Intuitive Totals in Power BI

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A big thank you to our amazing partners

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Agenda

- Why are the totals not always intuitive?

- How do we make them more intuitive?

- Live demos

Has this ever happened to you?

Item	Measure
Banana	2
Pickle	5
Total	**11,000,000**

Meme by Greg Deckler

Live demo

Let's see a short live example based on the Contoso dataset

2 ways of computing totals

Summing up individual elements

Country	Sales
United States	4,756.4M
Canada	175.9M
Australia	79.2M
Bhutan	30.0M
Poland	15.1M
Slovenia	15.1M
the Netherlands	14.9M
Total	**5,086.6M**

Add all cells to get the total

Intuitive, straightforward and logical to us. Excel does it this way.

Computing the total at current level
(in current filter context)

Country	Sales
United States	$4,756.4M
Canada	$175.9M
Australia	$79.2M
Bhutan	$30.0M
Poland	$15.1M
Slovenia	$15.1M
the Netherlands	$14.9M
Total	**$5,086.6M**

Compute the total outside country dimension

Can be difficult to interpret at times. Power BI does it this way by default.

What really happens behind the scenes

Computing the total in current filter context

Country	Sales
United States	4,756.4M
Canada	175.9M
Australia	79.2M
Bhutan	30.0M
Poland	15.1M
Slovenia	15.1M
the Netherlands	14.9M
Total	**5,086.6M**

```
CALCULATE(
    [Sales],
    Region[Country] = „United States"
)
```

```
CALCULATE(
    [Sales],
    Region[Country] = „Netherlands"
)
```

```
CALCULATE(
    [Sales]
)
```

90% of the time, these 2 approaches produce identical result...

Summing up individual elements

Country	Sales
United States	4,756.4M
Canada	175.9M
Australia	79.2M
Bhutan	30.0M
Poland	15.1M
Slovenia	15.1M
the Netherlands	14.9M
Total	**5,086.6M**

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Computing the total at current level

Country	Sales
United States	$4,756.4M
Canada	$175.9M
Australia	$79.2M
Bhutan	$30.0M
Poland	$15.1M
Slovenia	$15.1M
the Netherlands	$14.9M
Total	**$5,086.6M**

For the remaining 10% you have this session

Summing up individual elements

Country	Sales over $100M
United States	4,756.4M
Canada	175.9M
Australia	
Bhutan	
Poland	
Slovenia	
the Netherlands	
Total	**4,932.3M**

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Computing the total at current level

Country	Sales over $100M
United States	$4,756.4M
Canada	$175.9M
Australia	
Bhutan	
Poland	
Slovenia	
the Netherlands	
Total	**$5,086.6M**

I have these 5 products to sell

And I sold them to 3 customers

Types of measures

+ Additive

Can be logically aggregated over any dimension

Examples:

- Sales value sum,
- Count of items sold,
- Number of orders.

+ Semi-Additive

Can be logically aggregated over some dimensions

Examples:

- Headcount,
- Inventory,
- Closing balance.

+ Non-Additive

Can not be logically aggregated over any dimension

Examples:

- Number of distinct products sold,
- Ratios and shares,
- Averages and medians.

We can always force total calculation by summing up individual elements, but the results will differ

PBIG
POWER BI GEBRUIKERSGROEP

+ Additive

Forcing additiveness of a measure over a given dimension will make sense.

Example:

– Summing sales value is correct over products, time and countries.

+ Semi-Additive

Forcing additiveness is correct for some dimensions, for others it does not make sense.

Example:

– Summing Inventory is correct over products, but not over time.

+ Non-Additive

If we force additiveness then we get *approximate* results at best, simply *incorrect* at worst.

Example:

– Summing or averaging a % ratio is never correct.

Live demos

Let's see some live examples in Power BI based on the Contoso dataset

Key takeaways

1. Totals in Power BI are neither inaccurate nor incorrect – sometimes they are just unintuitive.

2. You can adjust the measures to calculate totals as an aggregation of individual elements; DAX functions like SUMX, AVERAGEX come in handy.

3. ISINSCOPE function can be leveraged to create totals which are completely custom at each dimension level.

4. Exercise caution when forcing additiveness on non- and semi-additive calculations. The results you will get might backfire on you.

5. Forcing additiveness might make the performance of your report worse.
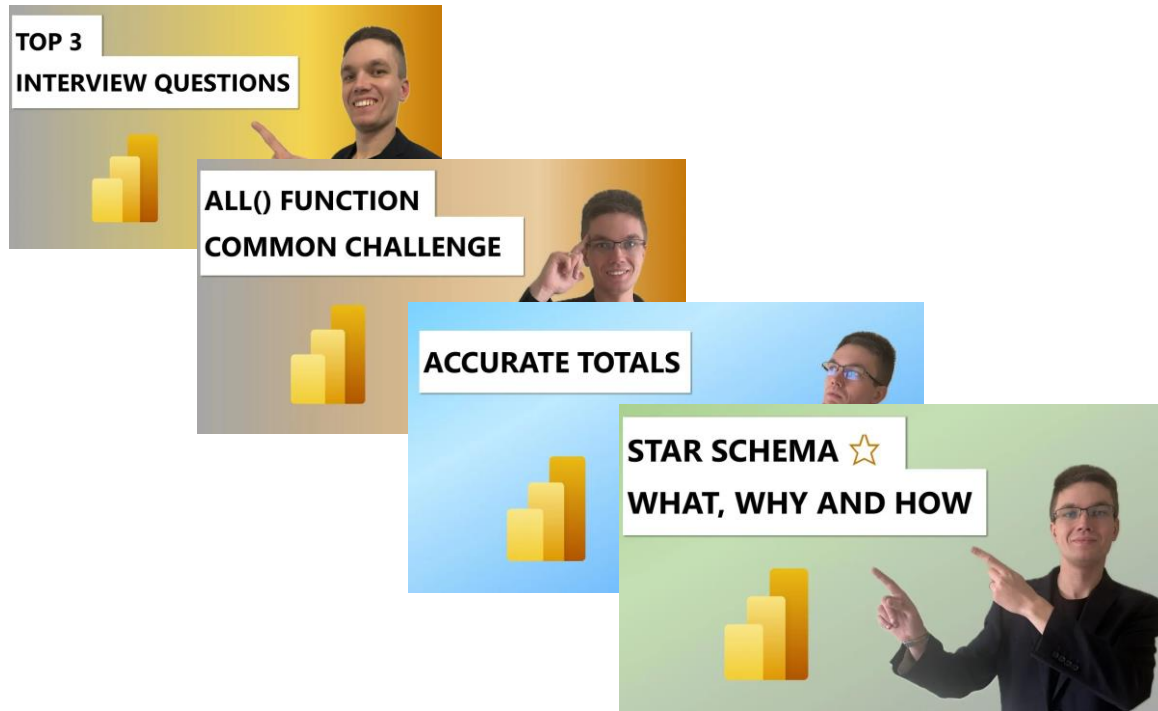
Session Feedback

Event Feedback