

Power BI - End To End Project - 2

Bi-Directional Filter

Cross-filter direction

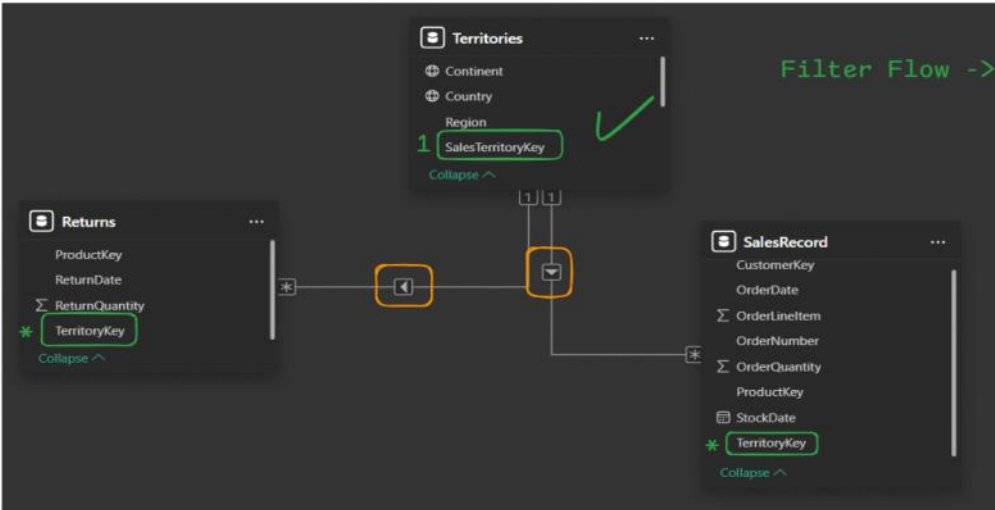
Single

✓ Single

Both

Single >> Both

Hiding Foreign Key



SalesTerritoryKey	Sum of OrderQuantity	Sum of ReturnQuantity
1	12513	270
2	40	
3	30	
4	17191	362
5	49	1
6	10894	238
7	7862	186
8	7950	163
9	17951	404
10	9694	204
Total	84174	1828

Dimension Table > SalesTerritoryKey [P.K]

SalesTerritoryKey	Region	Country	Continent
1	Northwest	United States	North America
2	Northeast	United States	North America
3	Central	United States	North America
4	Southwest	United States	North America
5	Southeast	United States	North America
6	Canada	Canada	North America
7	France	France	Europe
8	Germany	Germany	Europe
9	Australia	Australia	Pacific
10	United Kingdom	United Kingdom	Europe

Sales Record

TerritoryKey	Sum of OrderQuantity	Sum of ReturnQuantity
1	12513	1828
2	40	1828
3	30	1828
4	17191	1828
5	49	1828
6	10894	1828
7	7862	1828
8	7950	1828
9	17951	1828
10	9694	1828
Total	84174	1828

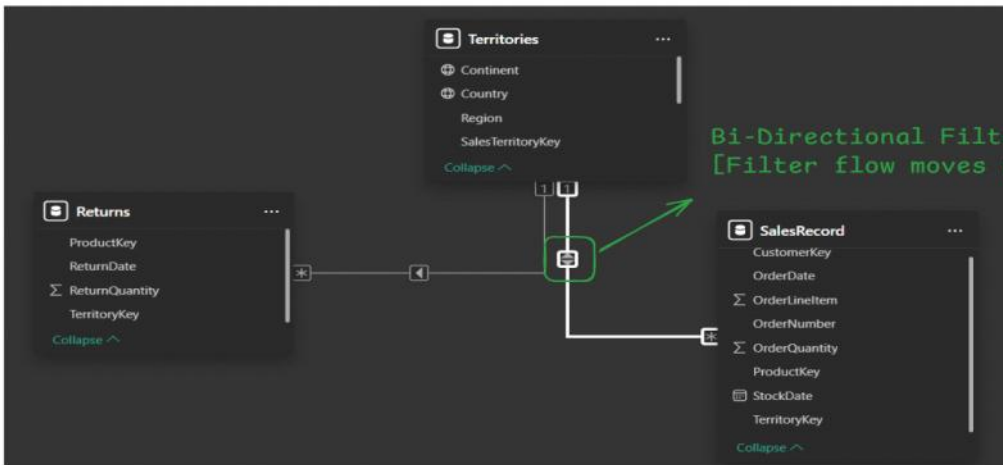
No-Relationship Exist Directly

Return Table

TerritoryKey	Sum of OrderQuantity	Sum of ReturnQuantity
1	84174	270
4	84174	362
5	84174	1
6	84174	238
7	84174	186
8	84174	163
9	84174	404
10	84174	204
Total	84174	1828

Loss of Information

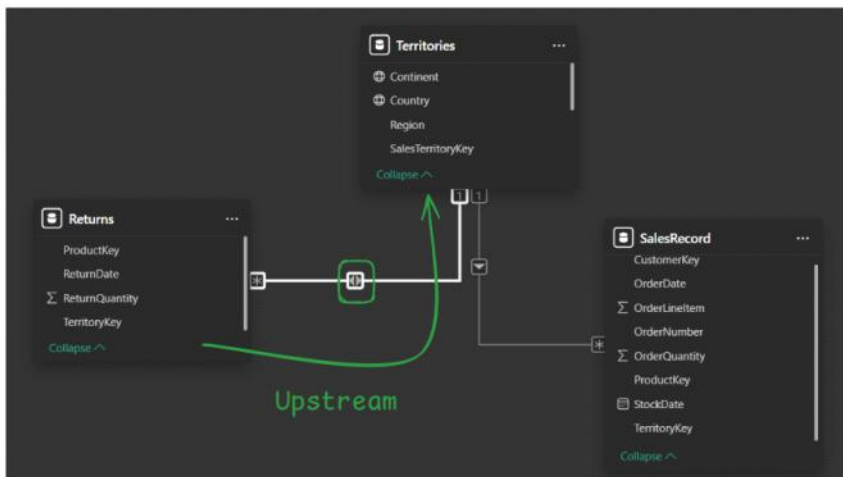
2-3[territory are missing bcoz of no returns]



TerritoryKey	Sum of OrderQuantity	Sum of ReturnQuantity
1	12513	270
2	40	
3	30	
4	17191	362
5	49	1
6	10894	238
7	7862	186
8	7950	163
9	17951	404
10	9694	204
Total	84174	1828

SalesRecord

✖ There are ambiguous paths between 'Territories' and 'Calendar': 'Territories'-'>'Returns'-'>'Calendar' and 'Territories'-'>'SalesRecord'-'>'Calendar'



TerritoryKey	Sum of OrderQuantity	Sum of ReturnQuantity
1	12513	270
4	17191	362
5	49	1
6	10894	238
7	7862	186
8	7950	163
9	17951	404
10	9694	204
Total	84174	1828

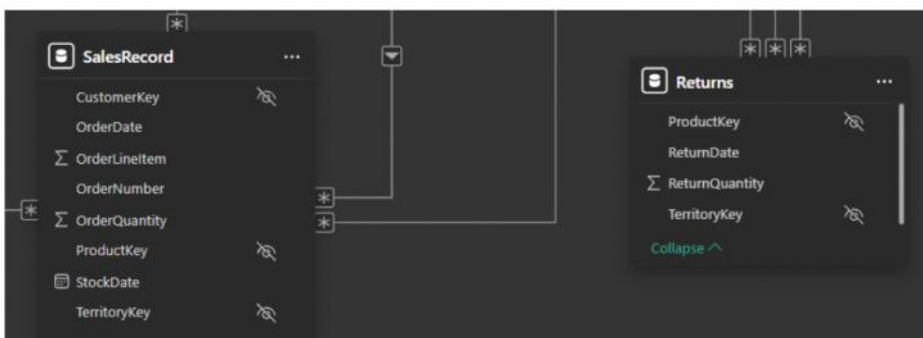
Loss of Information



SalesTerritoryKey	Sum of OrderQuantity	Sum of ReturnQuantity
1	12513	270
2	40	
3	30	
4	17191	362
5	49	1
6	10894	238
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DAX [Data Analysis Expression]

DAX

Calculated Column

1. Row-Context
2. Filtering / Grouping

Measures[Implicit / Explicit]

1. Filter Context
2. Aggregation

Related -> Lookup Function

-> Bringing the column from another table if the relationship exist.

Column: **RELATED(ColumnName)**

Whole number: Returns a related value from another table.

Structure:

1. RetailCost
2. RELATED(
3. cost

Products[ProductCost]

Date	StockDate	OrderNumber	ProductKey	CustomerKey	TerritoryKey	OrderLineItem	OrderQuantity	RetailCost
07-2015	03-06-2002	SO46718	360	12570	9	1	1	\$1,106
07-2015	22-04-2002	SO46736	360	12341	9	1	1	\$1,106

Name: RetailCost

Data type: Decimal number

Format: Currency

Summarization: Sum

Data category: Uncategorized

Sort by column: Sort

Data groups: Groups

Manage relationships: Relationships

New column: Calculations

Structure:

1. RetailCost =
2. RELATED(
3. Products[ProductCost])

OrderDate	StockDate	OrderNumber	ProductKey	CustomerKey	TerritoryKey	OrderLineItem	OrderQuantity	RetailCost
05-07-2015	03-06-2002	SO46718	360	12570	9	1	1	\$1,106
07-07-2015	22-04-2002	SO46736	360	12341	9	1	1	\$1,106
12-07-2015	05-05-2002	SO46776	360	12356	9	1	1	\$1,106
16-07-2015	22-06-2002	SO46808	360	12347	9	1	1	\$1,106
18-07-2015	11-05-2002	SO46826	360	12575	9	1	1	\$1,106
01-08-2015	21-04-2002	SO47075	360	12685	9	1	1	\$1,106
04-08-2015	01-05-2002	SO47098	360	12667	9	1	1	\$1,106
10-08-2015	21-04-2002	SO47149	360	12669	9	1	1	\$1,106

Name	RetailPrice	\$% Format	Currency	Summarization	Sum	Sort by column	Data groups	Manage relationships	New column
Data type	Decimal number	\$ %	00 -0%	Data category	Uncategorized	Sort	Groups	Relationships	Calculations
Structure	Formatting	Properties							
1	RetailPrice =								
2	RELATED(
3	Products[ProductPrice])								
OrderDate	StockDate	OrderNumber	ProductKey	CustomerKey	TerritoryKey	OrderLineItem	OrderQuantity	RetailCost	RetailPrice
05-07-2015	03-06-2002	SO46718	360	12570	9	1	1	\$1,106	\$2,049
07-07-2015	22-04-2002	SO46736	360	12341	9	1	1	\$1,106	\$2,049
12-07-2015	05-05-2002	SO46776	360	12356	9	1	1	\$1,106	\$2,049
16-07-2015	22-06-2002	SO46808	360	12347	9	1	1	\$1,106	\$2,049
18-07-2015	11-05-2002	SO46826	360	12575	9	1	1	\$1,106	\$2,049
01-08-2015	21-04-2002	SO47075	360	12685	9	1	1	\$1,106	\$2,049
04-08-2015	01-05-2002	SO47098	360	12667	9	1	1	\$1,106	\$2,049
10-08-2015	21-04-2002	SO47149	360	12669	9	1	1	\$1,106	\$2,049

Name

Expenses

Format

Currency

Summarization

Sum

Data category

Uncategorized

Sort by column

Sort

Data groups

Data groups

Manage relationships

Manage relationships

New column

New column

Structure

Formatting

Properties

Sort

Groups

Relationships

Calculations

1

Expenses =

2

SalesRecord[RetailCost] * SalesRecord[OrderQuantity]

OrderDate	StockDate	OrderNumber	ProductKey	CustomerKey	TerritoryKey	OrderLineItem	OrderQuantity	RetailCost	RetailPrice	Expenses
05-07-2015	03-06-2002	SO46718	360	12570	9	1	1	\$1,106	\$2,049	\$1,106
07-07-2015	22-04-2002	SO46736	360	12341	9	1	1	\$1,106	\$2,049	\$1,106
12-07-2015	05-05-2002	SO46776	360	12356	9	1	1	\$1,106	\$2,049	\$1,106
16-07-2015	22-06-2002	SO46808	360	12347	9	1	1	\$1,106	\$2,049	\$1,106
18-07-2015	11-05-2002	SO46826	360	12575	9	1	1	\$1,106	\$2,049	\$1,106
01-08-2015	21-04-2002	SO47075	360	12685	9	1	1	\$1,106	\$2,049	\$1,106
04-08-2015	01-05-2002	SO47098	360	12667	9	1	1	\$1,106	\$2,049	\$1,106

Revenue

Format

Currency

Summarization

Sum

Sort by column

Data groups

Manage relationships

New column

Decimal number

\$ %

00 -0%

Data category

Uncategorized

Sort

Groups

Relationships

Calculations

Structure

Change the number of decimal places shown for this value.

Properties

1

Revenue =

2

SalesRecord[RetailPrice] * SalesRecord[OrderQuantity]

Date	StockDate	OrderNumber	ProductKey	CustomerKey	TerritoryKey	OrderLineItem	OrderQuantity	RetailCost	RetailPrice	Expenses	Revenue
7-2015	03-06-2002	SO46718	360	12570	9	1	1	\$1,106	\$2,049	\$1,106	\$2,049
7-2015	22-04-2002	SO46736	360	12341	9	1	1	\$1,106	\$2,049	\$1,106	\$2,049
7-2015	05-05-2002	SO46776	360	12356	9	1	1	\$1,106	\$2,049	\$1,106	\$2,049
7-2015	22-06-2002	SO46808	360	12347	9	1	1	\$1,106	\$2,049	\$1,106	\$2,049
7-2015	11-05-2002	SO46826	360	12575	9	1	1	\$1,106	\$2,049	\$1,106	\$2,049
8-2015	21-04-2002	SO47075	360	12685	9	1	1	\$1,106	\$2,049	\$1,106	\$2,049
8-2015	01-05-2002	SO47098	360	12667	9	1	1	\$1,106	\$2,049	\$1,106	\$2,049
8-2015	21-04-2002	SO47149	360	12669	9	1	1	\$1,106	\$2,049	\$1,106	\$2,049

Name

Profit

Data type

Decimal number

\$%

Format

Currency

\$ %

00

-0%

0

Σ

Summarization

Sum

☰

Data category

Uncategorized

Sort by column

Sort

☰

Data groups

Groups

☰

Manage relationships

Relationships

☰

New column

Calculations

✕

✓

1

Profit =

2

SalesRecord[Revenue] - SalesRecord[Expenses]

Date	StockDate	OrderNumber	ProductKey	CustomerKey	TerritoryKey	OrderLineItem	OrderQuantity	RetailCost	RetailPrice	Expenses	Revenue	Profit
06-2017	23-03-2004	SO73527	485	22161	4	3	3	\$8	\$22	\$25	\$66	\$41
06-2017	02-05-2004	SO72945	223	25493	10	6	3	\$6	\$9	\$17	\$26	\$9
05-2017	20-03-2004	SO71336	223	23841	4	6	3	\$6	\$9	\$17	\$26	\$9
05-2017	05-03-2004	SO71145	464	23958	7	6	3	\$10	\$24	\$29	\$71	\$42
04-2017	07-01-2004	SO69218	462	16641	4	6	3	\$10	\$24	\$29	\$71	\$42
04-2017	21-03-2004	SO68324	466	16866	4	6	3	\$10	\$24	\$29	\$71	\$42
02-2017	02-11-2003	SO63613	223	20700	4	6	3	\$6	\$9	\$17	\$26	\$9
01-2017	20-09-2003	SO61837	462	12198	1	6	3	\$10	\$24	\$29	\$71	\$42
12-2016	28-09-2003	SO59973	223	23930	10	6	3	\$6	\$9	\$17	\$26	\$9
09-2016	04-07-2003	SO53918	462	25726	10	6	3	\$10	\$24	\$29	\$71	\$42

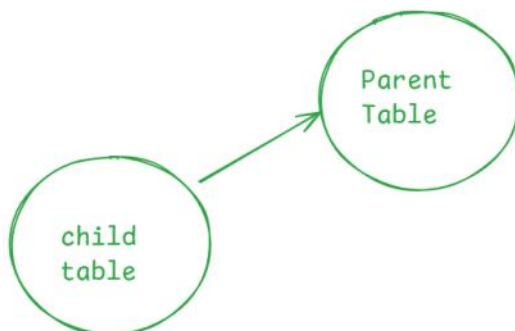
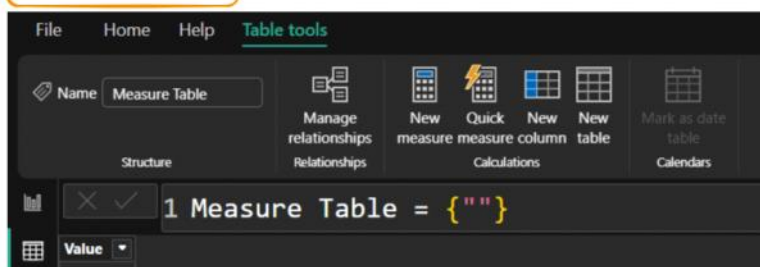
RetailCost	RetailPrice	Expenses	Revenue	Profit
\$8	\$22	\$25	\$66	\$41
\$6	\$9	\$17	\$26	\$9
\$6	\$9	\$17	\$26	\$9
\$10	\$24	\$29	\$71	\$42
\$10	\$24	\$29	\$71	\$42
\$10	\$24	\$29	\$71	\$42
\$6	\$9	\$17	\$26	\$9
\$10	\$24	\$29	\$71	\$42
\$6	\$9	\$17	\$26	\$9
\$10	\$24	\$29	\$71	\$42
\$3	\$8	\$9	\$24	\$15
\$2	\$5	\$6	\$15	\$9
\$2	\$5	\$6	\$15	\$9
\$3	\$8	\$9	\$24	\$15
\$3	\$8	\$9	\$24	\$15
\$4	\$10	\$11	\$30	\$19
\$10	\$24	\$29	\$71	\$42
\$10	\$24	\$29	\$71	\$42

All this column that we have added using calculated columns is not actual a good idea , as this columns are numerical types not useful for filtering/grouping.

Also the number of records added are roughly $60k * 5 \text{ columns} \sim 300k$ [3 Lakh].
High computational & Less Efficient .
Better to go with Measures.

Let's try to reduce the C.C and store every single measures in Measure Table.

Measure Table



Total Revenue

Format Currency

Data category Uncategorized

New Quick measure measure

Measure Table

\$ % & # 0.00 Auto

Structure

Formatting

Properties

Calculations

1 Total Revenue =
2 SUMX(
3 SalesRecord,
4 SalesRecord[OrderQuantity] * RELATED(Products[ProductPrice]
5)

\$24.91M

Total Revenue

Total Expenses

\$%

Format

Currency

Data category

Uncategorized

New

Quick

measure

measure

Calculations

Structure

Formatting

Properties

1

Total Expenses =

2

SUMX(

3

SalesRecord,

4

SalesRecord[OrderQuantity] * RELATED(Products[ProductCost]))

\$14.46M

Total Expenses

Total Profit

\$%

Format

Currency

Data category

Uncategorized

New

Quick

measure

measure

Calculations

Structure

Formatting

Properties

1

Total Profit =

2

[Total Revenue] - [Total Expenses]

\$10.46M

Total Profit

ProductColor	Total Revenue	Sum of OrderQuantity
Black	\$76,81,997.28	5062
Red	\$48,73,778.22	1912
Yellow	\$45,40,599.97	3130
Silver	\$44,06,958.92	2562
Blue	\$21,39,160.71	1263
Total	\$2,36,42,495.10	13929

CategoryName

☐ Accessories
 ☒ Bikes
 ☐ Clothing
 ☐ Components

Black Color Revenue =

CALCULATE(

[Total Revenue],

Products[ProductColor] = "Black")

\$7.88M

Black Color Revenue

Table: SalesRecord (56,046 rows) Column: OrderNumber (25,164 distinct values)

Measure

DISTINCTCOUNT(ColumnName)

Measure Table

Structure

Counts the number of distinct values in a column.

1

Total

2

DISTINCTCOUNT(

3

Total Orders

\$%

Format

Whole number

Data category

Uncategorized

New

Quick

measure

measure

Calculations

Structure

Formatting

Properties

1

Total Orders =

2

DISTINCTCOUNT(

3

SalesRecord[OrderNumber])

25164
Total Orders

25K
Total Orders

Callout value

Font

DIN 45

B I U

Color

None

Display units

Value decimal places

Auto

Quantity Sold

Measure Table

Format Whole number

Data category Uncategorized

Structure

Formatting

Properties

Calculations

1 Quantity Sold =

2 SUM(SalesRecord[OrderQuantity])

84K
Quantity Sold

Total Return Quant...

Measure Table

Format Whole number

Data category Uncategorized

Structure

Formatting

Properties

Calculations

1 Total Return Quantity =

2 SUM>Returns[ReturnQuantity])

1828
Total Return Quantity

Weekend Order /
Weekday Orders

1 DayName = FORMAT(
2 'Calendar'[Date],
3 "DDDD")

Date	Year	Quarter	Month	Day	DayName
01-07-2016	2016	3	7	1	Friday
02-07-2016	2016	3	7	2	Saturday
03-07-2016	2016	3	7	3	Sunday
04-07-2016	2016	3	7	4	Monday
05-07-2016	2016	3	7	5	Tuesday
06-07-2016	2016	3	7	6	Wednesday
07-07-2016	2016	3	7	7	Thursday
08-07-2016	2016	3	7	8	Friday
09-07-2016	2016	3	7	9	Saturday
10-07-2016	2016	3	7	10	Sunday

1	IsWeekend =
2	SWITCH(
3	TRUE(),
4	'Calendar'[DayName] IN {"Saturday","Sunday"} , "Weekend",
5	"Weekday")]

Date	Year	Quarter	Month	Day	DayName	IsWeekend
01-07-2016	2016	3	7	1	Friday	Weekday
02-07-2016	2016	3	7	2	Saturday	Weekend
03-07-2016	2016	3	7	3	Sunday	Weekend
04-07-2016	2016	3	7	4	Monday	Weekday
05-07-2016	2016	3	7	5	Tuesday	Weekday
06-07-2016	2016	3	7	6	Wednesday	Weekday
07-07-2016	2016	3	7	7	Thursday	Weekday
08-07-2016	2016	3	7	8	Friday	Weekday
09-07-2016	2016	3	7	9	Saturday	Weekend
10-07-2016	2016	3	7	10	Sunday	Weekend

1	IsWeekend? =
2	SWITCH(
3	'Calendar'[DayName],
4	"Monday" , "Weekday",
5	"Tuesday" , "Weekday",
6	"Wednesday" , "Weekday",
7	"Thursday" , "Weekday",
8	"Friday" , "Weekday",
9	"Saturday" , "Weekend",
10	"Sunday" , "Weekend")]

Date	Year	Quarter	Month	Day	DayName	IsWeekend	IsWeekend?
01-07-2016	2016	3	7	1	Friday	Weekday	Weekday
02-07-2016	2016	3	7	2	Saturday	Weekend	Weekend
03-07-2016	2016	3	7	3	Sunday	Weekend	Weekend
04-07-2016	2016	3	7	4	Monday	Weekday	Weekday
05-07-2016	2016	3	7	5	Tuesday	Weekday	Weekday
06-07-2016	2016	3	7	6	Wednesday	Weekday	Weekday
07-07-2016	2016	3	7	7	Thursday	Weekday	Weekday
08-07-2016	2016	3	7	8	Friday	Weekday	Weekday
09-07-2016	2016	3	7	9	Saturday	Weekend	Weekend
10-07-2016	2016	3	7	10	Sunday	Weekend	Weekend

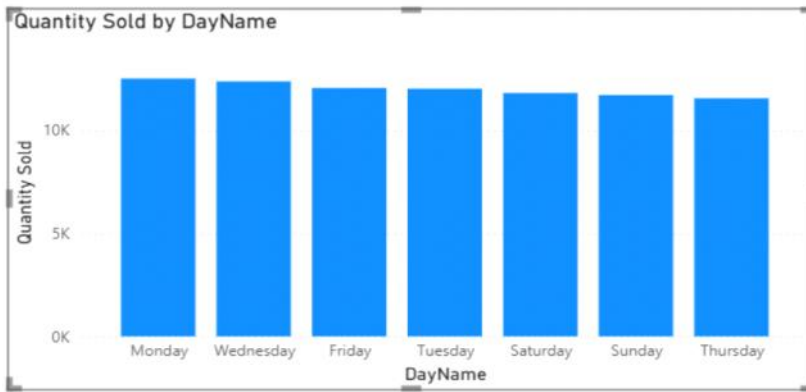
Weekend/Weekday
Qty Sold

Weekend Qty Sold =
CALCULATE(
[Quantity Sold],
'Calendar'[IsWeekend] = "Weekend")

24K
Weekend Qty Sold

Weekday Qty Sold =
CALCULATE(
[Quantity Sold],
'Calendar'[IsWeekend] = "Weekday")

61K
Weekday Qty Sold



```
Weekday Revenue =
CALCULATE(
    [Total Revenue],
    'Calendar'[IsWeekend] = "Weekday")
```

```
Weekend Revenue =
CALCULATE(
    [Total Revenue],
    'Calendar'[IsWeekend] = "Weekend")
```

\$6.99M

Weekend Revenue

17.93M

Weekday Revenue



```
1 Order Type =
2 SWITCH(
3     TRUE(),
4     SalesRecord[OrderQuantity] > 1 , "Bulk Order",
5     "Regular Order"
6 )
```

StockDate	OrderNumber	ProductKey	CustomerKey	TerritoryKey	OrderLineItem	OrderQuantity	Order Type
03-06-2002	SO46718	360	12570	9	1	1	Regular Order
22-04-2002	SO46736	360	12341	9	1	1	Regular Order
05-05-2002	SO46776	360	12356	9	1	1	Regular Order
22-06-2002	SO46808	360	12347	9	1	1	Regular Order
11-05-2002	SO46826	360	12575	9	1	1	Regular Order
21-04-2002	SO47075	360	12685	9	1	1	Regular Order
01-05-2002	SO47098	360	12667	9	1	1	Regular Order
21-04-2002	SO47149	360	12669	9	1	1	Regular Order
04-06-2002	SO47212	360	12580	9	1	1	Regular Order
29-06-2002	SO47302	360	12670	9	1	1	Regular Order
12-08-2002	SO47328	360	12681	9	1	1	Regular Order
13-08-2002	SO47346	360	12585	9	1	1	Regular Order
12-06-2002	SO47744	360	12989	9	1	1	Regular Order
28-07-2002	SO47745	360	12998	9	1	1	Regular Order
22-08-2002	SO47753	360	13020	9	1	1	Regular Order
17-06-2002	SO47769	360	12703	9	1	1	Regular Order
06-09-2002	SO47857	360	13024	9	1	1	Regular Order
14-07-2002	SO47867	360	12991	9	1	1	Regular Order

```
RegularOrder Revenue =  
    CALCULATE(  
        [Total Revenue],  
        SalesRecord[Order Type] = "Regular Order")
```

24.33M

RegularOrder Revenue

```
BulkOrder Revenue =  
    CALCULATE(  
        [Total Revenue],  
        SalesRecord[Order Type] = "Bulk Order")
```

585.61K

BulkOrder Revenue