PERSONAL FINANCE BUDGETING

1.Project Overview

The personal finance budgeting project analyses financial transaction data from multiple individuals to identify overall income and expense trends across time, categories, countries, payment methods, and household characteristics. This project uses data analytics and visualization to support better financial planning and spending control.

2.Data Source

- Source Description and Timeline: gomask ai and 2025
- Link: https://gomask.ai/marketplace/datasets
- Domain: Financial service domain

3.Problem Statement

Understanding income and expense patterns across a diverse population is challenging due to spending volatility and uneven income distribution. This project aims to identity key income sources, major expense drivers, financial imbalances and risk patterns to support effective budgeting and informed financial decision making.

4.Attribute Details

S.No	Attribute Name	Data Types	Description
1.	Household ID	Integer / Text	Unique identifier for each household
2.	Record ID	Integer / Text	Unique identifier for each transaction
3.	Record Type	Text	Type of record such as Income, Expense
4.	Category	Text	Classification of transaction (e.g., Groceries, Utilities)
5.	Subcategory	Text	Detailed clarification of transaction (e.g., Fruits, Electricity, Phone)
6.	Amount	Decimal/Currency	Value of the transaction
7.	Currency	Text	Currency of transaction e.g., (AUD, USD)
8.	Transaction Date	Date	Date on which transaction occurred.
9.	Description	Text	Short text describing the transaction.
10.	Payment Method	Text	Mode of payment (e.g., Cash, Credit card, Bank Transfer)
11.	Payer Payee	Text	Name of the counter party involved in the transaction such as merchant, service provider
12.	Is Recurring	Boolean (Yes/No)	Flag indicating that the transaction is recurring (True / False)
13.	Recurrence Interval	Text	Frequency of recurrence (e.g., monthly, weekly, yearly)
14.	Household size	Integer	Number of members in the household

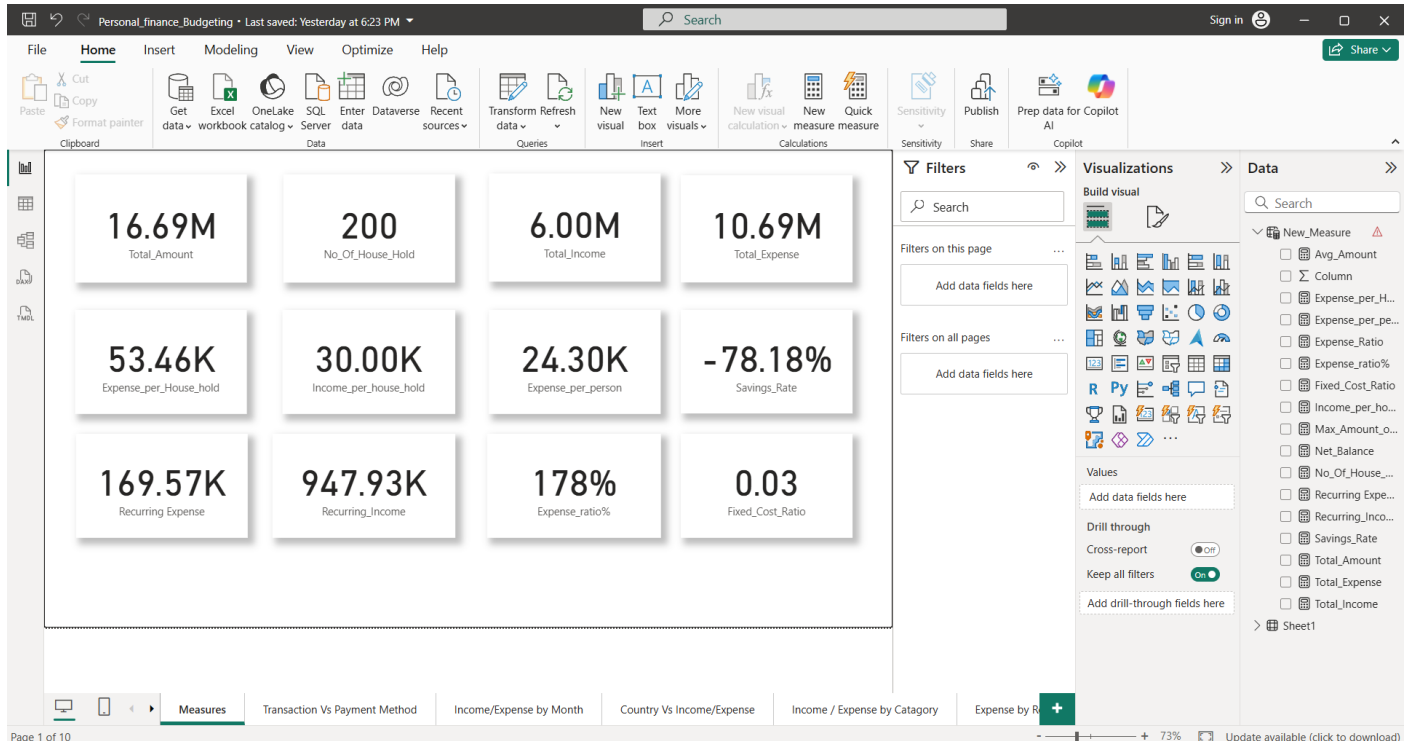| 15.	Location City	Text	City where the transaction took place.
16.	Location State	Text	State or region of the transaction location.
17.	Location postal code	Text	Postal or ZIP code of the transaction location.
18.	Location Country	Text	Country where the transaction occurred.

5. Tools & Technologies

- Excel – Data Cleaning
- Powew BI – Creating measures, building interactive dashboards for insights and decision making.

6. Data Preprocessing

- Data cleaning: Duplicates were checked and missing values were reviewed to ensure dataset accuracy (In Excel).
- Data Loading: Loaded the excel data into Power BI.
- Data Transformation: data types were validated and adjusted were required in Power BI
- Calculated measures: Created measures such as Total transaction amount, Count of Households.

7. Dax measures

Total_Amount = SUM(Sheet1[Amount])

No_Of_Household = COUNT(Sheet1[Household_Id])

Total_Income = CALCULATE(SUM(Sheet1[Amount]),FILTER(Sheet1,Sheet1[Record_Type]="Income"))

Total_Expense =CALCULATE(SUM(Sheet1[Amount]),FILTER(Sheet1,Sheet1[Record_Type]="Expense"))

Expense_per_House_hold = DIVIDE([Total_Expense],[No_Of_House_Hold])

Income_per_house_hold = DIVIDE([Total_Income],[No_Of_House_Hold])

Expense_per_person = DIVIDE([Total_Expense],SUM(Sheet1[Household_Size]))

Savings_Rate = DIVIDE([Total_Income]-[Total_Expense],[Total_Income])

Recurring Expense = CALCULATE (SUM ('Sheet1'[Amount]), 'Sheet1'[Is_Recurring] = TRUE(), 'Sheet1'[Record_Type] = "Expense")

Recurring_Income = CALCULATE(SUM(Sheet1[Amount]), Sheet1[Is_Recurring]=True(),
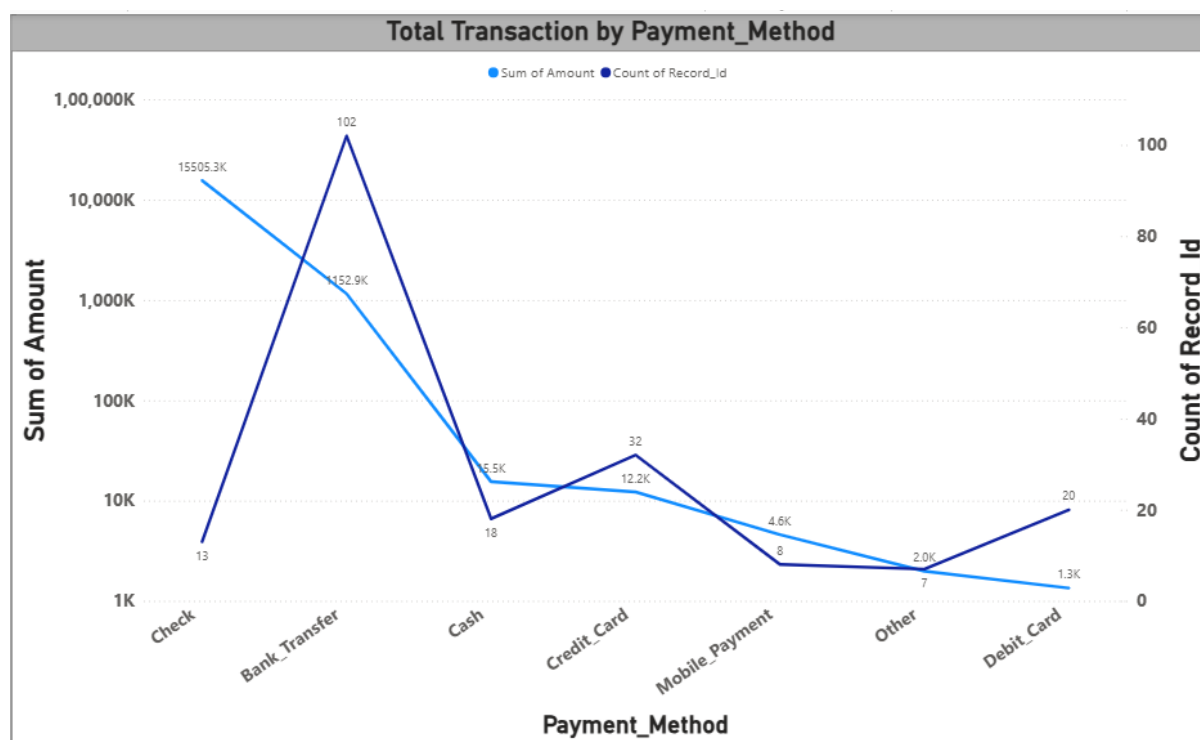
Sheet1[Record_Type]="Income")

Expense_Ratio = DIVIDE([Total_Expense],[Total_Income])

Expense_ratio% = FORMAT([Expense_Ratio],"0%")

Fixed_Cost_Ratio = DIVIDE([Recurring Expense],[Total_Income])
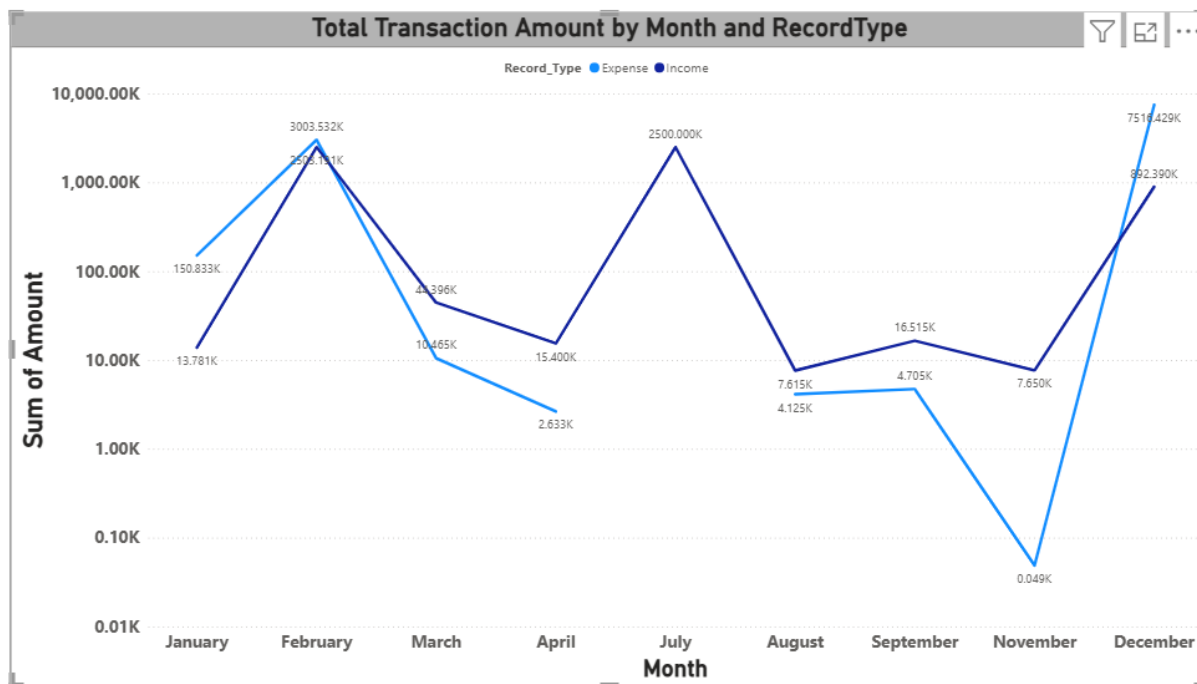
Net_Balance = [Total_Income]-[Total_Expense]

Total Transaction Amount by Payment methods

Insights

- Bank transfer dominates in transaction count but not the highest total value.
- Check has the highest total transaction value despite fewer transactions.
- Credit card shows moderate usage in both count and value.
- Cash and mobile transaction are low in both value and count.
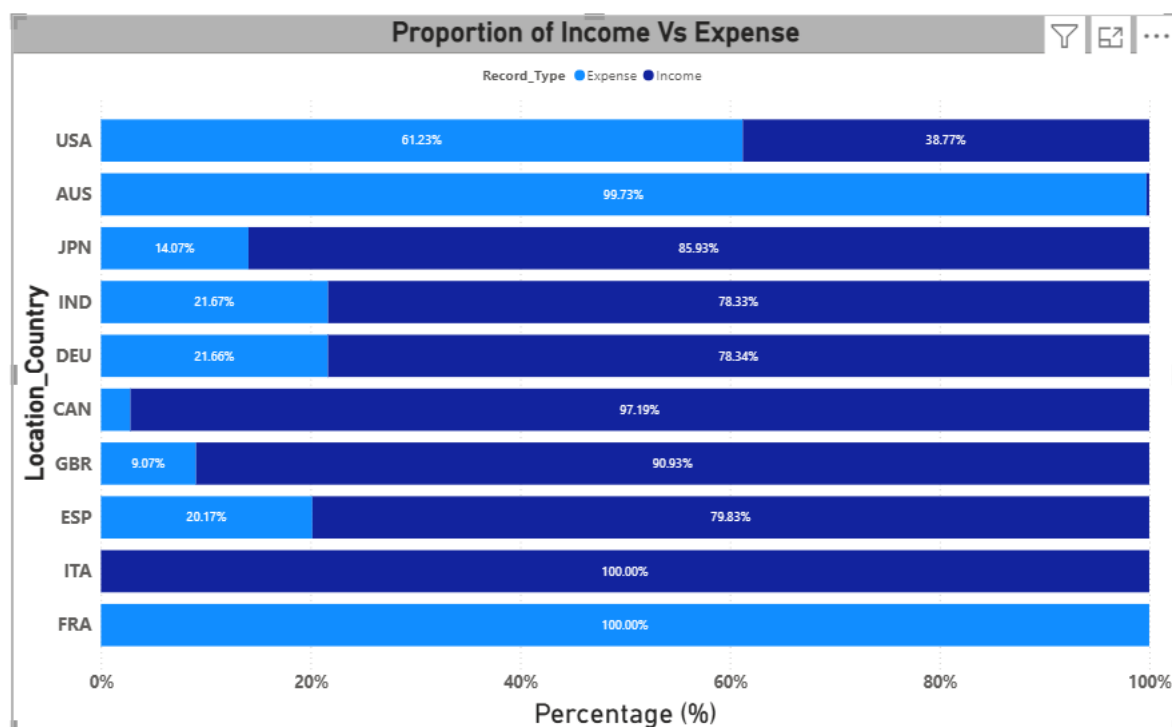- Debit card shows limited with a low transaction value.

Total Income and Expense by month

Total Transaction Amount by Month and RecordType

Record_Type ● Expense ● Income

Sum of Amount

- 150.833K
- 13.781K
- 3003.532K
- 2503.131K
- 43.396K
- 10.465K
- 2.633K
- 15.400K
- 2500.000K
- 7.615K
- 4.125K
- 16.515K
- 4.705K
- 7.650K
- 0.049K
- 7519.429K
- 892.390K

Month: January, February, March, April, July, August, September, November, December

Insights:

- Income and expenses show high volatility with sharp monthly spikes.
- February and July show higher income; February expenses closely match income.
- November shows low income with moderate expenses.
- December has the largest imbalance, where expenses far exceed income, driving overall Loss.
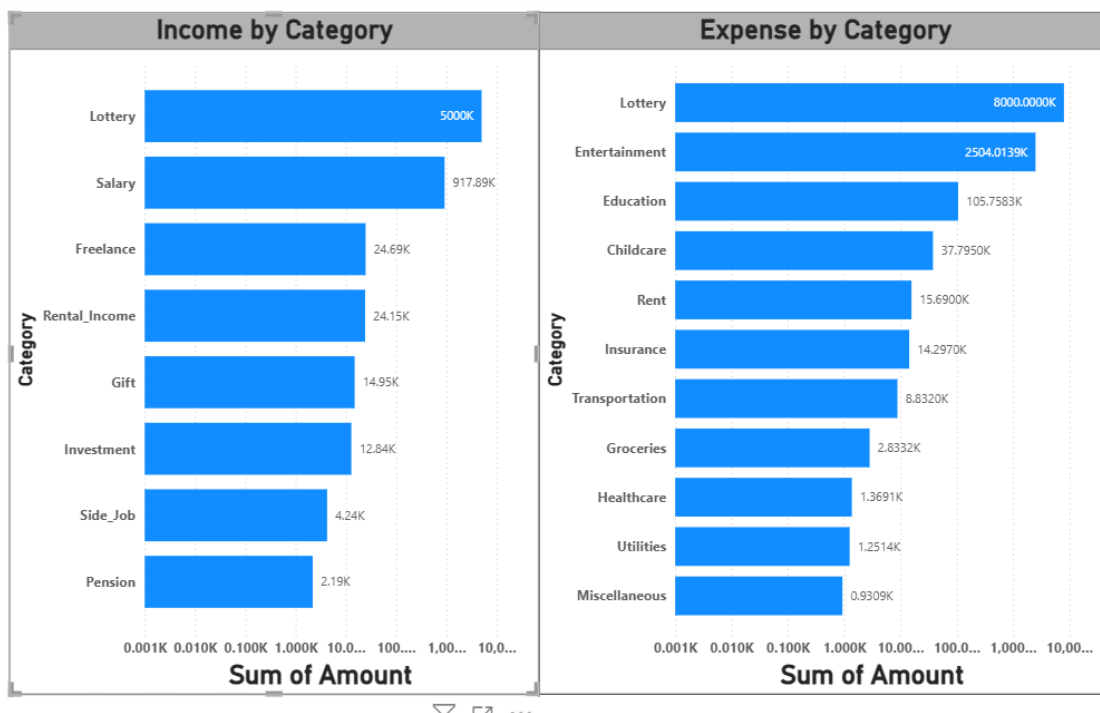
Income Vs Expense proportion by country

Proportion of Income Vs Expense

Record_Type ● Expense ● Income

Location_Country	Expense	Income
USA	61.23%	38.77%
AUS	99.73%	
JPN	14.07%	85.93%
IND	21.67%	78.33%
DEU	21.66%	78.34%
CAN		97.19%
GBR	9.07%	90.93%
ESP	20.17%	79.83%
ITA		100.00%
FRA	100.00%	

Percentage (%)

Insights

- JPN, CAN, GBR are income heavy countries.
- USA shows higher expenses than income.
- AUS, ITA, and FRA show 100% values due to limited or incomplete income and expense records in the dataset.
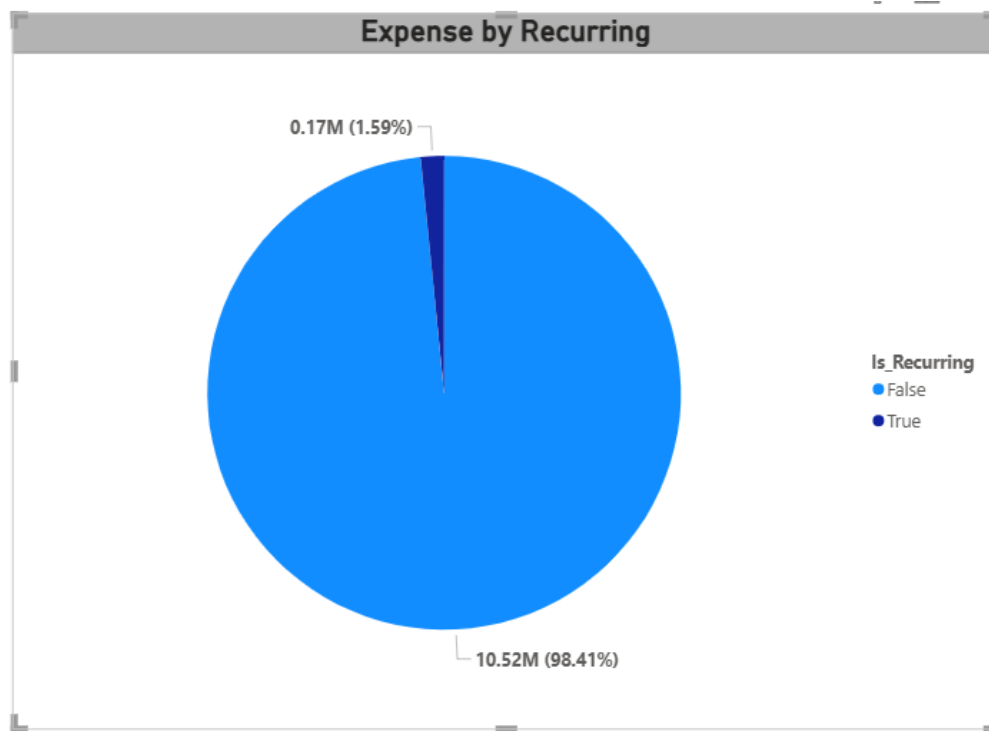
Income & Expense by category

Income by Category

Category	Sum of Amount
Lottery	5000K
Salary	917.89K
Freelance	24.69K
Rental_Income	24.15K
Gift	14.95K
Investment	12.84K
Side_Job	4.24K
Pension	2.19K

Expense by Category

Category	Sum of Amount
Lottery	8000.0000K
Entertainment	2504.0139K
Education	105.7583K
Childcare	37.7950K
Rent	15.6900K
Insurance	14.2970K
Transportation	8.8320K
Groceries	2.8332K
Healthcare	1.3691K
Utilities	1.2514K
Miscellaneous	0.9309K

Insights

- Salary and Lottery are the major income source, contributing the majority of the income source.
- Freelance and rental income provide moderate diversification.
- Side job and pension contribute are minimal, indicating limited secondary income stability.
- Lottery and Entertainment expenses dominate, driving overall expenses inflation.
- Rent and Insurance are major fixed cost, limiting financial flexibility.
- Higher lottery contribution to both income and expenses indicate financial risk and unpredictability.
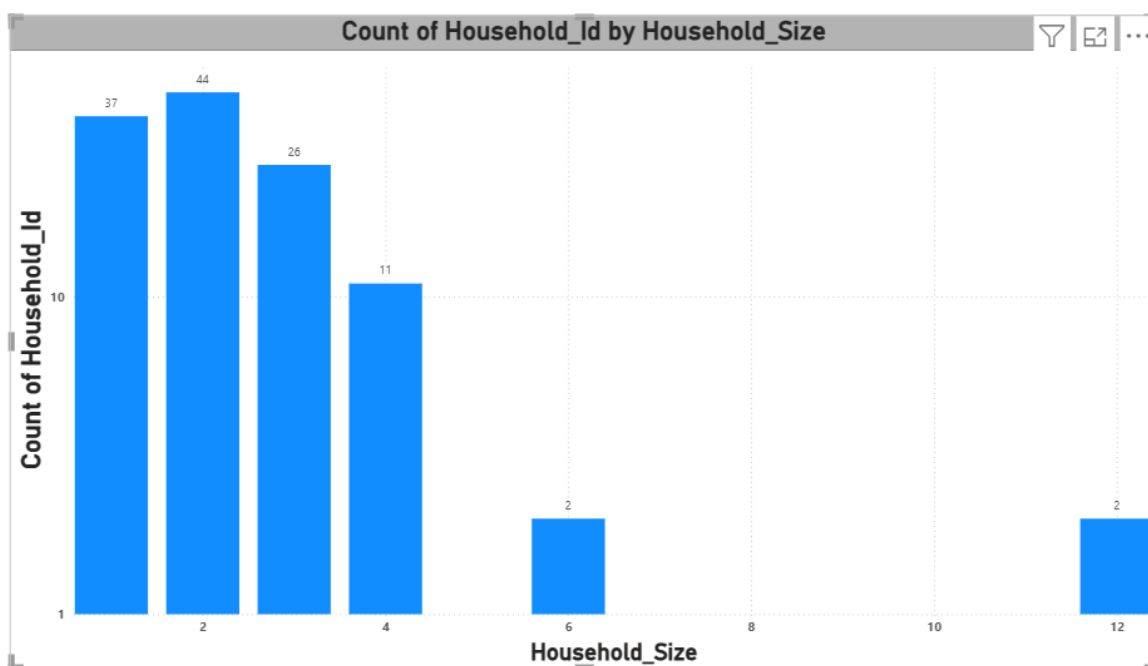- Lottery driven transactions are the primary source of income and expense volatility.

Recurring Vs Non-Recurring Household expenses

Expense by Recurring

0.17M (1.59%)

Is_Recurring
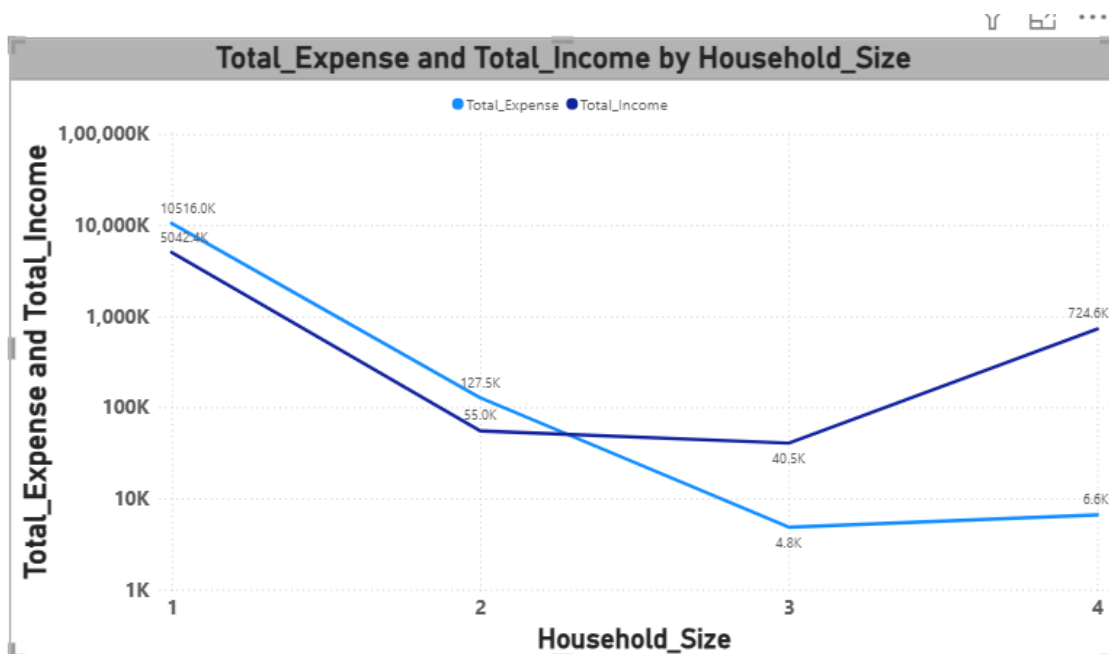- False
- True

10.52M (98.41%)

Insights

- The low share of recurring expenses indicates limited fixed obligations; however, the dominance of non-recurring expenses suggests unnecessary spending.
- Non recurring expenses can help identify and reduce unnecessary spending.

Income Vs Expense by Household size

Count of Household_Id by Household_Size

Total_Expense and Total_Income by Household_Size

Note:
House hold sizes 6 & 12 treated as outliers.

Insight:

- Smaller Households (size 1-2) show higher income and expenditure levels, while mid-sized households) have the lowest spending.
- Household size 4 shows rising income with controlled expenses, indicating better financial balance.
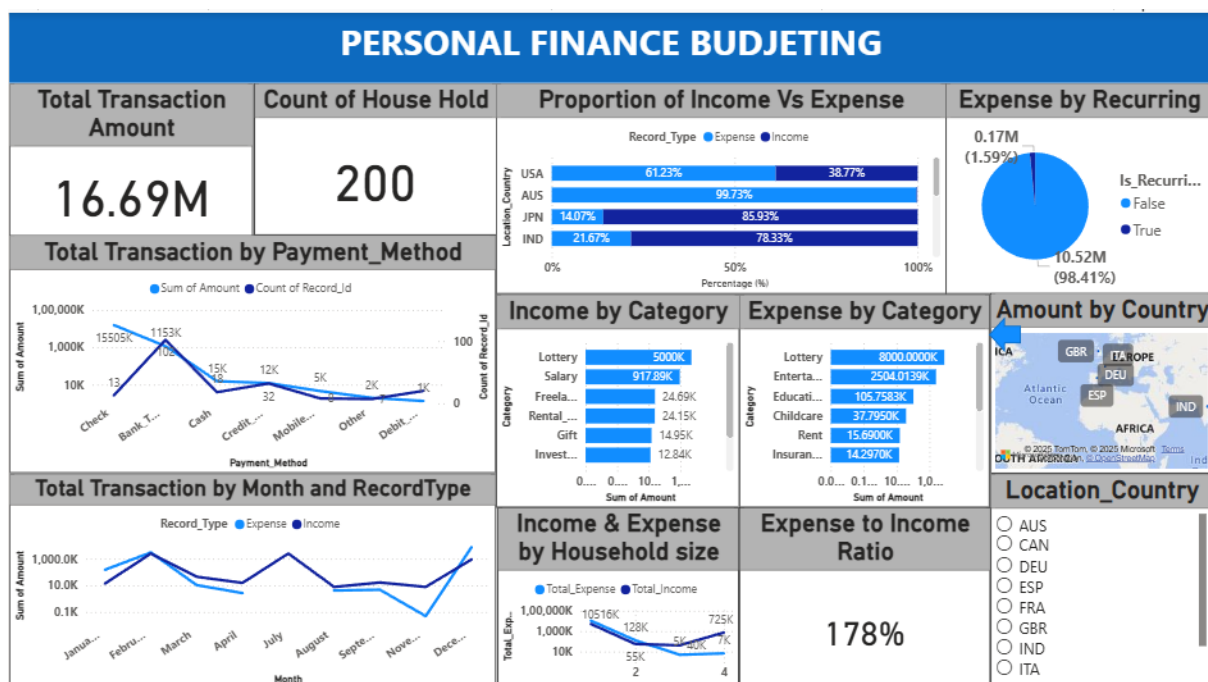- Outlier household size (6 & 12) has minimal impact on overall trends.

Income and Expense by country

Amount by Country

Insights

- North America shows the highest overall amount, indicating a major concentration of both income and expenses.
- Europe has multiple countries contributing moderate amount, reflecting a well distributed financial activity.
- Australia shows a noticeable amount, higher average transaction values.
- Asia contributes selectively with small value.

Dashboard

PERSONAL FINANCE BUDJETING

Descriptive Analysis

- Bank transfers dominate transaction count, but checks contribute the highest total transaction value.
- Income and expenses show high monthly volatility with sharp spikes.
- February and July record higher income, while December shows the highest financial loss due to excessive expenses.
- Salary and lottery are the primary income sources.
- Lottery and entertainment dominate expenses.
- North America contributes the highest income and expense amounts.
- Smaller households (1–2 members) show higher income and expenses compared to mid-sized households

Diagnostic Analysis

- Heavy reliance on lottery income explains income volatility and financial unpredictability.
- December losses are driven by expenses far exceeding income, indicating poor expense control.

- High entertainment and lottery expenses inflate total spending.
- USA shows higher expenses than income, indicating potential overspending.
- Non-recurring expenses dominate household spending, highlighting non-essential spending behaviour.

Predictive Analysis

- If current spending patterns continue, months with high discretionary expenses (like December) will continue to generate losses.
- Continued dependence on lottery income may lead to unstable future cash flow.
- Countries with expense-heavy trends (e.g., USA) may face recurring deficits.
- Households with controlled recurring expenses are likely to maintain better financial balance over time.

Prescriptive Analysis

- Reduce dependency on lottery income by strengthening stable income sources like salary and freelance work.
- Set monthly expense limits, especially for entertainment and non-essential categories.
- Increase focus on recurring expense planning to avoid sudden financial shocks.
- Monitor high-risk months (e.g., December) and plan savings in advance.
- Improve budgeting in expense-heavy countries by aligning expenses closer to income.
- Encourage balanced spending across household sizes to improve long-term financial sustainability.

Conclusion

This project analyses household income and expense patterns across time, categories, countries, and household sizes. The analysis suggests that financial volatility is mainly driven by discretionary spending and reliance on unstable income sources such as lottery earnings. It also suggests that fixed costs like rent and insurance, along with entertainment expenses, significantly affect overall financial balance. These findings suggest the need for better expense control and a stronger focus on stable income planning to achieve long-term financial sustainability.