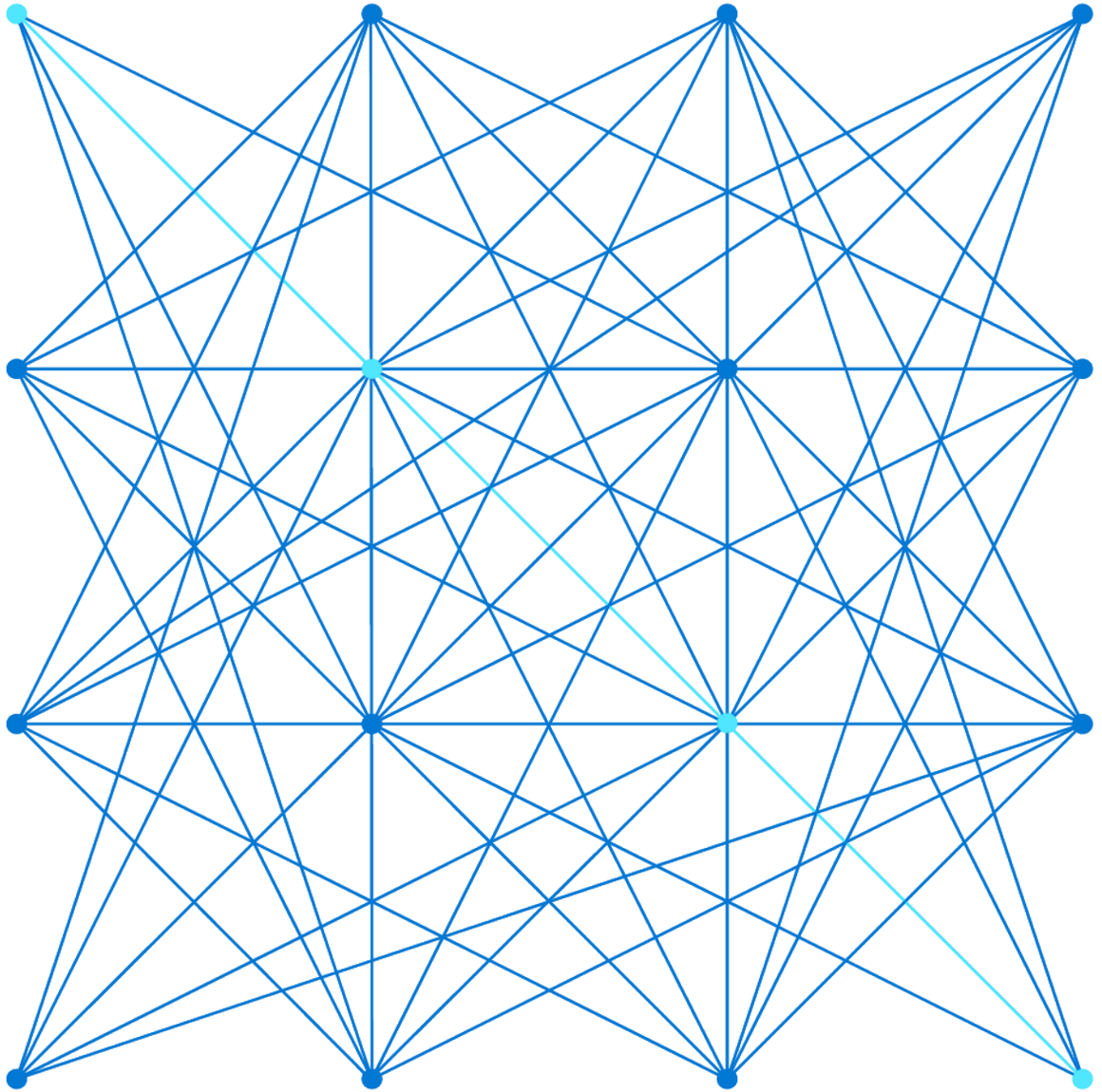
DA-100 Analyzing Data with Power BI

Dr. Ernesto Lee



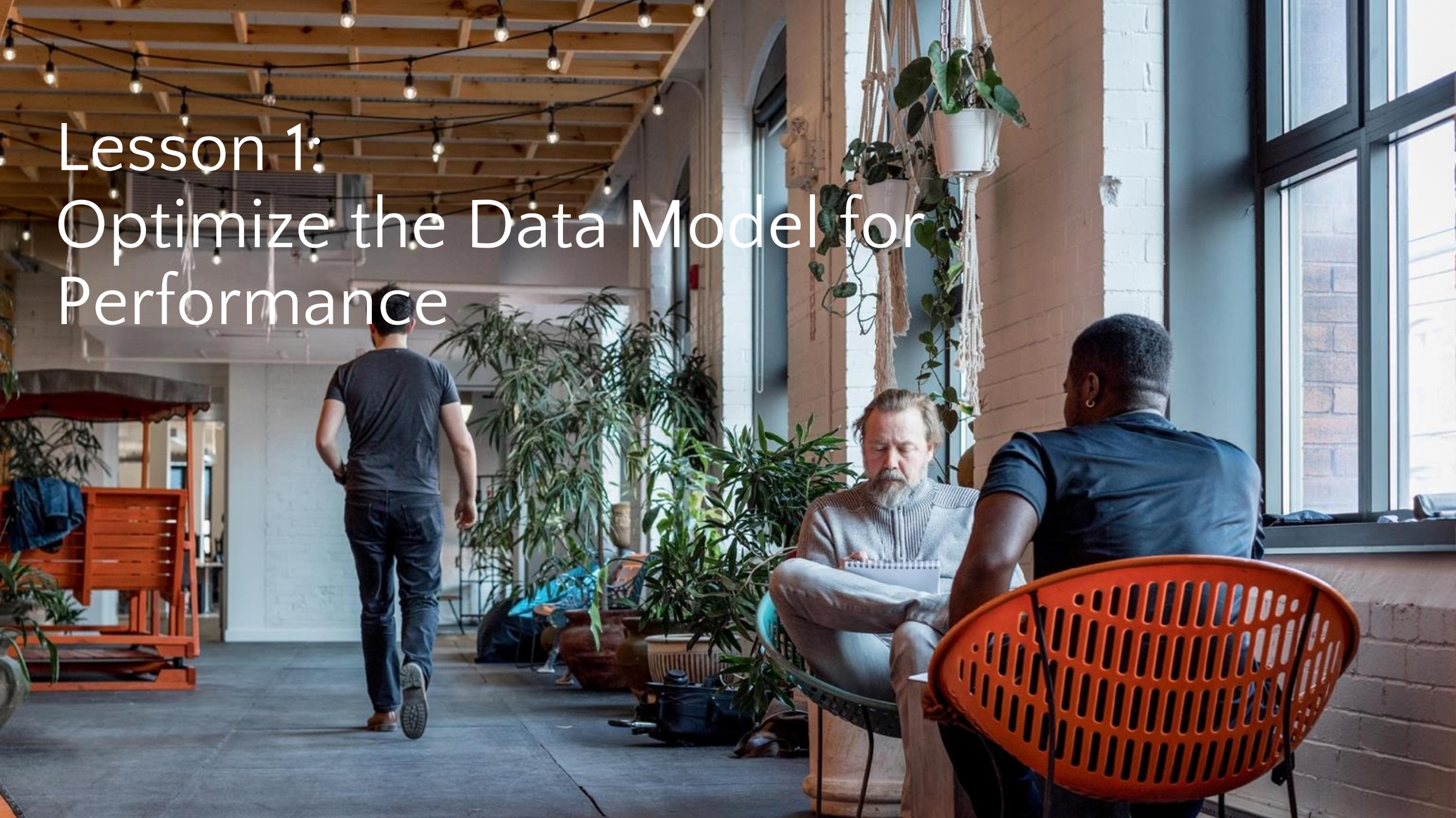
Module 6: Optimize Model Performance

Microsoft Power Platform

Learning Objectives

You will learn the following concepts:

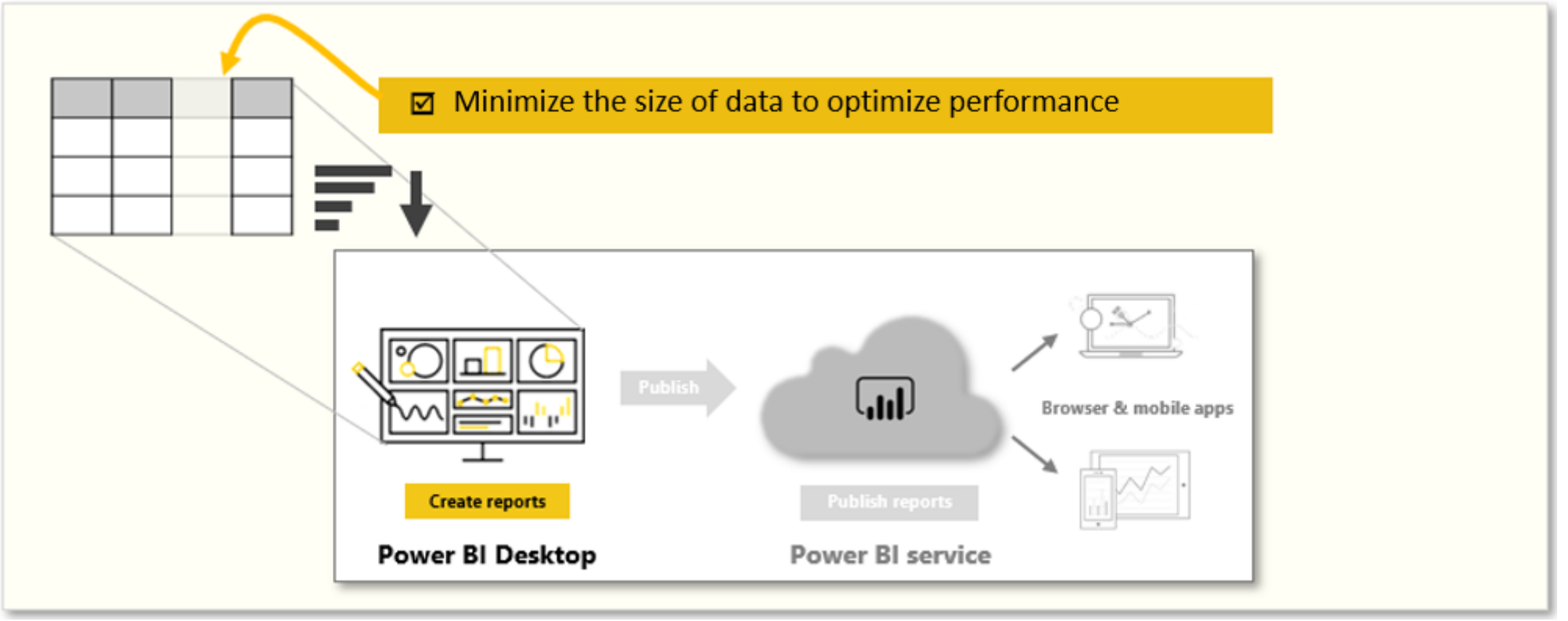
- Data model performance optimization
- DirectQuery model optimization
- Aggregations



Lesson 1: Optimize the Data Model for Performance

Microsoft Power Platform

Introduction to Performance Optimization



When your data model is optimized, it performs better.

Use Variables to Improve Performance and Troubleshooting

Without variable:

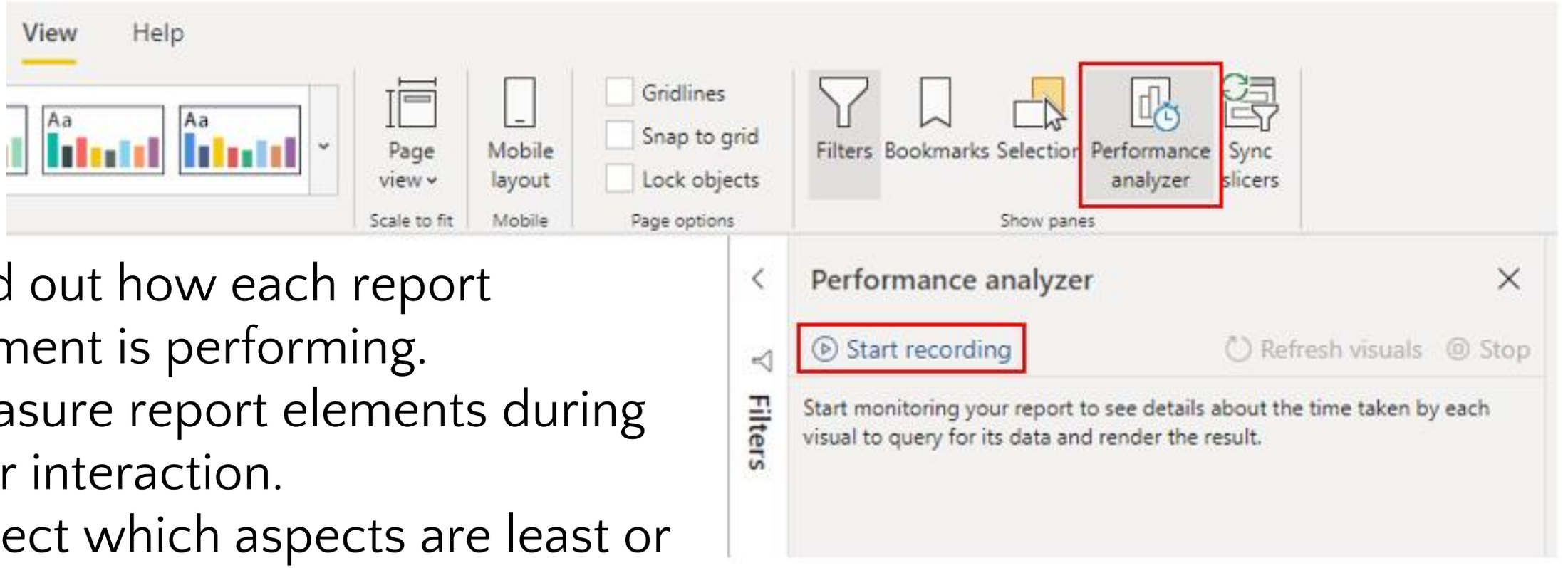
```
Sales YoY Growth =
DIVIDE (
        ( [Sales] - CALCULATE ( [Sales], PARALLELPERIOD ( 'Date'[Date], -12,
MONTH ) ) ),
        CALCULATE ( [Sales], PARALLELPERIOD ( 'Date'[Date], -12, MONTH ) )
 )
```

With variable:

```
Sales YoY Growth =
VAR SalesPriorYear =
        CALCULATE ( [Sales], PARALLELPERIOD ( 'Date'[Date], -12, MONTH )
)
VAR SalesVariance =
        DIVIDE ( ( [Sales] - SalesPriorYear ), SalesPriorYear )
RETURN
        SalesVariance
```

Microsoft Power Platform

Performance Analyzer

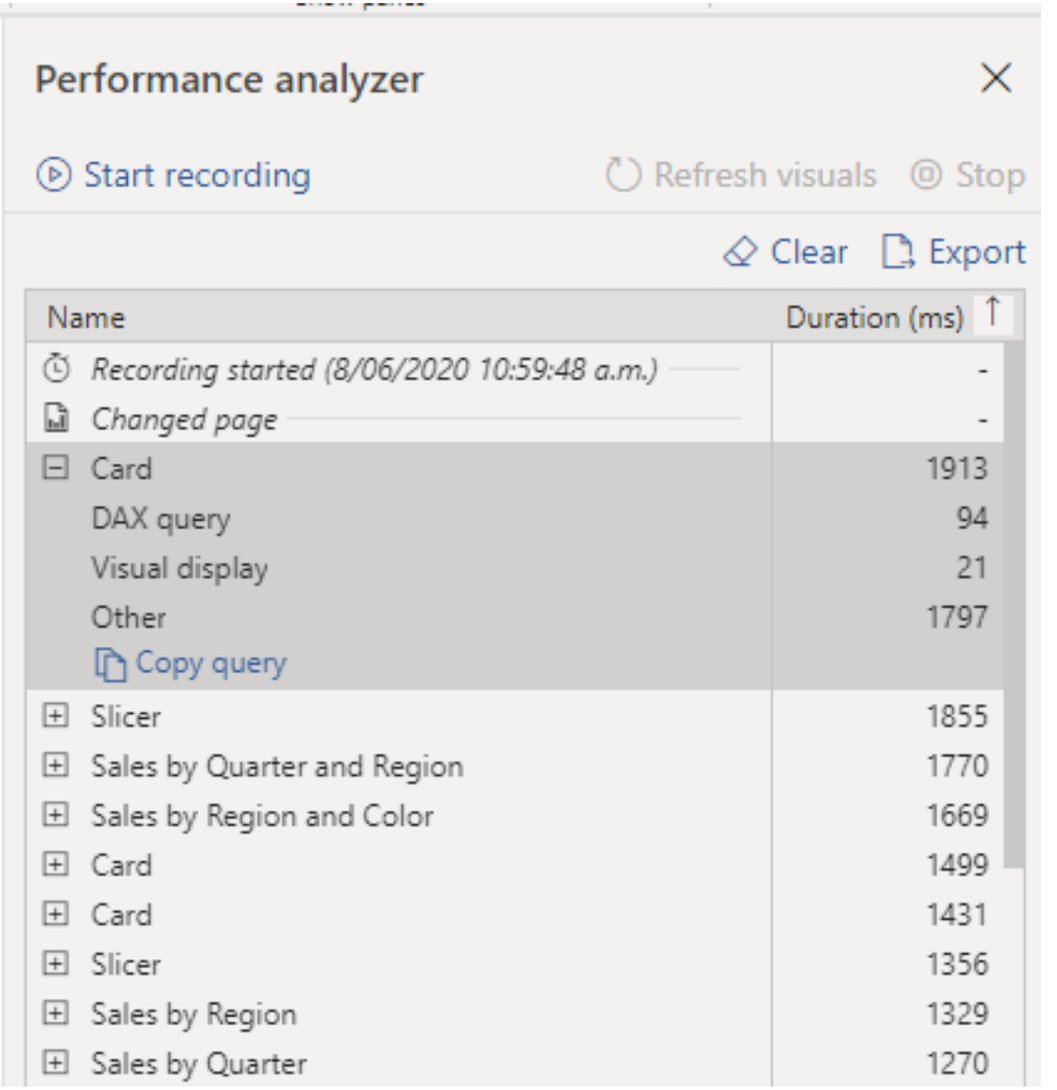


- Find out how each report element is performing.
- Measure report elements during user interaction.
- Detect which aspects are least or most resource intensive.

Microsoft Power Platform

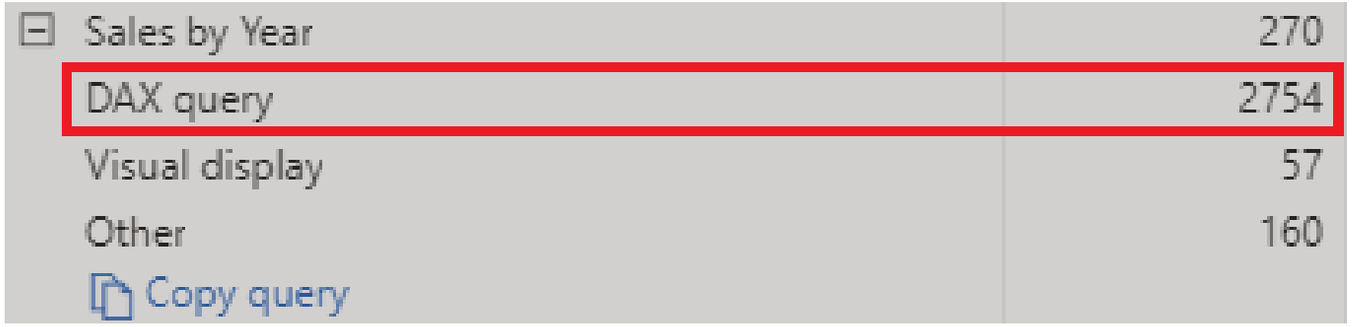
Review Performance Results

- Log information shows duration to complete each task.
- Duration value indicates the difference between the start and end timestamp for each operation.



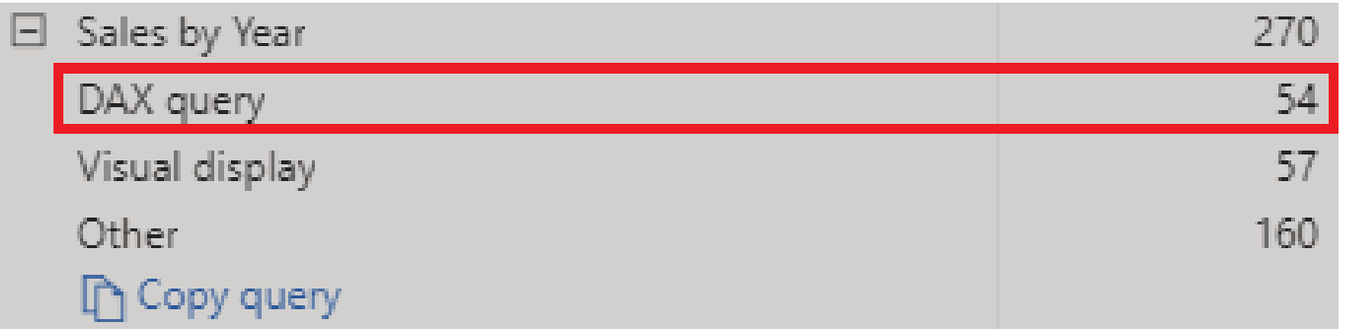
Microsoft Power Platform

Analyze Query Plans



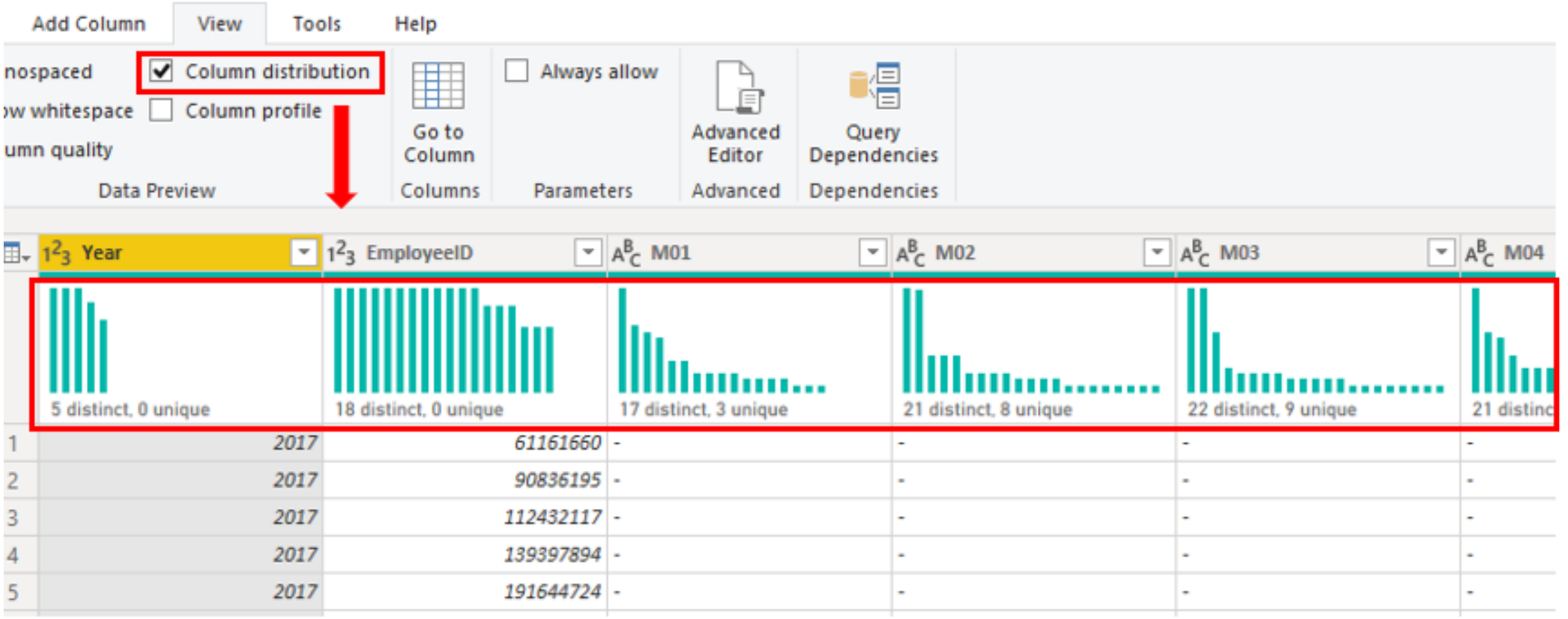

```
Count Customers =
CALCULATE ( DISTINCTCOUNT (
Order[ProductID] ), FILTER ( Order,
Order[OrderQty] >= 5 ) )
```

```
Count Customers =
CALCULATE ( DISTINCTCOUNT (
Order[ProductID] ), KEEPFILTERS
(Order[OrderQty] >= 5 ) )
```



Microsoft Power Platform

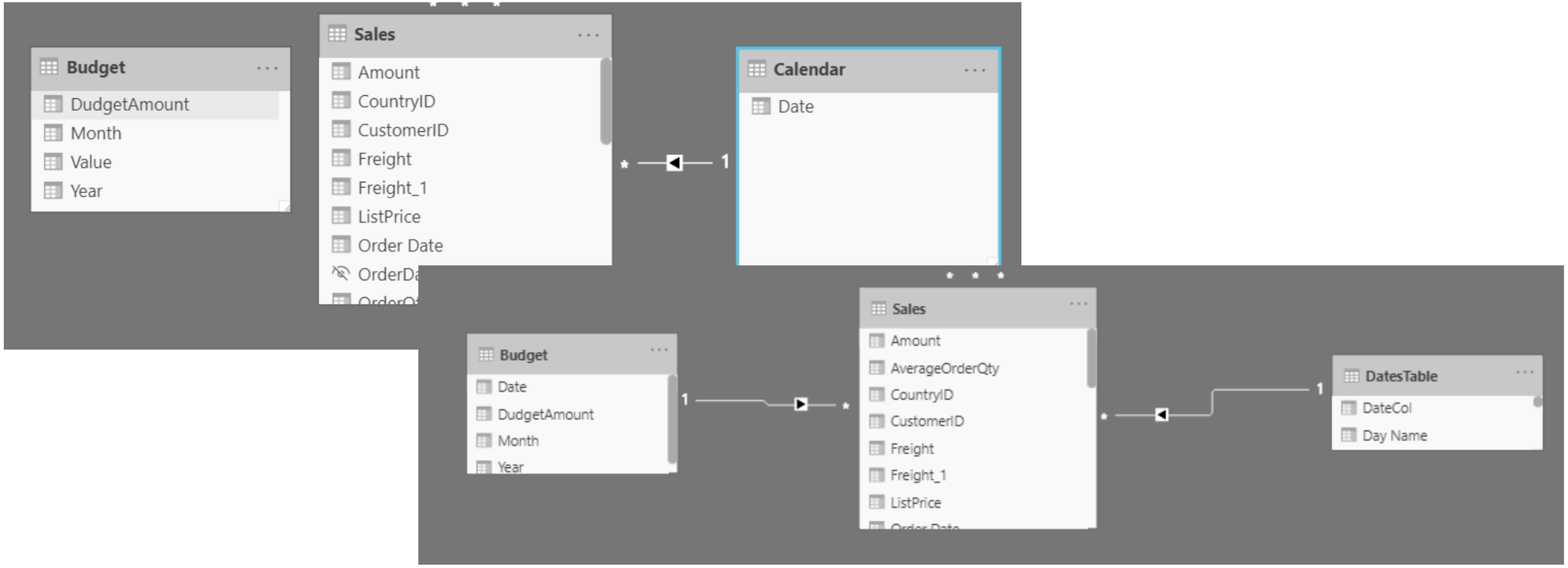
Reduce Cardinality



Microsoft Power Platform

Implement Table Granularity

Granularity: The lowest level that data can be in a set of data.



Microsoft Power Platform

Review Questions

- Q01 – What benefit do you get from analyzing metadata?
- A01 – The benefit of analyzing metadata is that you can clearly identify data inconsistencies with your dataset.

- Q02 – Which tool enables you to identify bottlenecks that exist in code?
- A02 – Performance Analyzer

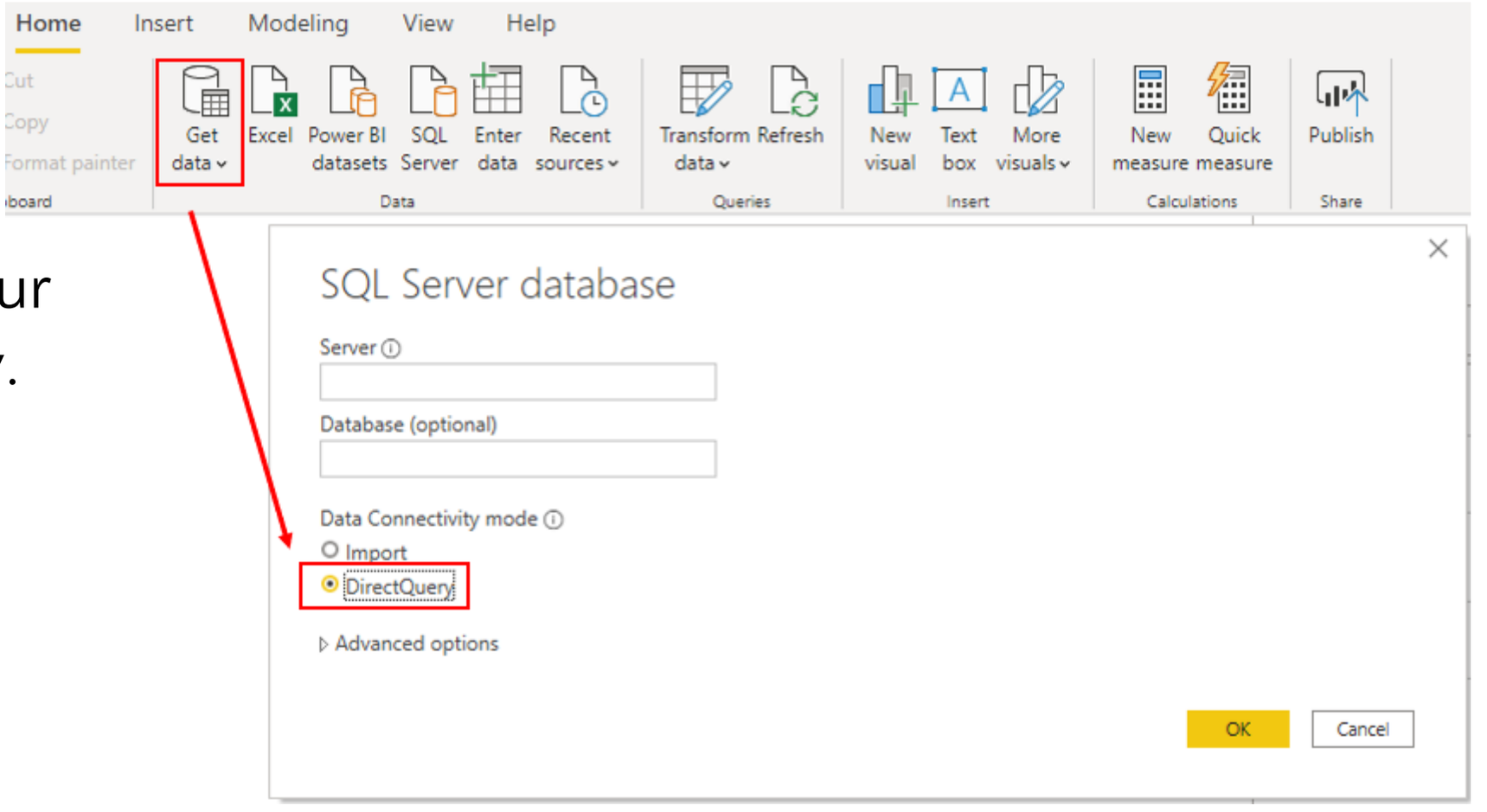
- Q03 – What is cardinality?
- A03 – The direction that the data flows in a relationship between tables.

Lesson 2: Optimize DirectQuery Models

Microsoft Power Platform

Introduction to DirectQuery

Connect directly to your data source repository.



Microsoft Power Platform

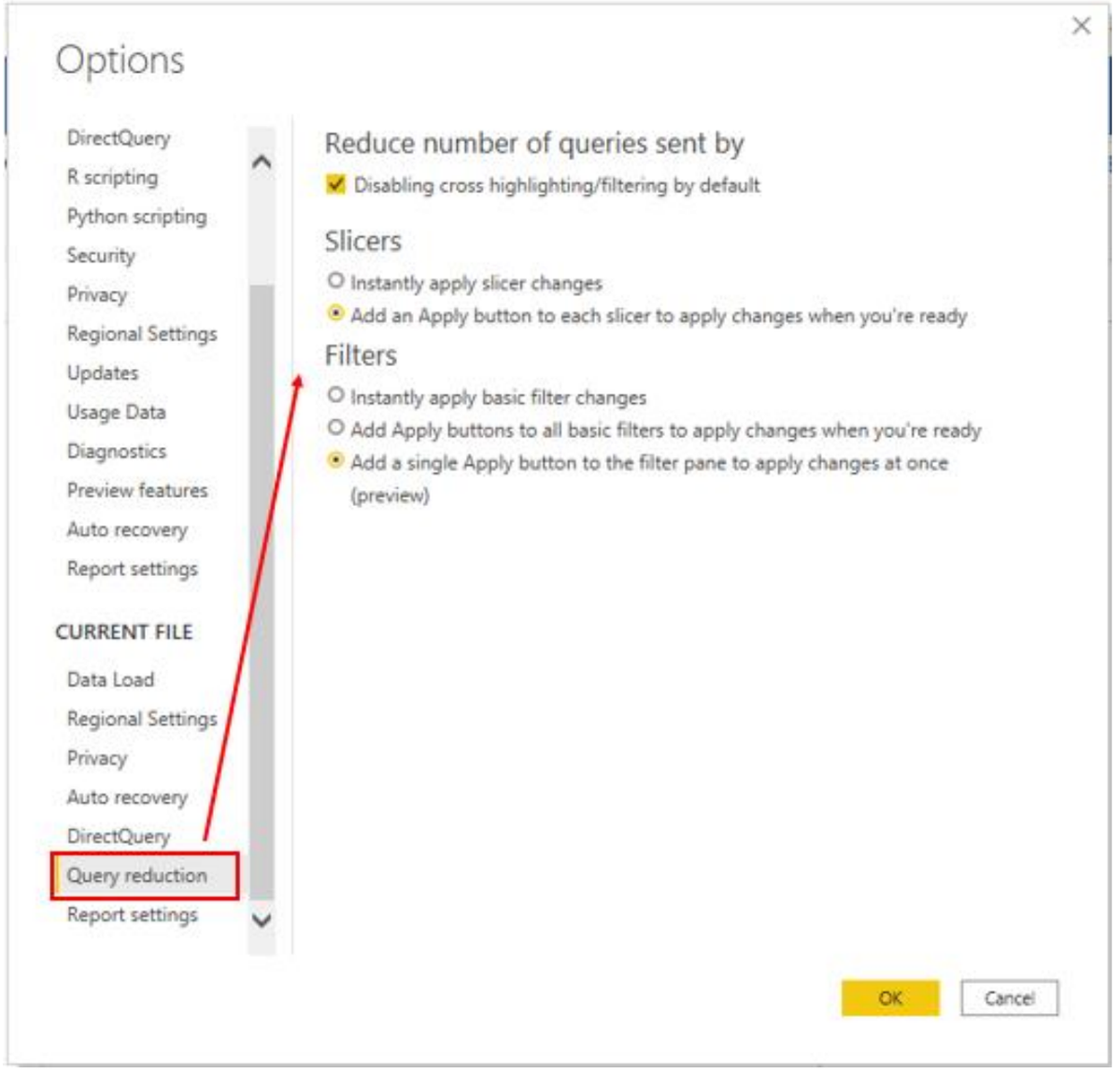
Implications of using DirectQuery

- Benefits:
  - Where data changes frequently.
  - Near-real time reporting is needed.
  - Supports large data volumes.
  - Supports multi-dimensional data.
- Limitations:
  - Performance: Depends on the underlying data source.
  - Security: Understand how data moves between source and destination.
  - Modeling: Some modeling capabilities are limited or aren't supported.
  - Transformation: Some data transformation techniques are limited.

Microsoft Power Platform

Optimize Performance

- Steps to optimize:
  - Performance Analyzer
  - Data Source
  - Query Reduction



Microsoft Power Platform

Review Questions

- Q01 – Which Power BI option gives you the option to send fewer queries and disable certain interactions?
- A01 – Query reduction.

- Q02 – Other than Power BI, another place for performance optimization can be performed is where?
- A02 – At the data source

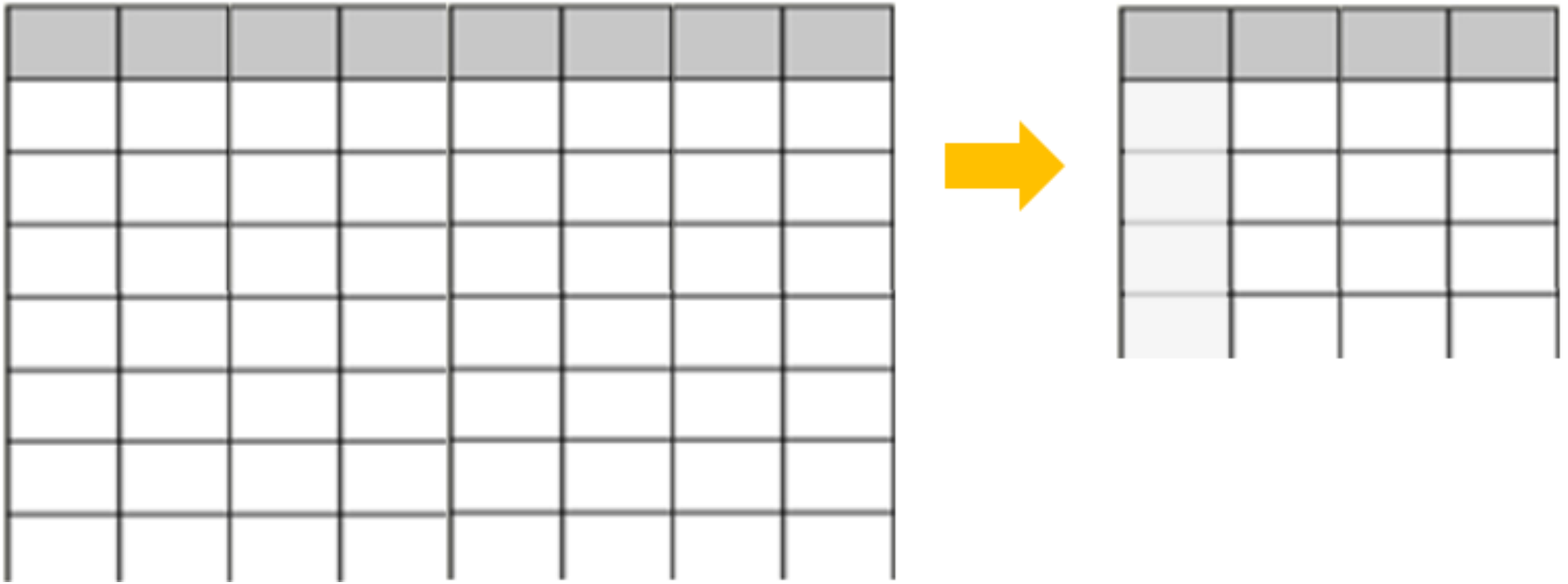
- Q03 – Is it possible to create a relationship between two columns if they are different DATA TYPE columns?
- A03 – No, both columns in a relationship must be sharing the same DATA TYPE.

Lesson 3: Create and Manage Aggregations

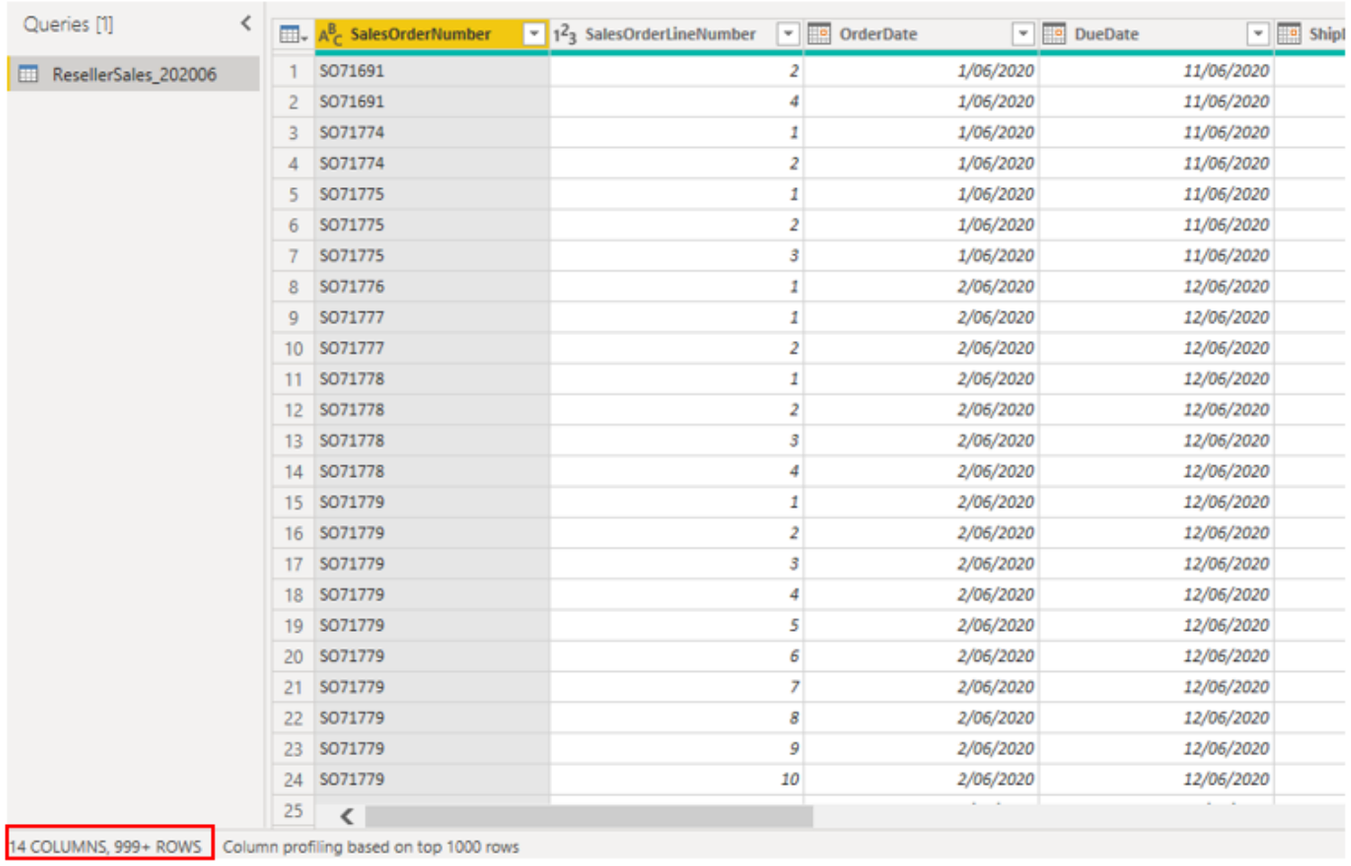
Microsoft Power Platform

Introduction to Aggregations

Reduce table size and improve query performance.



Creating Aggregations



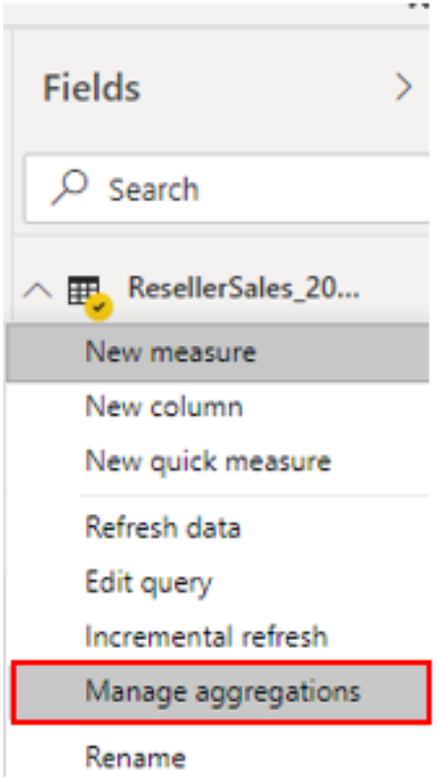
	SalesOrderNumber	SalesOrderLineNumber	OrderDate	DueDate
1	SO71691	2	1/06/2020	11/06/2020
2	SO71691	4	1/06/2020	11/06/2020
3	SO71774	1	1/06/2020	11/06/2020
4	SO71774	2	1/06/2020	11/06/2020
5	SO71775	1	1/06/2020	11/06/2020
6	SO71775	2	1/06/2020	11/06/2020
7	SO71775	3	1/06/2020	11/06/2020
8	SO71776	1	2/06/2020	12/06/2020
9	SO71777	1	2/06/2020	12/06/2020
10	SO71777	2	2/06/2020	12/06/2020
11	SO71778	1	2/06/2020	12/06/2020
12	SO71778	2	2/06/2020	12/06/2020
13	SO71778	3	2/06/2020	12/06/2020
14	SO71778	4	2/06/2020	12/06/2020
15	SO71779	1	2/06/2020	12/06/2020
16	SO71779	2	2/06/2020	12/06/2020
17	SO71779	3	2/06/2020	12/06/2020
18	SO71779	4	2/06/2020	12/06/2020
19	SO71779	5	2/06/2020	12/06/2020
20	SO71779	6	2/06/2020	12/06/2020
21	SO71779	7	2/06/2020	12/06/2020
22	SO71779	8	2/06/2020	12/06/2020
23	SO71779	9	2/06/2020	12/06/2020
24	SO71779	10	2/06/2020	12/06/2020

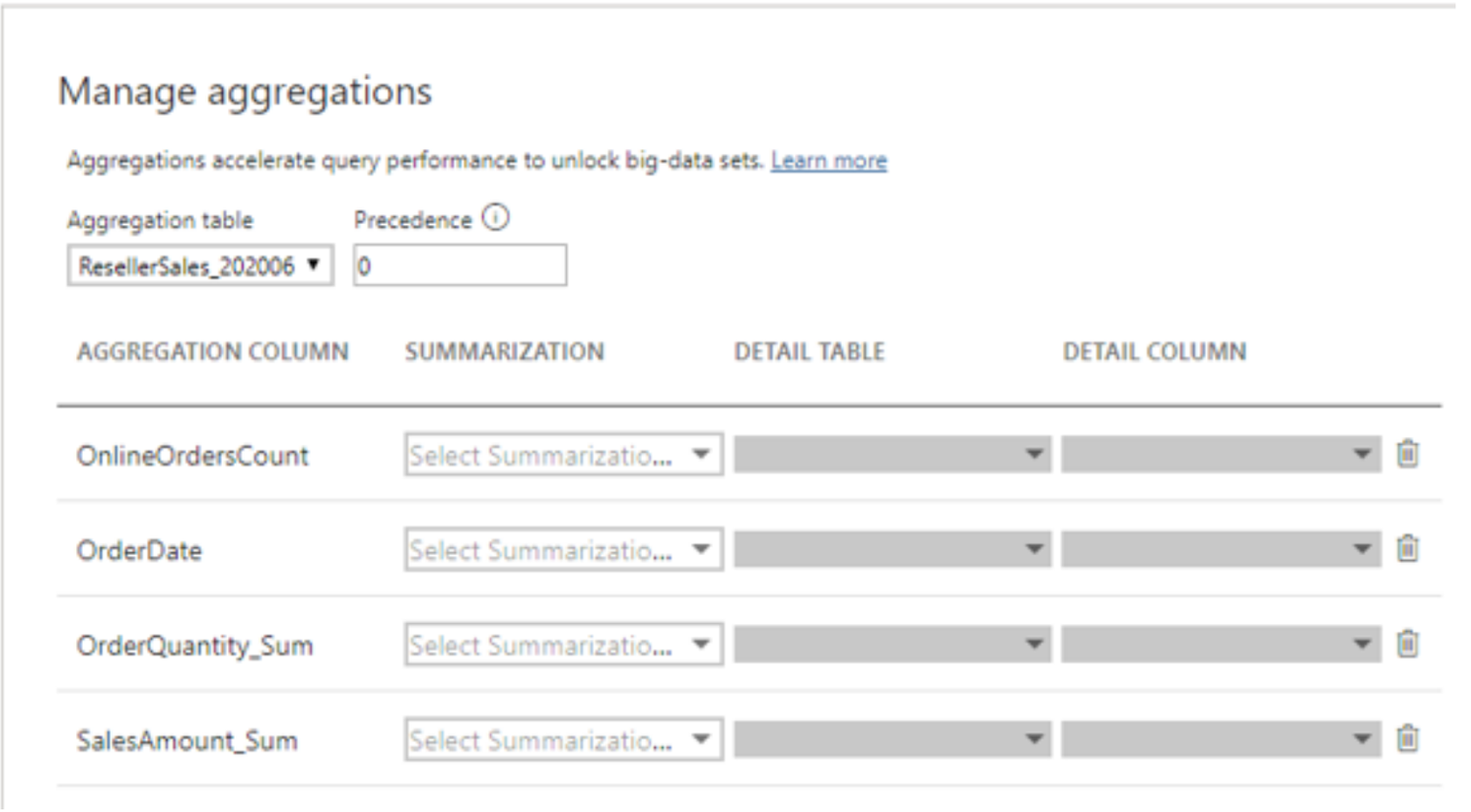
- Determine aggregation level.
- Decide appropriate creation method.

22	22/06/2020	55	73935.41	129
23	23/06/2020	116	191212.91	371
24	24/06/2020	20	11193.33	26
25	25/06/2020	62	65857.75	183

Microsoft Power Platform

Managing Aggregations





Microsoft Power Platform

Review Questions

- Q01 – A critical aspect of data aggregation is that it allows you to focus on what?
- A01 – The important and most meaningful data.

- Q02 – Before you start creating aggregations, you should first decide what?
- A02 – The grain (level) on which to create them.

Microsoft Power Platform

Module Overview

We covered the following concepts:

- Data model performance optimization
- DirectQuery model optimization
- Aggregations

Microsoft Power Platform

References

- DA-100 Optimize a model for performance in Power BI

https://docs.microsoft.com/en-us/learn/modules/create-measures-dax-power-bi/