

Advanced Analysis & KPI's with DAX

As an intermediate user, you should already have a good foundation in the basics of DAX, including using basic aggregation functions such as SUM, AVG, and MAX, as well as more advanced functions such as CALCULATE and FILTER. You should also be familiar with the different types of relationships that can exist between tables in a data model, as well as external tools like DAX Studio and/or Tabular Editor. In this course, we will take your skills to the next level by diving deeper into these topics and introducing you to more advanced functions and practices.

Here are some of the key topics we will cover:

- **Time Intelligence Functions:** These functions allow you to perform calculations on dates, such as year-to-date totals or comparing values across different time periods. Some of the most useful time intelligence functions include TOTALYTD, SAMEPERIODLASTYEAR, and DATESBETWEEN. You'll also learn how to leverage Calendar OFFSET columns for easy Time Intelligence filtering.
- **Date & Time Dimension Tables:** Some models require multiple date tables and or time dimension tables. For these scenarios, it's important to learn how to handle relationships and filtering between different date and time dimensions, and how to optimize the performance of their data model when working with large amounts of time-based data.
- **Filtering and Context:** In DAX, the context in which a measure is evaluated can have a big impact on the result. We will explore different techniques for controlling the filter context of a measure, including using filters and the CALCULATE function to apply context transitions.
- **Semi-Additive Measures:** Some calculations require DAX to calculate values over multiple dimensions with different aggregations. While these measures are not hard for the model to compute, they can be complex to create the desired behavior accurately. We will review the core concepts of what a semi-additive measure is, when it's required, and how to implement.
- **Working with Many-to-Many Relationships:** In some cases, you may have multiple relationships between tables in your data model. We will cover how to handle these many-to-many relationships in DAX, including using the SUMMARIZE and ADDCOLUMNS functions.
- **Row Level Security (RLS):** Row-level security can be used to ensure that users only see the data they are permitted to see, and can be implemented in a variety of ways. We will explore two RLS implementations based on dimensional security groups or username security groups. We will also utilize DAX studio and see how to test measures with an RLS role applied.

- **Performance and Optimization:** As your DAX measures get more complex, it's important to pay attention to performance. We will discuss best practices for optimizing DAX measures, including using the best function for the job and minimizing the use of expensive functions like CALCULATE.
- **Variables:** Variables are a powerful tool that allow you to store and reuse values or expressions within a DAX formula, and can help to reduce the complexity of large or nested formulas. We will cover the fundamentals of using variables in DAX, including how to define and reference variables, and how to use variables to improve the performance and readability of data models.
- **Advanced External Tool Techniques:** DAX Studio and Tabular Editor are powerful tools for working with DAX. We'll dive deeper into using DAX studio for performance and optimization, and Tabular Editor for advanced DAX model configurations such as Calculation Groups.