

Custom IDA – POWER BI Case study

15 Sept 2023

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Load Data

The screenshot shows the Power BI Desktop interface. The Navigator pane on the left lists the following data sources:

- EC2AMAZ-0110MA\SQLEXPRESS [4]
 - PetroCorpDB
 - ReportServer\$SQLEXPRESS
 - ReportServer\$SQLEXPRESSTempDB
- retail_analysis_handson [4]
 - Customers
 - Products
 - SalesTransactions
 - Stores

The Stores table is selected, and its data is previewed in the center pane:

StoreID	StoreName	Location	StoreManager
1	Downtown	New York	John Smith
2	Uptown	Los Angeles	Jane Doe
3	Suburbia	Chicago	Mike Johnson

The right pane shows the Visualizations area with various chart and table icons. The bottom status bar indicates the system temperature is 73°F and the time is 9:27 AM on 9/15/2023.

Merge Table

The screenshot shows the Power Query Editor interface. The query is named "prod_sales" and is defined by the following M code:

```
Table.NestedJoin(SalesTransactions, {"ProductID"}, Products, {"ProductID"}, "Products", JoinKind.Inner)
```

The resulting data table is displayed in the center pane:

TransactionID	ProductID	StoreID	TransactionDate	QuantitySold
1	1	101	1/5/2023	50
2	2	102	1/10/2023	40
3	3	103	2/15/2023	30
4	4	104	3/20/2023	60
5	5	101	4/25/2023	70
6	6	102	5/30/2023	45
7	7	105	6/5/2023	55
8	8	106	7/10/2023	38
9	9	107	8/15/2023	42
10	10	105	9/20/2023	68

The right pane shows the Query Settings for "prod_sales", including the Properties (Name: prod_sales) and Applied Steps (Source).

Extract Columns

The screenshot shows the Power Query Editor interface. The 'Queries' pane on the left lists 'SalesTransactions' as the selected query. The main area displays a table with columns: CustomerID, TransactionDate, QuantitySold, Revenue, and Last Characters. The formula bar at the top shows the operation: `= Table.AddColumn(dbo_SalesTransactions, "Year", each Text.End(Text.From([TransactionDate]), "en-US"),`. The 'Query Settings' pane on the right shows the 'Name' as 'SalesTransactions' and the 'Applied Steps' as 'Inserted Last Characters'.

CustomerID	TransactionDate	QuantitySold	Revenue	Last Characters
1	1001	1/5/2023	50	500 2023
2	1002	1/10/2023	40	600 2023
3	1003	2/15/2023	30	300 2023
4	1004	3/20/2023	60	900 2023
5	1001	4/25/2023	70	700 2023
6	1002	5/30/2023	45	675 2023
7	1005	6/5/2023	55	550 2023
8	1006	7/10/2023	38	570 2023
9	1007	8/15/2023	42	630 2023
10	1005	9/20/2023	68	680 2023

Calculated Column – Sales_rev = price * quantity_sold

The screenshot shows the Power Query Editor interface. The 'Queries' pane on the left lists 'prod_salesTrans' as the selected query. The main area displays a table with columns: Products.ProductID, Products.ProductName, Products.Category, Products.Price, and sales_rev. The formula bar at the top shows the operation: `= Table.AddColumn("#Expanded Products", "sales_rev", each [QuantitySold] * [Products.Price])`. The 'Query Settings' pane on the right shows the 'Name' as 'prod_salesTrans' and the 'Applied Steps' as 'Added Custom'.

Products.ProductID	Products.ProductName	Products.Category	Products.Price	sales_rev
1	101 Laptop XYZ	Electronics	800	40000
2	101 Laptop XYZ	Electronics	800	56000
3	102 T-Shirt Blue	Clothing	15	600
4	102 T-Shirt Blue	Clothing	15	675
5	103 Smartphone ABC	Electronics	400	12000
6	104 Sofa Set	Furniture	1200	72000
7	105 Tablet PQR	Electronics	300	16500
8	106 Jeans Black	Clothing	40	1520
9	107 Chair	Furniture	80	3360
10	105 Tablet PQR	Electronics	300	20400

Filter Data

The screenshot shows the Power BI Desktop interface with a table visual. The table has columns: Location, StoreManager, and Sum of QuantitySold. The data is filtered by StoreManager, showing only records for Jane Doe and John Smith. The filters pane on the right shows the 'StoreManager' filter applied to the 'Sum of QuantitySold' column.

Location	StoreManager	Sum of QuantitySold
Los Angeles	Jane Doe	140
New York	John Smith	200
Total		339

Create Relationships:

The screenshot shows the 'Create relationship' dialog box in Power BI Desktop. It displays two tables: 'prod_salesTrans' and 'Stores'. The 'prod_salesTrans' table has columns: TransactionID, ProductID, StoreID, CustomerID, TransactionDate, QuantitySold, Revenue, and Year. The 'Stores' table has columns: StoreID, StoreName, Location, and StoreManager. The dialog box shows the relationship between 'StoreID' in 'prod_salesTrans' and 'StoreID' in 'Stores'. The cardinality is set to 'Many to one (*:1)' and the cross filter direction is 'Single'. The 'Make this relationship active' checkbox is checked.

TransactionID	ProductID	StoreID	CustomerID	TransactionDate	QuantitySold	Revenue	Year
1	101	1	1001	Thursday, January 5, 2023	50	500	2023
5	101	2	1001	Tuesday, April 25, 2023	70	700	2023
2	102	2	1002	Tuesday, January 10, 2023	40	600	2023

StoreID	StoreName	Location	StoreManager
1	Downtown	New York	John Smith
2	Uptown	Los Angeles	Jane Doe
3	Suburbia	Chicago	Mike Johnson

Create Hierarchy: Date

The screenshot shows the Power BI Desktop interface. The main view displays a table with the following data:

TransactionDate	QuantitySold	Revenue	Year	Products.ProductID	Products.ProductName	Products.Category	Products.Price	sales_rev	month
Thursday, January 5, 2023	50	500	2023	101	Laptop XYZ	Electronics	800	40000	1
Tuesday, April 25, 2023	70	700	2023	101	Laptop XYZ	Electronics	800	56000	4
Tuesday, January 10, 2023	40	600	2023	102	T-Shirt Blue	Clothing	15	600	1
Tuesday, May 30, 2023	45	675	2023	102	T-Shirt Blue	Clothing	15	675	5
Wednesday, February 15, 2023	30	300	2023	103	Smartphone ABC	Electronics	400	12000	2
Monday, March 20, 2023	60	900	2023	104	Sofa Set	Furniture	1200	72000	3
Monday, June 5, 2023	55	550	2023	105	Tablet PQR	Electronics	300	16500	6
Monday, July 10, 2023	38	570	2023	106	Jeans Black	Clothing	40	1520	7
Tuesday, August 15, 2023	42	630	2023	107	Chair	Furniture	80	3360	8
Wednesday, September 20, 2023	68	680	2023	105	Tablet PQR	Electronics	300	20400	9

The Fields pane on the right shows the following hierarchy for TransactionDate:

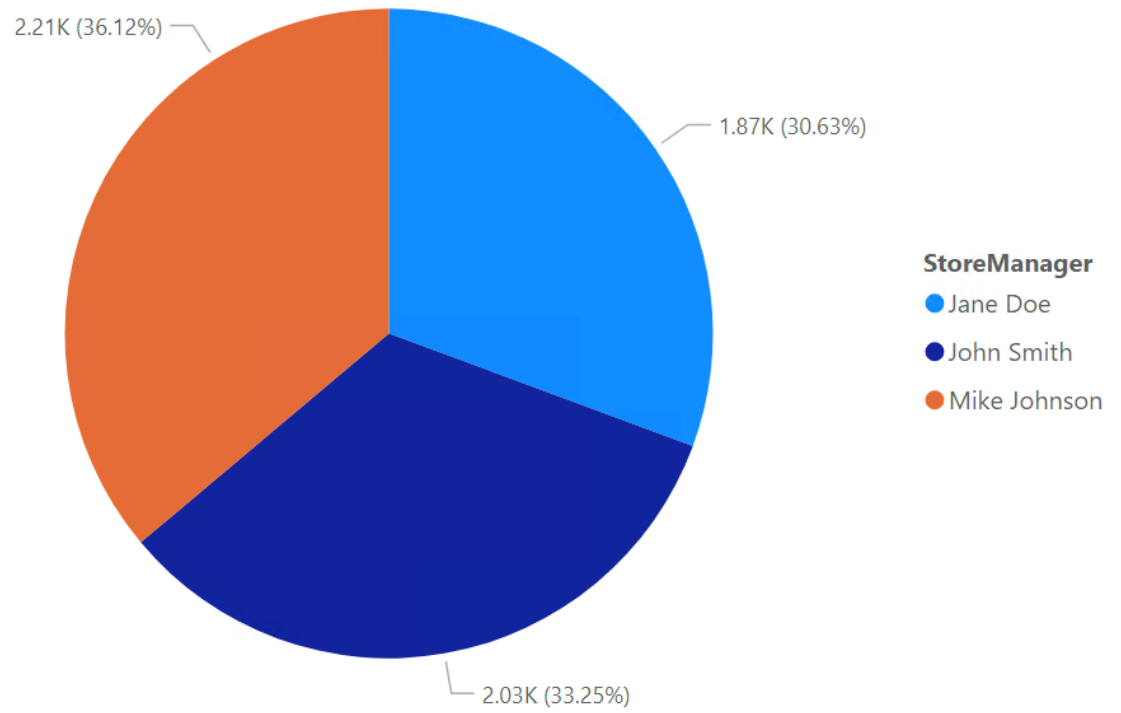
- TransactionDate
 - month
 - Day

- Who are the top-spending customers based on their total purchase amount?

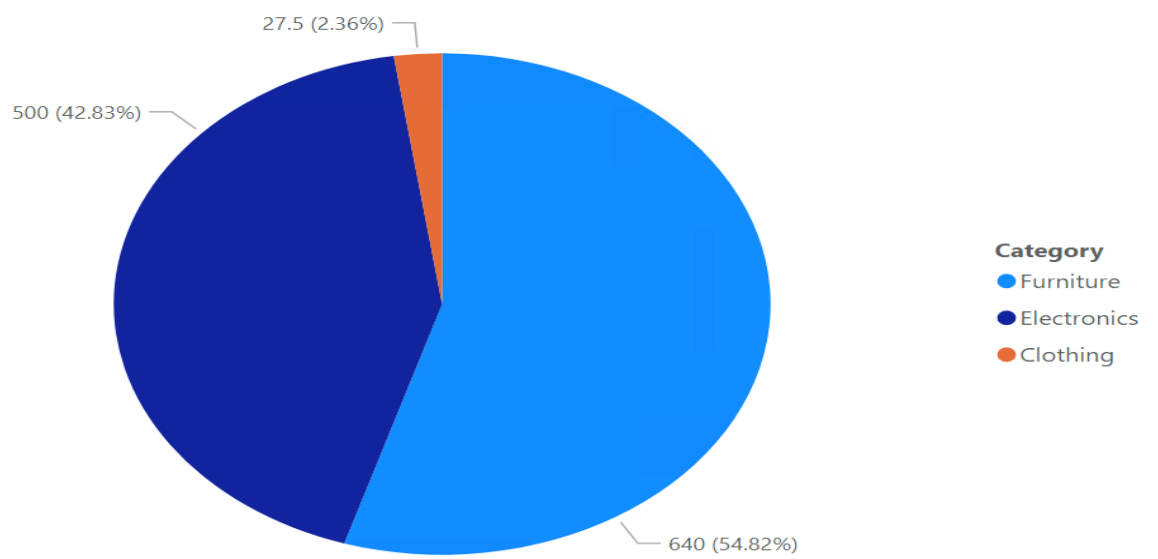
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CustomerID	CustomerName	ProductID	Sum of Revenue
1001	Customer A	101	1,200.00
1002	Customer B	102	1,275.00
1003	Customer C	103	300.00
1004	Customer D	104	900.00
1005	Customer E	105	1,230.00
1006	Customer F	106	570.00
1007	Customer G	107	630.00
Total			6,105.00

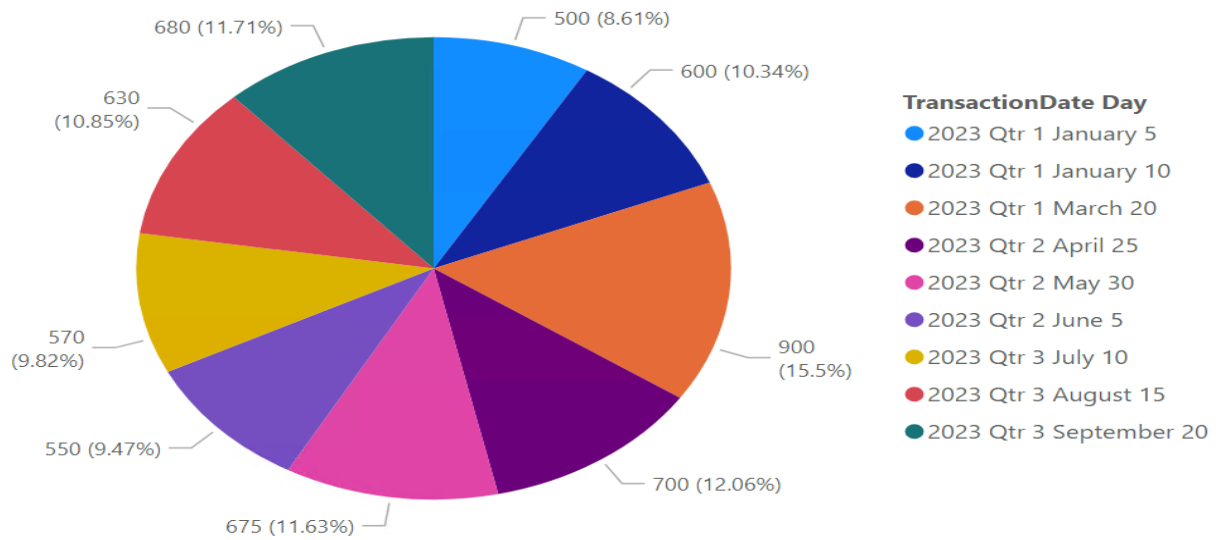
- How is sales revenue distributed among different store managers?



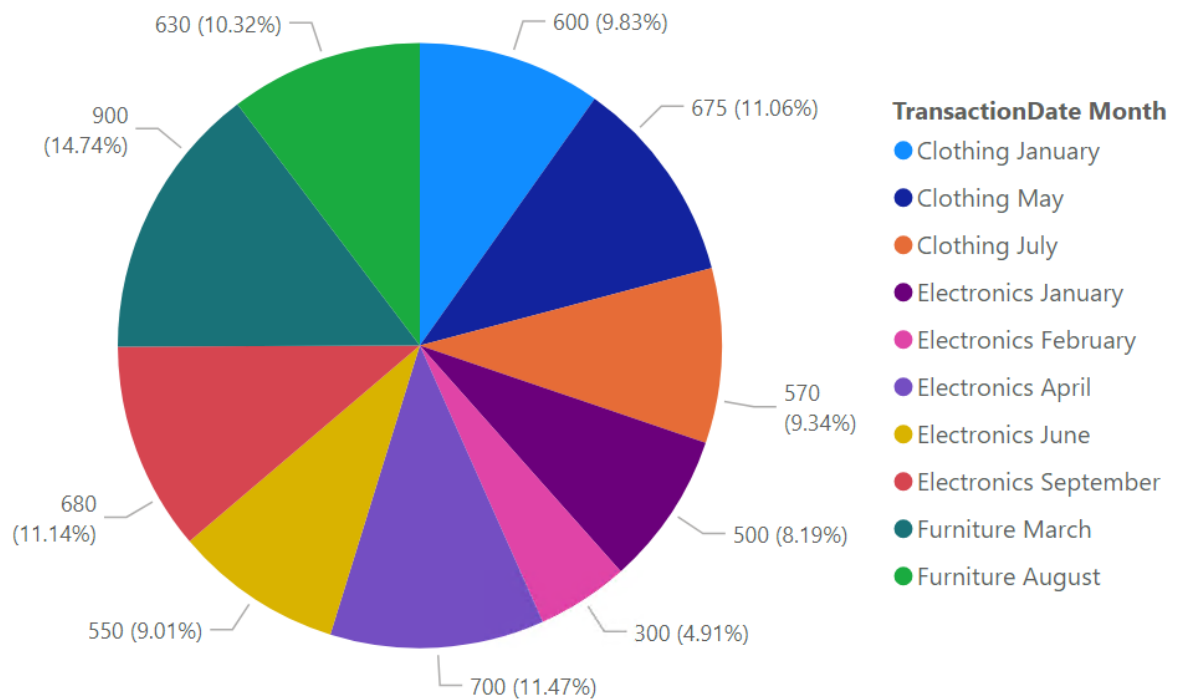
3. What is the average price of products in each category?



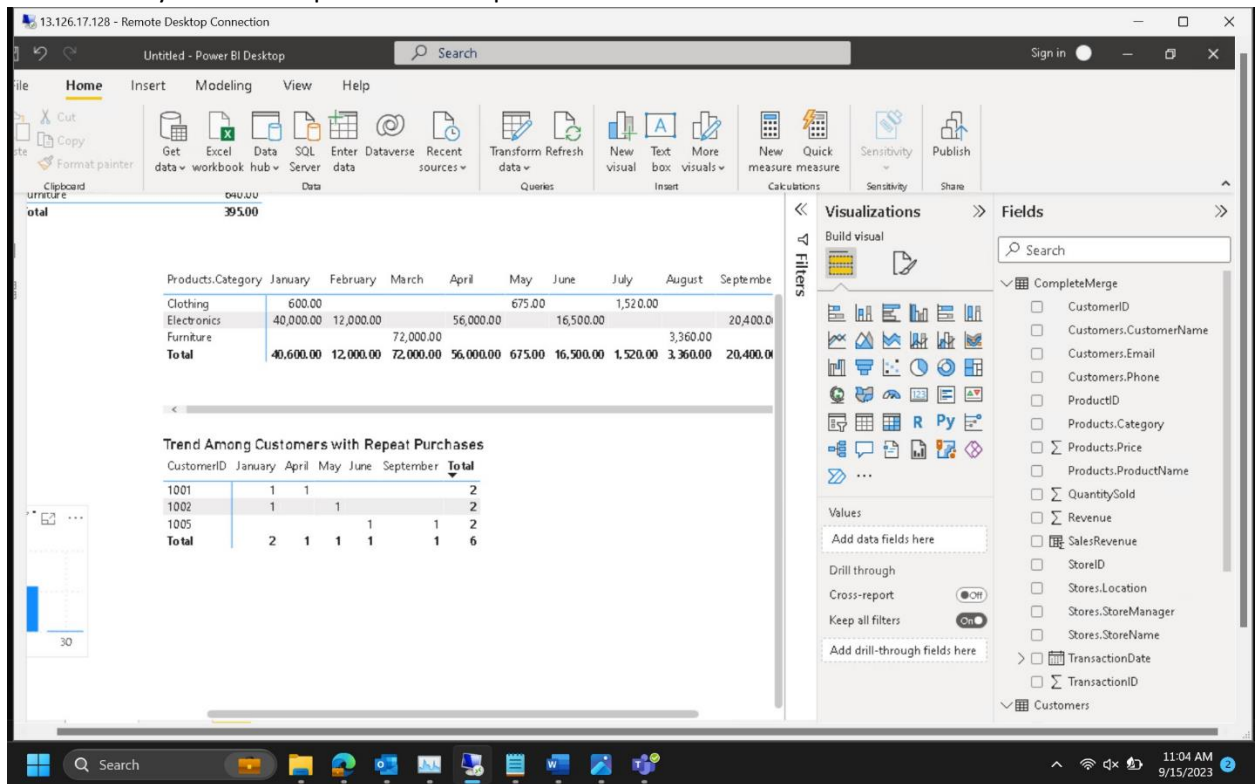
4. Are there specific days of the week when sales are higher?



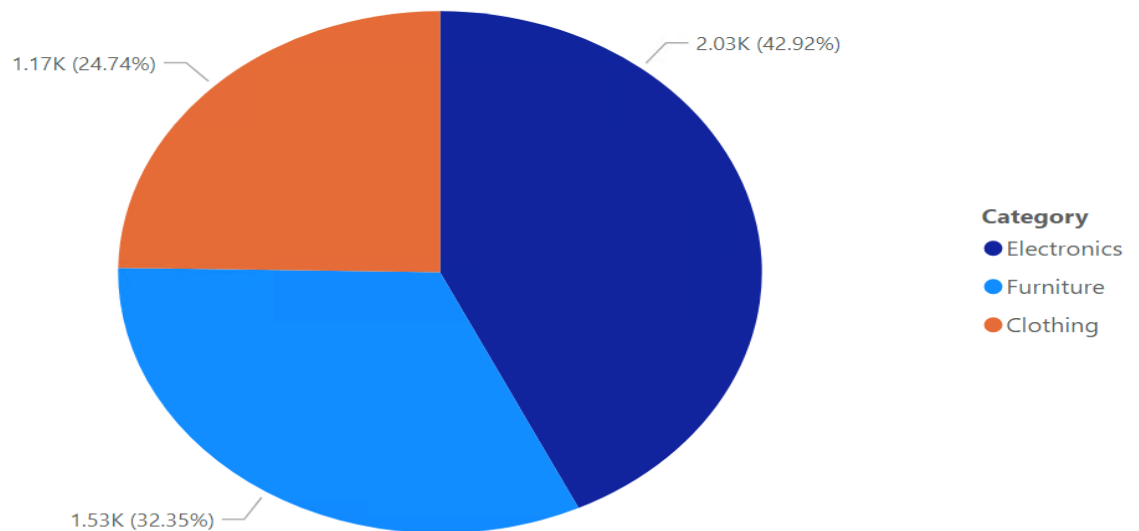
5. How do sales trends vary by product category on a monthly basis?



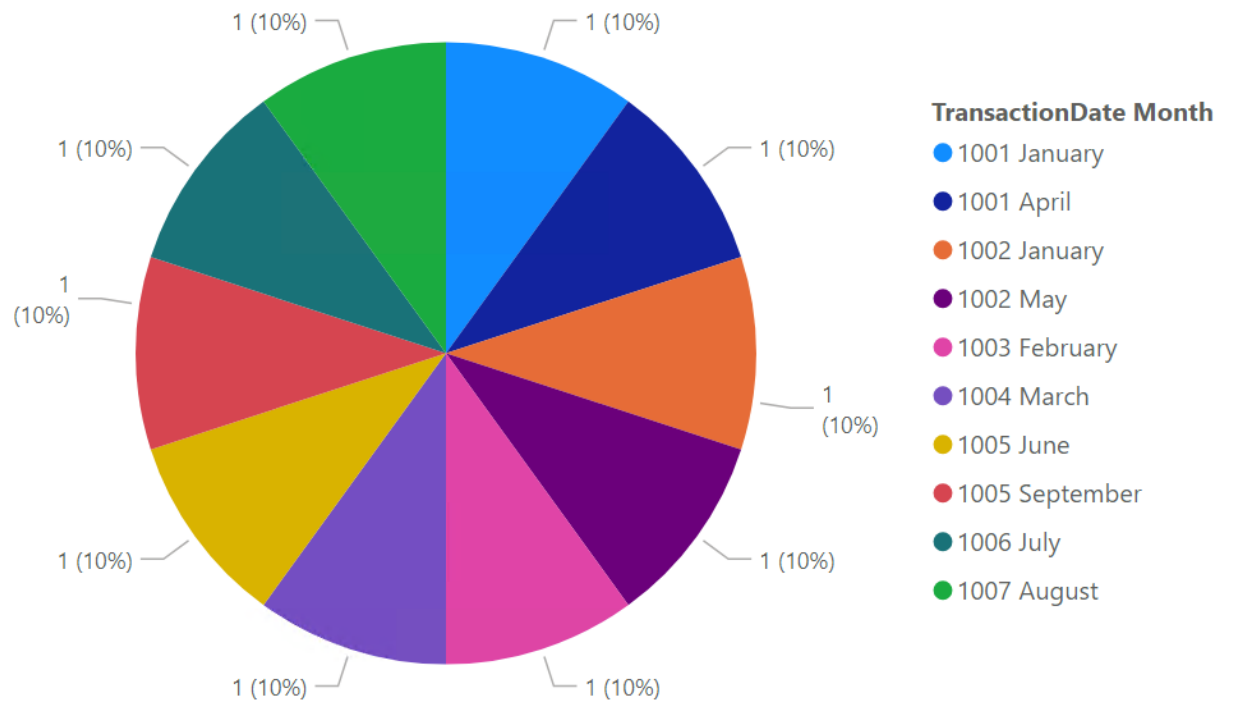
7. Are there any trends in repeat customer purchases?



8. Which product categories perform best at each store location?



9. Are there any trends in repeat customer purchases?



Data Insights

