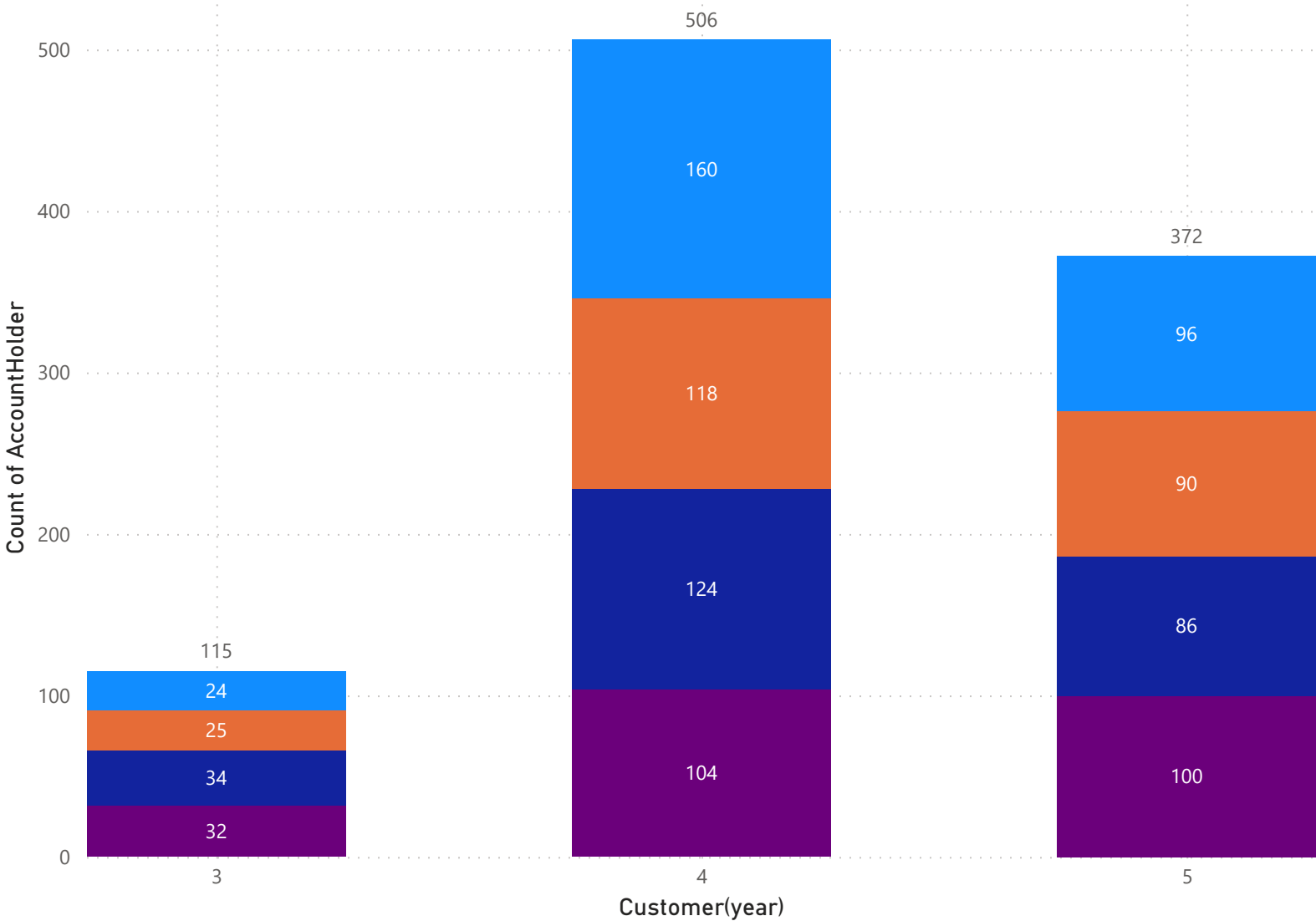
Customer(year)

--	3	4	5
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AccountHolder	AccountNumber	Customer(year)
Barbara Anderson	509971	5
Barbara Garcia	315929	5
Barbara Jones	493503	5
Barbara Jones	546973	5
Barbara Jones	802815	5
Barbara Lopez	118749	5
Barbara Lopez	712210	5
Barbara Miller	988691	5
Barbara Moore	758095	5
Charles Gonzalez	825670	5
Charles Hernandez	104796	5
Charles Moore	593137	5
Charles Smith	946555	5
Charles Williams	119118	5
Charles Wilson	991737	5
David Anderson	685995	5
David Gonzalez	913072	5
David Johnson	691855	5
David Lopez	809549	5
David Martin	817886	5
David Martinez	169383	5
David Miller	710375	5
David Miller	825214	5
David Rodriguez	261457	5
David Smith	284295	5
David Smith	222602	5

Count of AccountHolder by Customer(year) and AccountType

AccountType ●Checking ●Credit ●Loan ●Savings



AccountNumber

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100268
100406
100876
101574
102194
104716
104796
105468
107588

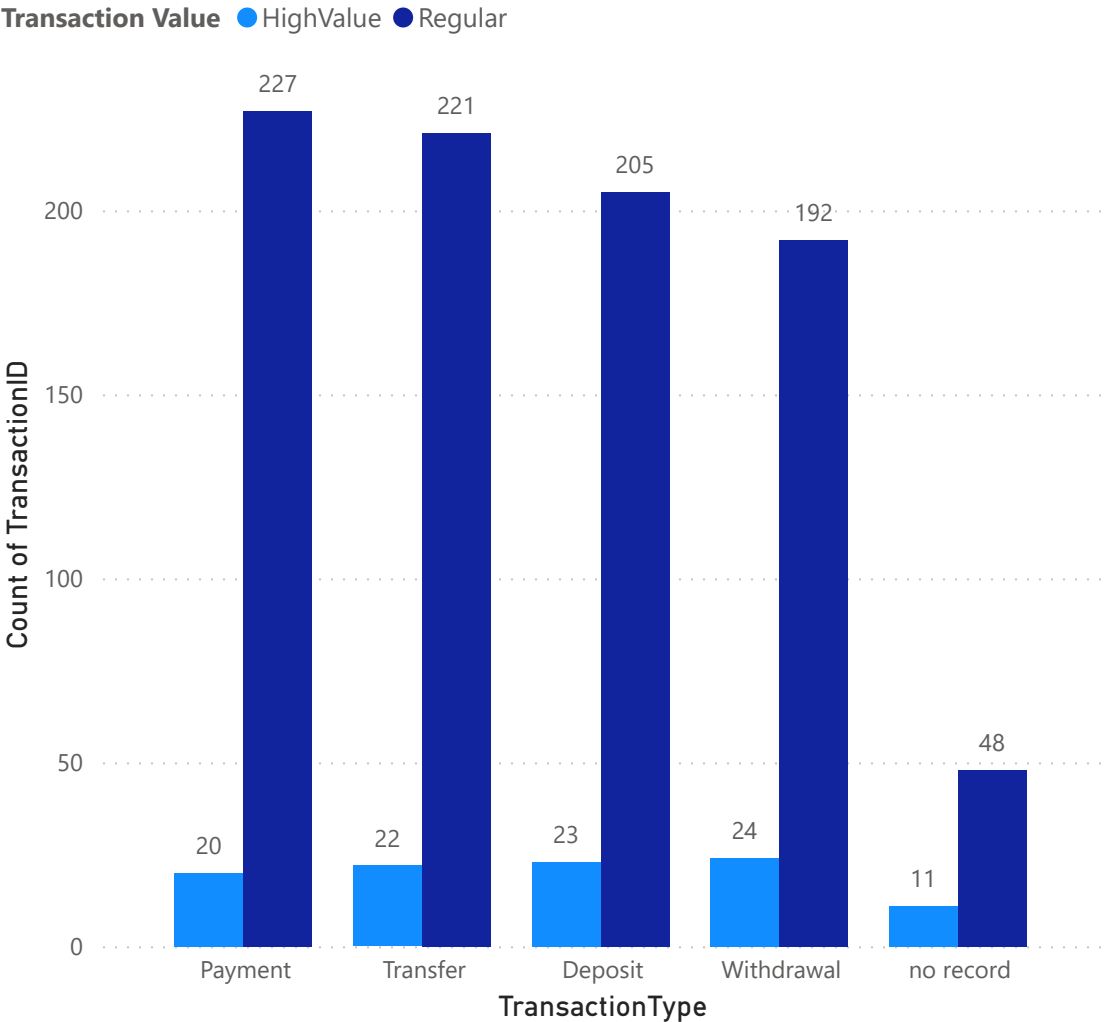
13.- High-Value Transaction Analysis

Identify high-value transactions and analyze their characteristics. What constitutes a high-value transaction in your analysis?

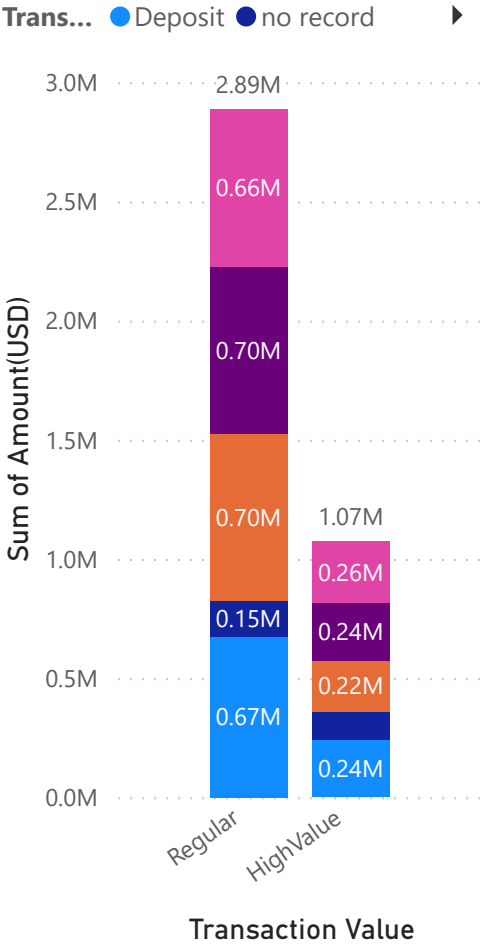
High value > 90 percentile (transaction amt. (UDS))

Insights : The high value transaction has been determined by grouping the data present according to the percentiles. Any value residing above the percentile value has been categorized as a High Value Transaction. The bar graph provides insights about all the types of transactions that are present in our dataset.

Count of TransactionID by TransactionType and Transaction Value



Sum of Amount(USD) by Transaction Value and TransactionType



Transaction Value

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HighValue

Regular

AccountNumber	TransactionType	Amount(USD)
936946	Withdrawal	12654.63
614907	Payment	12611.58
320218	Payment	12504.11
935337	Deposit	12493.32
988691	Withdrawal	12485.69
536128	Transfer	12420.48
273833	Transfer	12378.25
750787	Withdrawal	12359.66
936946	Withdrawal	12332.85
687600	Transfer	12232.96
583223	no record	12187.60
294326	Deposit	12141.49
807233	Transfer	12006.74
760445	Payment	11941.28
479868	Deposit	11815.53

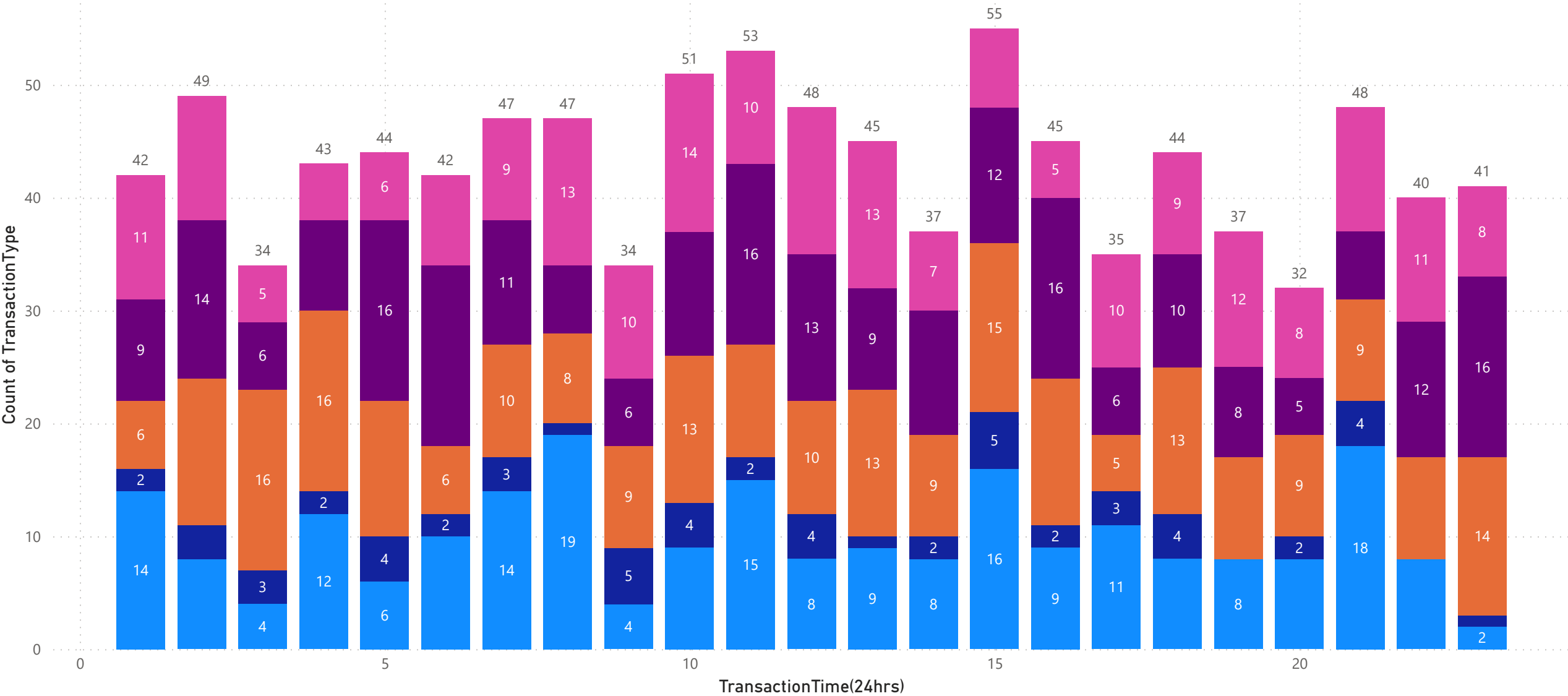
14.- Analysis of Transaction Time Patterns

Investigate if there are patterns in the times of day when different types of transactions are made.

Insights : For this problem, we need to determine the distribution of various transaction type at each hour of the day. The stacked column chart provides an ideal distribution for such analysis.

Count of TransactionType by TransactionTime(24hrs) and TransactionType

TransactionType Deposit no record Payment Transfer Withdrawal



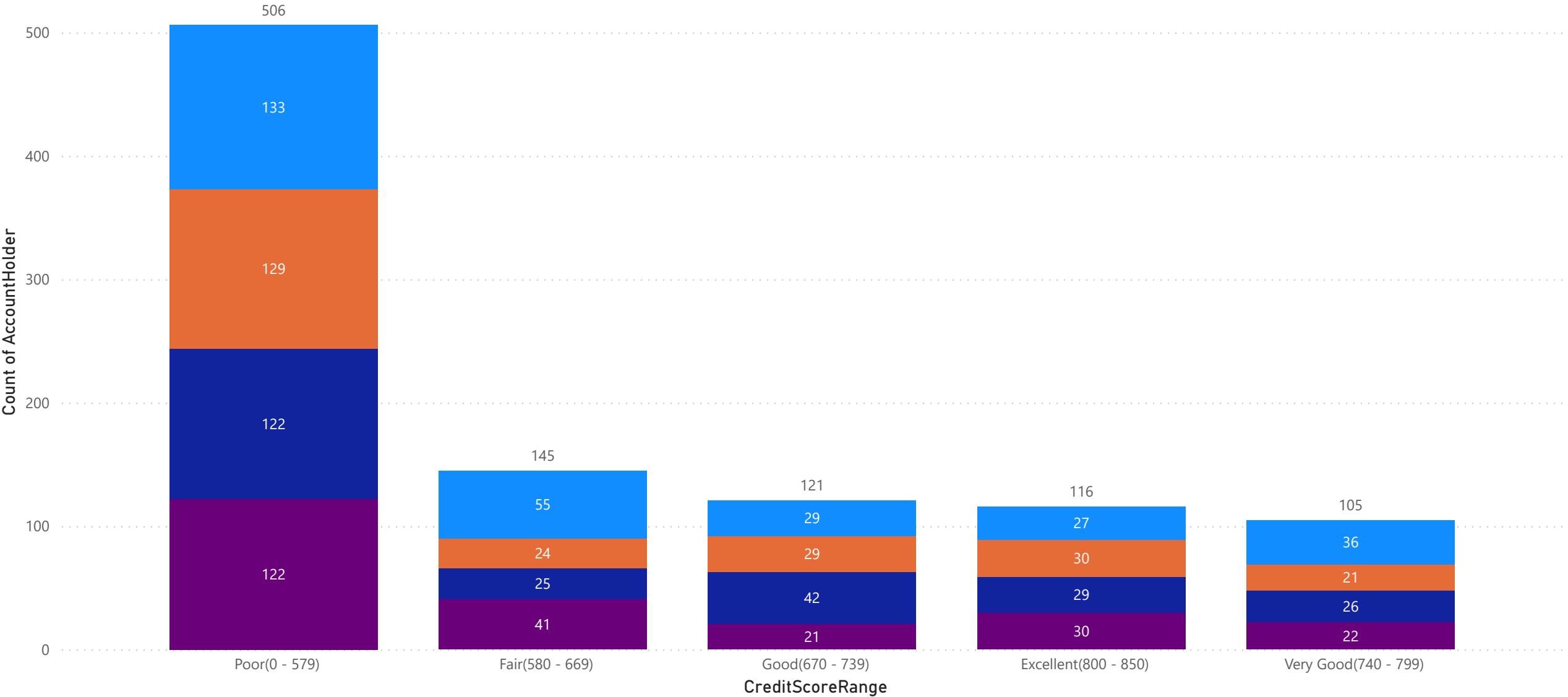
15.- Credit Score Distribution

Analyze the distribution of credit scores among account holders. What insights can you gather?

Insights : A new column was constructed to categorize the credit scores based on the manually determined range of credit scores. Then for each customer, a bar graph was plotted to determine the number of customers that lie in the range that has been defined.

Count of AccountHolder by CreditScoreRange and AccountType

AccountType ● Checking ● Credit ● Loan ● Savings



16.- Correlation Between Account Age and Balance

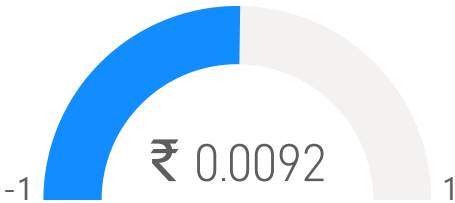
Explore if there's a correlation between the age of an account (time since opening) and its current balance.

Insights - The correlation analysis was done between the age of an account and their respective balance . From the graph we can conclude that their is a constant number of balances that were found for each customer year.

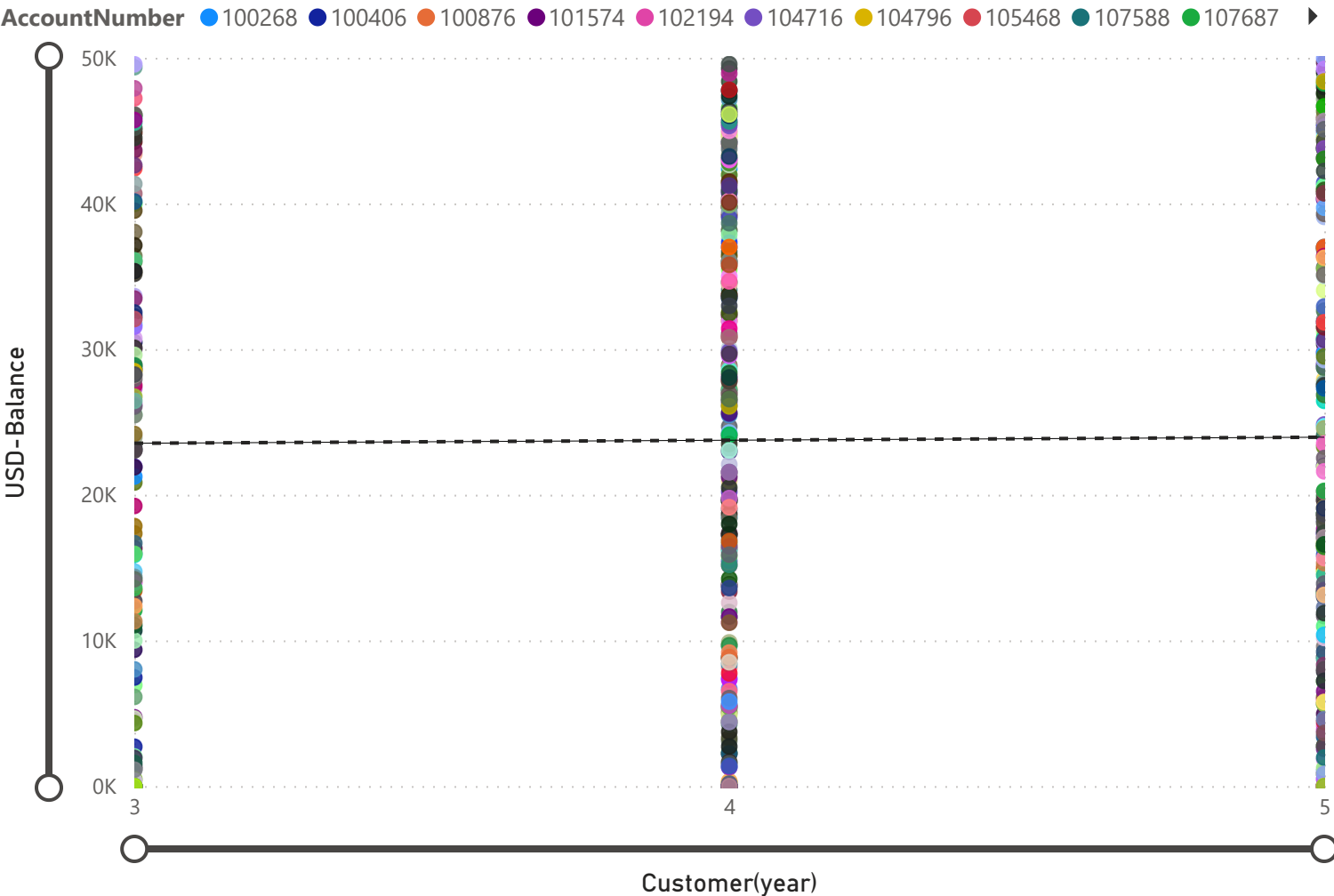
AccountHolder	AccountNumber	Sum of USD-Balance	Customer(year)
Barbara Anderson	509971	90880.78	5
Barbara Anderson	752678	64920.74	4
Barbara Brown	182086	50933.96	4
Barbara Davis	456843	46106.33	3
Barbara Davis	463702	32371.48	4
Barbara Davis	591704	55548.17	4
Barbara Davis	886201	7451.75	3
Barbara Garcia	315929	3691.26	5
Barbara Garcia	795889	19332.18	4
Barbara Gonzalez	370251	86096.79	4
Barbara Hernandez	367523	36002.00	3
Barbara Hernandez	653729	14608.86	4
Barbara Hernandez	931618	17847.55	3
Barbara Jackson	417627	25489.45	3
Barbara Jones	493503	17422.11	5
Barbara Jones	502535	30091.09	3
Barbara Jones	546973	97022.08	5
Barbara Jones	802815	8801.77	5
Barbara Lopez	118749	8286.19	5
Barbara Lopez	712210	37340.97	5
Barbara Martin	719248	13961.91	3
Barbara Martinez	590599	13424.59	3
Barbara Martinez	979900	40133.18	3
Barbara Miller	988691	9176.46	5

Total23628275.95

Max of Customer(year) and Max of USD-Balance correlation for TransactionDate, MIN and MAX



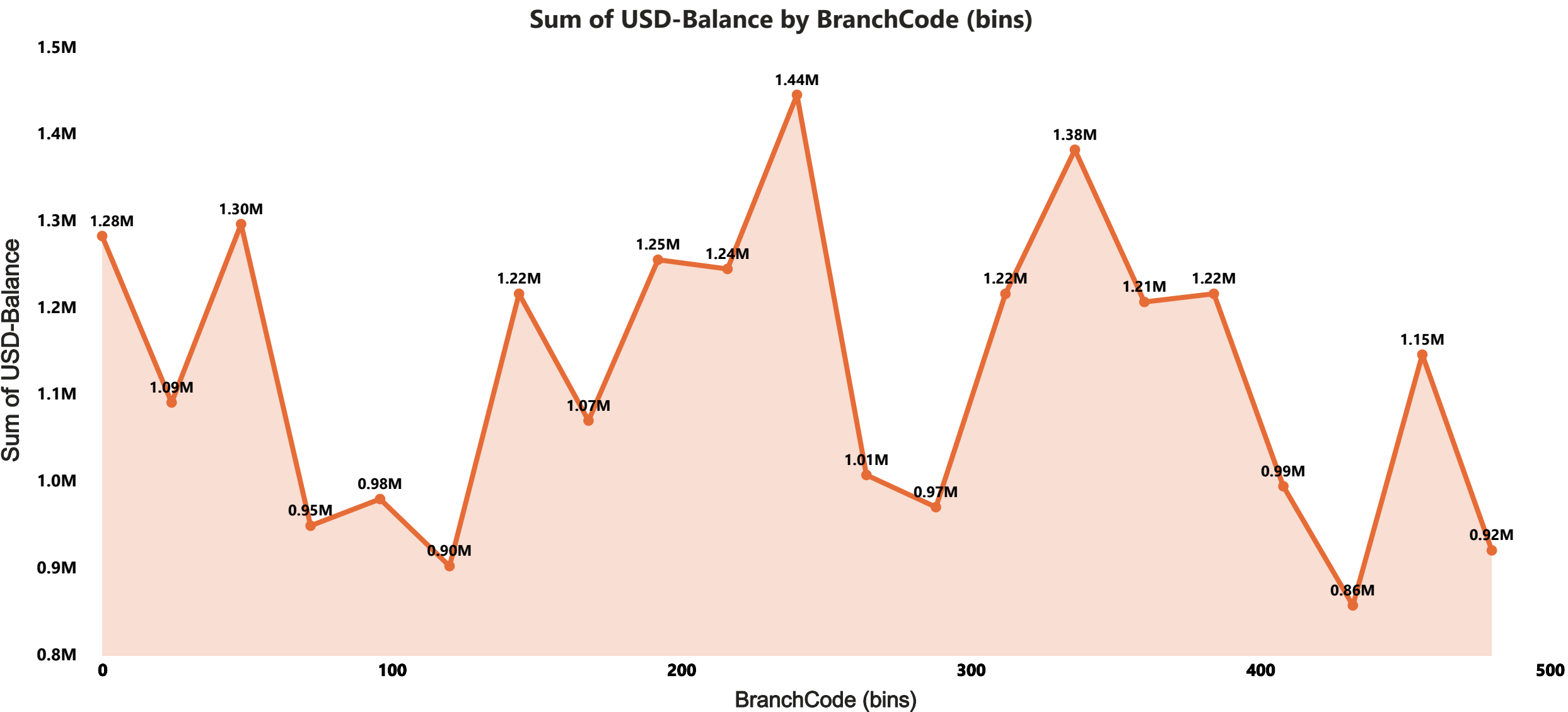
AccountNumber, Customer(year) and USD-Balance



17.- Performance Rating of Branches

Create a measure to rate branches based on transaction volume and value.

Insights : For each branchcode present in the dataset. we need to determine the sum of balances in branches. An area chart gives us better insights to the trends of balances across the branches.

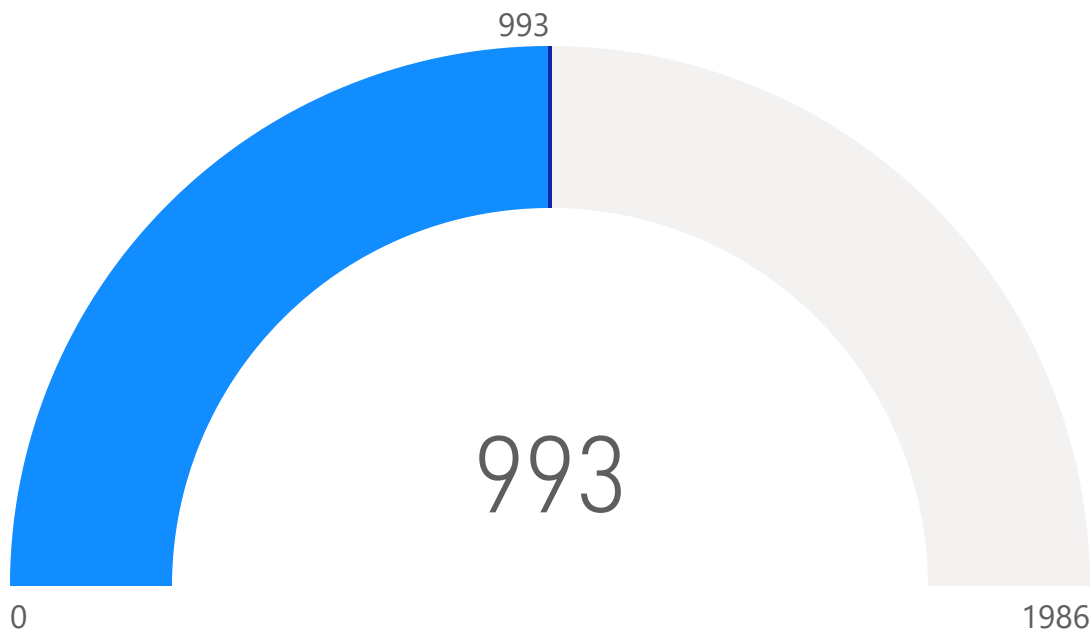


19.- Advanced DAX: Risk Assessment Model

Using DAX, develop a risk assessment model based on transaction patterns, account balances, and credit scores.

Insights : On the basis of normalized risk score, the Risk Level has been defined for individual customers having varied credit scores. The generated insights would help judge customers according to their transactional data about the risks associated with the bank to provide high end services to them.

Count of TransactionMethod and Count of Risk Level



AccountHolder	AccountNumber	USD-Balance	TransactionMethod	Risk Level
Barbara Anderson	509971	45440.39	Deposit	Low Risk
Barbara Anderson	752678	32460.37	Other	Low Risk
Barbara Anderson	752678	32460.37	Payment	Low Risk
Barbara Brown	182086	25466.98	Payment	Medium Risk
Barbara Davis	456843	46106.33	Payment	Low Risk
Barbara Davis	463702	16185.74	Transfer	Medium Risk
Barbara Davis	463702	16185.74	Withdrawal	Medium Risk
Barbara Davis	591704	27774.09	Payment	Low Risk
Barbara Davis	591704	27774.09	Withdrawal	Low Risk
Barbara Davis	886201	7451.75	Transfer	Low Risk
Barbara Garcia	315929	1845.63	Withdrawal	Low Risk
Barbara Garcia	795889	9666.09	Payment	Low Risk
Barbara Garcia	795889	9666.09	Transfer	Low Risk
Barbara Gonzalez	370251	43048.40	Deposit	Low Risk
Barbara Gonzalez	370251	43048.40	Transfer	Low Risk
Barbara Hernandez	367523	36002.00	Deposit	Low Risk
Barbara Hernandez	653729	7304.43	Payment	Low Risk
Barbara Hernandez	653729	7304.43	Transfer	Low Risk
Barbara Hernandez	931618	17847.55	Withdrawal	Low Risk
Barbara Jackson	417627	25489.45	Transfer	Low Risk
Barbara Jones	493503	8711.06	Payment	Medium Risk
Barbara Jones	493503	8711.06	Withdrawal	Medium Risk
Barbara Jones	502535	30091.09	Other	Low Risk
Barbara Jones	546973	48511.04	Transfer	Low Risk
Barbara Jones	546973	48511.04	Withdrawal	Low Risk
Barbara Jones	802815	4400.89	Transfer	Low Risk
Barbara Jones	802815	4400.89	Withdrawal	Low Risk
Barbara Lopez	118749	4143.09	Other	High Risk
Barbara Lopez	118749	4143.09	Withdrawal	High Risk
Barbara Lopez	712210	18670.49	Deposit	Low Risk
Barbara Martin	719248	13961.91	Withdrawal	Low Risk
Barbara Martinez	590599	13424.59	Withdrawal	Medium Risk
Barbara Martinez	979900	40133.18	Withdrawal	Medium Risk
Barbara Miller	988691	4588.23	Other	High Risk

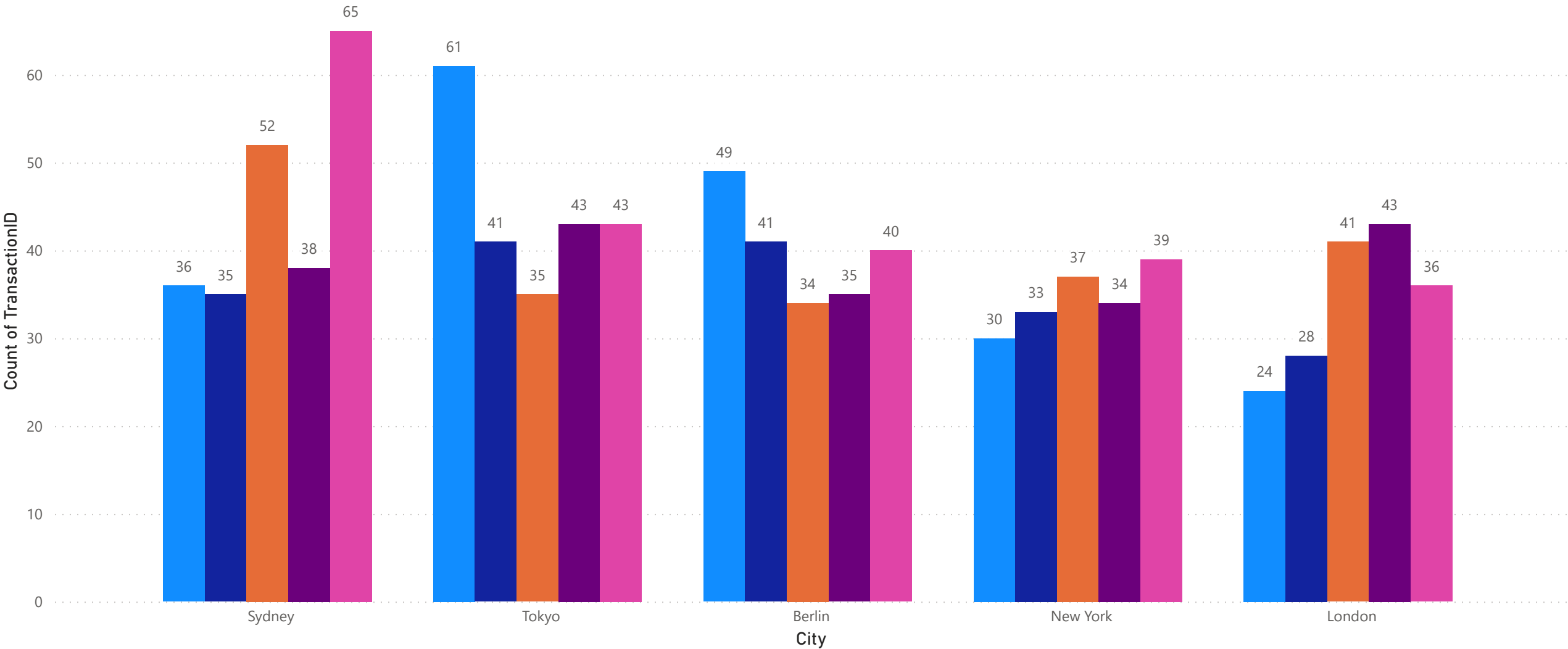
20.- Customer Demographics and Transaction Behavior

Analyze transaction behavior based on customer demographics inferred from account data.

Insights : to study the transaction behaviour according to demographics, the data has been grouped according to city and the sectors present, A bar graph has been plotted for analysis purposes. From the graph we can determine that Sydney of all places has higher number of transactions pertaining specifically to technology and Healthcare.

Count of TransactionID by City and Sector

Sector Education Finance Healthcare Retail Technology



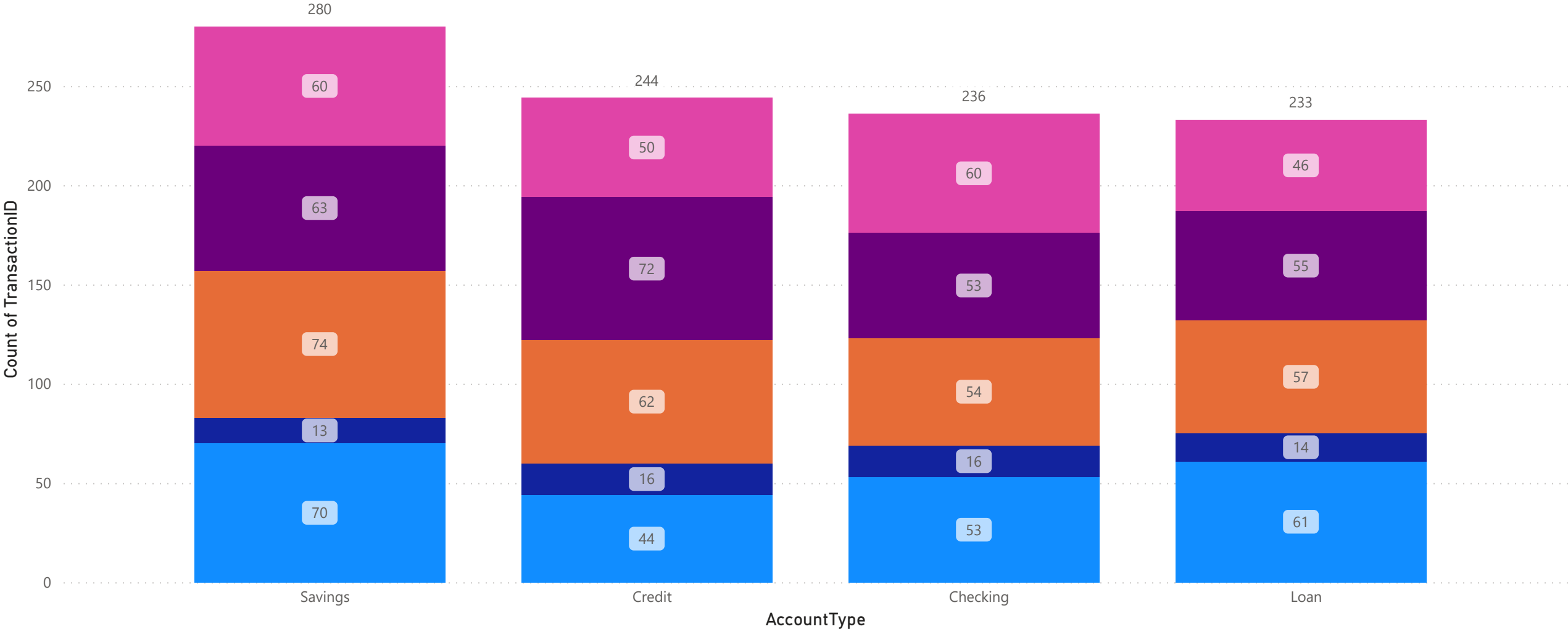
21.- Branch and Account Type Influence on Transactions

Investigate if certain branches or account types have a significant influence on the types and values of transactions.

Insights : For each AccountType, the data has been categorized on the basis of transaction type. The bar graph is ten plotted comparing them to the count of TransactionIDs. We can observe that Savings account has higher number of transactions of a majority of TransactionTypes.

Count of TransactionID and Sum of Amount(USD) by AccountType and TransactionType

TransactionType Deposit no record Payment Transfer Withdrawal



22.- Predictive Modeling for Account Growth

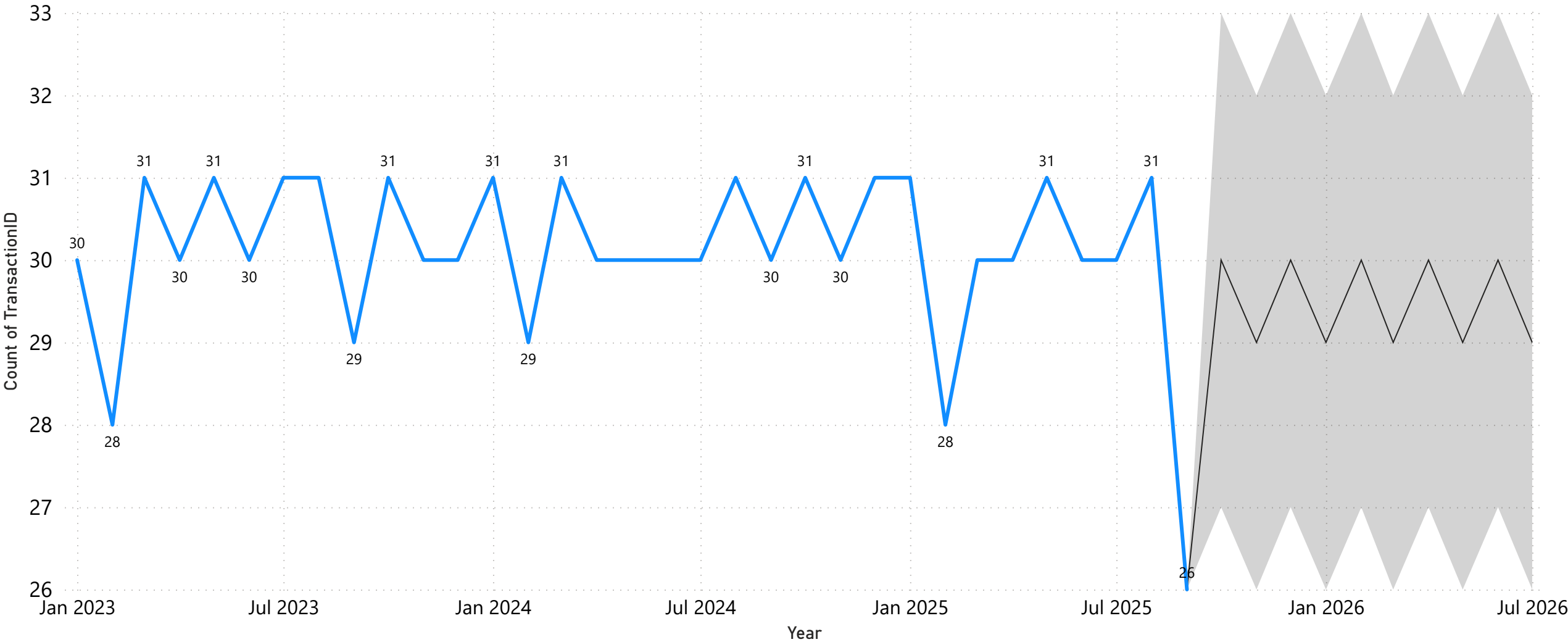
Use DAX to create a predictive model estimating future account growth based on historical transaction and balance data.

Insights : On a monthly basis, the counts of TransactionIDs has been defined and are plotted using a line graph. The Forecast functionality has been used to predict new data on the basis of historical data which is present in the dataset.

AccountNumber

All

Count of TransactionID by Year and Month



23.- Data Modeling: Time Series Forecasting of Transactions

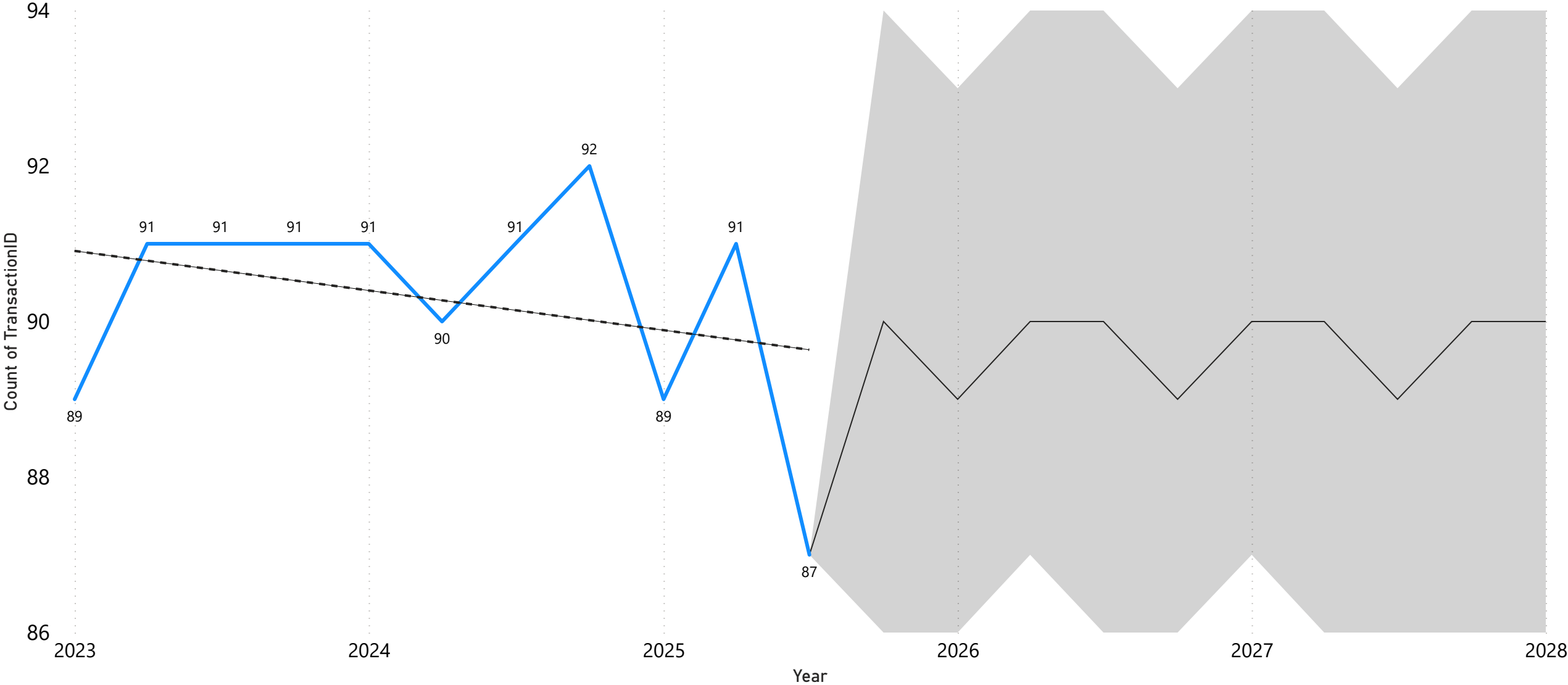
Perform time series forecasting of transaction volumes using historical data. What are the predicted transaction volumes for the next quarter?

Insights : The data has been distributed on a quarterly basis and is plotted as a line graph depicting the count of TransactionIDs. The Forecast functionality has been used to determine new values by training the model on the historical data.

Year, Quarter

- ✓ ☐ (Blank)
- ✓ ☐ 2023

Count of TransactionID by Year and Quarter

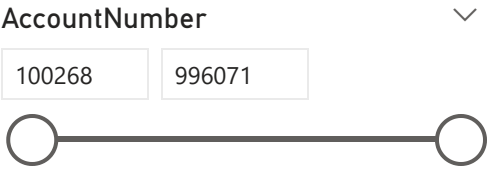


24.- Advanced Data Transformation: Identifying Unusual Transactions

Using Power BI's data transformation capabilities, identify any unusual transactions (e.g., unusually high amounts, rare transaction types).

Insights : In order to determine any unusual transactions, the data needs to be modelled in a way that defines the Transaction Value as a range. After defining the range, the Area graph was plotted for each AccountHolder. It can be observed that the AccountHolders with high value Transactions have been highlighted in blue in the plot.

AccountHolder	AccountNumber	Transaction Value
Barbara Anderson	509971	Regular
Barbara Anderson	752678	Regular
Barbara Brown	182086	HighValue
Barbara Brown	182086	Regular
Barbara Davis	456843	Regular
Barbara Davis	463702	HighValue
Barbara Davis	463702	Regular
Barbara Davis	591704	Regular
Barbara Davis	886201	Regular
Barbara Garcia	315929	Regular
Barbara Garcia	795889	Regular
Barbara Gonzalez	370251	Regular



Count of Transaction Value by AccountHolder and Transaction Value

Transaction Value ● HighValue ● Regular

