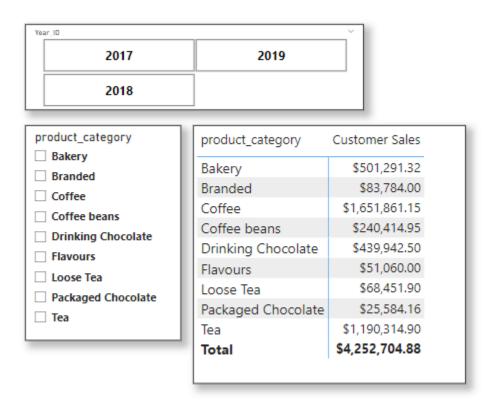# Advanced DAX – Filter Function

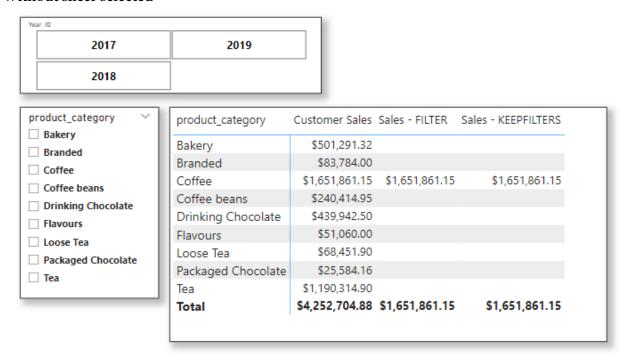How data looks without FILTER.

Note: Although we have not explicitly applied any filter/slicer, one can see that once we add field "product category" in row section implicit filters are applied and sales values are filtered on each row.

```
Customer Sales =

SUMX(
        'Sales by Store',
        'Sales by Store'[quantity_sold]*'Sales by Store'[unit_price]
)
```

FILTER & KEEPFILTERS

FILTER – Filters data on condition applied
KEEPFILTERS – Removes other filters except on mentioned column

Both below measures generate same result as shown in screenshot.

```
Sales - FILTER =
CALCULATE(
          [Customer Sales],
          FILTER('Product Lookup','Product Lookup'[product_category] = "Coffee")
)
```

```
Sales - KEEPFILTERS =
CALCULATE(
          [Customer Sales],
          KEEPFILTERS('Product Lookup'[product_category] = "Coffee")
)
```

Without slicer selected

Year_ID

2017	2019
2018	

product_category		Customer Sales	Sales - FILTER	Sales - KEEPFILTERS
☐ Bakery	Bakery	$501,291.32		
☐ Branded	Branded	$83,784.00		
☐ Coffee	Coffee	$1,651,861.15	$1,651,861.15	$1,651,861.15
☐ Coffee beans	Coffee beans	$240,414.95		
☐ Drinking Chocolate	Drinking Chocolate	$439,942.50		
☐ Flavours	Flavours	$51,060.00		
☐ Loose Tea	Loose Tea	$68,451.90		
☐ Packaged Chocolate	Packaged Chocolate	$25,584.16		
☐ Tea	Tea	$1,190,314.90		
	Total	**$4,252,704.88**	**$1,651,861.15**	**$1,651,861.15**

Selecting value in Date Slicer

Year_ID

2017	2019
2018	

product_category		Customer Sales	Sales - FILTER	Sales - KEEPFILTERS
☐ Bakery	Bakery	$77,394.82		
☐ Branded	Branded	$13,021.00		
☐ Coffee	Coffee	$255,522.60	$255,522.60	$255,522.60
☐ Coffee beans	Coffee beans	$37,200.85		
☐ Drinking Chocolate	Drinking Chocolate	$68,662.25		
☐ Flavours	Flavours	$7,868.00		
☐ Loose Tea	Loose Tea	$10,611.80		
☐ Packaged Chocolate	Packaged Chocolate	$4,043.00		
☐ Tea	Tea	$183,761.70		
	Total	**$658,086.02**	**$255,522.60**	**$255,522.60**

To Replicate filtered values on all rows

```
Sales - Replicate ALL rows =
CALCULATE(
        [Customer Sales],
        'Product Lookup'[product_category] = "Coffee"
)
```

Above Measure is calculated internally like below

```
Sales - Replicate ALL rows =

CALCULATE(
        [Customer Sales],
        FILTER(ALL('Product Lookup'),'Product Lookup'[product_category] = "Coffee")
)
```

Year ID

2017	2019
2018	

product_category
- [ ] Bakery
- [ ] Branded
- [ ] Coffee
- [ ] Coffee beans
- [ ] Drinking Chocolate
- [ ] Flavours
- [ ] Loose Tea
- [ ] Packaged Chocolate
- [ ] Tea

product_category	Customer Sales	Sales - FILTER	Sales - KEEPFILTERS	Sales - Replicate ALL rows
Bakery	$501,291.32			$1,651,861.15
Branded	$83,784.00			$1,651,861.15
Coffee	$1,651,861.15	$1,651,861.15	$1,651,861.15	$1,651,861.15
Coffee beans	$240,414.95			$1,651,861.15
Drinking Chocolate	$439,942.50			$1,651,861.15
Flavours	$51,060.00			$1,651,861.15
Loose Tea	$68,451.90			$1,651,861.15
Packaged Chocolate	$25,584.16			$1,651,861.15
Tea	$1,190,314.90			$1,651,861.15
Total	**$4,252,704.88**	**$1,651,861.15**	**$1,651,861.15**	**$1,651,861.15**

Above example indicates that applying only FILTER function and KEEPFILTERS removes the rows.

Although FILTER and KEEPFILTERS behaves same they differ in performance. For more read: https://michalmolka.medium.com/dax-keepfilters-vs-filter-8f3fb519ccaf

ALL vs REMOVEFILTERS vs ALLSELECTED

ALL - Removes all filters and return table

REMOVEFILTERS - only removes existing filters mentioned in parameters (but does not return any table)

ALLSELECTED - Works same as ALL but changes total based on slicer selection

```
Sales - ALL =
CALCULATE(
        [Customer Sales],
        ALL('Sales by Store')
)
```

```
Sales - ALLSELECTED =
CALCULATE(
        [Customer Sales],
        ALLSELECTED('Sales by Store')
)
```
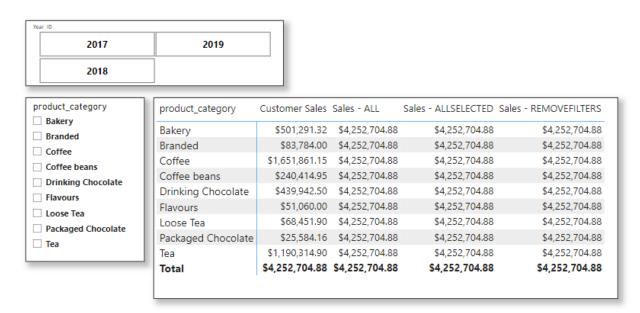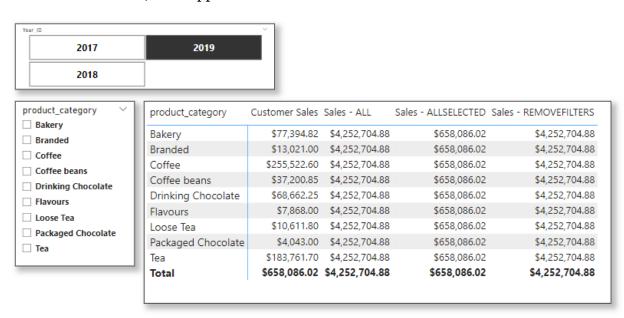
```
Sales - REMOVEFILTERS =
CALCULATE(
        [Customer Sales],
        REMOVEFILTERS('Sales by Store')
)
```
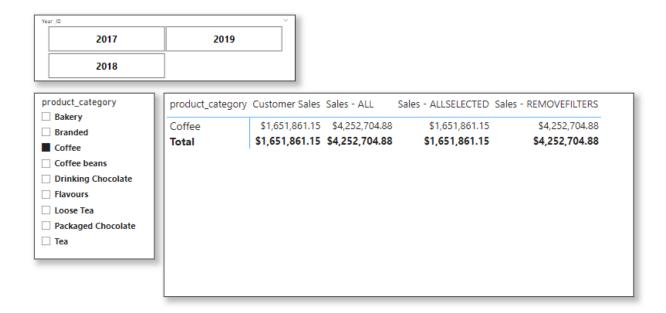
Matrix without any filter/slicer value selected

Year_ID

| 2017 | 2019 |
| 2018 | |

product_category
- [ ] Bakery
- [ ] Branded
- [ ] Coffee
- [ ] Coffee beans
- [ ] Drinking Chocolate
- [ ] Flavours
- [ ] Loose Tea
- [ ] Packaged Chocolate
- [ ] Tea

product_category	Customer Sales	Sales - ALL	Sales - ALLSELECTED	Sales - REMOVEFILTERS
Bakery	$501,291.32	$4,252,704.88	$4,252,704.88	$4,252,704.88
Branded	$83,784.00	$4,252,704.88	$4,252,704.88	$4,252,704.88
Coffee	$1,651,861.15	$4,252,704.88	$4,252,704.88	$4,252,704.88
Coffee beans	$240,414.95	$4,252,704.88	$4,252,704.88	$4,252,704.88
Drinking Chocolate	$439,942.50	$4,252,704.88	$4,252,704.88	$4,252,704.88
Flavours	$51,060.00	$4,252,704.88	$4,252,704.88	$4,252,704.88
Loose Tea	$68,451.90	$4,252,704.88	$4,252,704.88	$4,252,704.88
Packaged Chocolate	$25,584.16	$4,252,704.88	$4,252,704.88	$4,252,704.88
Tea	$1,190,314.90	$4,252,704.88	$4,252,704.88	$4,252,704.88
Total	**$4,252,704.88**	**$4,252,704.88**	**$4,252,704.88**	**$4,252,704.88**

Matrix with date filter/slicer applied

Year_ID

| 2017 | 2019 |
| 2018 | |

product_category
- [ ] Bakery
- [ ] Branded
- [ ] Coffee
- [ ] Coffee beans
- [ ] Drinking Chocolate
- [ ] Flavours
- [ ] Loose Tea
- [ ] Packaged Chocolate
- [ ] Tea

product_category	Customer Sales	Sales - ALL	Sales - ALLSELECTED	Sales - REMOVEFILTERS
Bakery	$77,394.82	$4,252,704.88	$658,086.02	$4,252,704.88
Branded	$13,021.00	$4,252,704.88	$658,086.02	$4,252,704.88
Coffee	$255,522.60	$4,252,704.88	$658,086.02	$4,252,704.88
Coffee beans	$37,200.85	$4,252,704.88	$658,086.02	$4,252,704.88
Drinking Chocolate	$68,662.25	$4,252,704.88	$658,086.02	$4,252,704.88
Flavours	$7,868.00	$4,252,704.88	$658,086.02	$4,252,704.88
Loose Tea	$10,611.80	$4,252,704.88	$658,086.02	$4,252,704.88
Packaged Chocolate	$4,043.00	$4,252,704.88	$658,086.02	$4,252,704.88
Tea	$183,761.70	$4,252,704.88	$658,086.02	$4,252,704.88
Total	**$658,086.02**	**$4,252,704.88**	**$658,086.02**	**$4,252,704.88**

Hrushikesh Churi

Matrix with product category filter selected

Year_ID

2017	2019
2018	

product_category
- ☐ Bakery
- ☐ Branded
- ■ Coffee
- ☐ Coffee beans
- ☐ Drinking Chocolate
- ☐ Flavours
- ☐ Loose Tea
- ☐ Packaged Chocolate
- ☐ Tea

product_category	Customer Sales	Sales - ALL	Sales - ALLSELECTED	Sales - REMOVEFILTERS
Coffee	$1,651,861.15	$4,252,704.88	$1,651,861.15	$4,252,704.88
Total	**$1,651,861.15**	**$4,252,704.88**	**$1,651,861.15**	**$4,252,704.88**

More on Difference between ALL & REMOVEFILTERS

https://youtu.be/BPo7SzJXb0w

ALLEXCEPT

Removes all filters except specified column

In below case all filters are removed except Product Category and Transaction date. So values are changing for product category but not for store id.

Use Case: Calculate Percentage of sales in each store of overall sales of a particular product. E.g. What Percentage of Coffee sales has store 3 contributed?

```
Sales - ALLEXCEPT =
 CALCULATE(
        [Customer Sales],
        ALLEXCEPT('Sales by Store','Product
Lookup'[product_category],'Calendar'[Transaction_Date])
    )
```

Year_ID

2017	2019
2018	

product_category
- ☐ Bakery
- ☐ Branded
- ☐ Coffee
- ☐ Coffee beans
- ☐ Drinking Chocolate
- ☐ Flavours
- ☐ Loose Tea
- ☐ Packaged Chocolate
- ☐ Tea

product_category	Customer Sales	Sales - ALL	Sales (ALLEXCEPT)
⊟ **Bakery**	**$501,291.32**	**$4,252,704.88**	**$501,291.32**
3	$162,400.75	$4,252,704.88	$501,291.32
5	$172,912.67	$4,252,704.88	$501,291.32
8	$165,977.90	$4,252,704.88	$501,291.32
⊟ **Branded**	**$83,784.00**	**$4,252,704.88**	**$83,784.00**
3	$33,614.00	$4,252,704.88	$83,784.00
5	$39,372.00	$4,252,704.88	$83,784.00
8	$10,798.00	$4,252,704.88	$83,784.00
⊟ **Coffee**	**$1,651,861.15**	**$4,252,704.88**	**$1,651,861.15**
3	$550,179.40	$4,252,704.88	$1,651,861.15
5	$547,112.35	$4,252,704.88	$1,651,861.15
8	$554,569.40	$4,252,704.88	$1,651,861.15
⊟ **Coffee beans**	**$240,414.95**	**$4,252,704.88**	**$240,414.95**
3	$64,966.40	$4,252,704.88	$240,414.95
5	$70,061.60	$4,252,704.88	$240,414.95
Total	**$4,252,704.88**	**$4,252,704.88**	**$4,252,704.88**