

13. Analysis

Creating Analysis Files

Analysis files in DBT are SQL queries that don't create objects in your data warehouse. They're useful for:

- Ad-hoc analysis
- Exploratory data analysis
- Testing complex queries
- Generating reports

Creating an Analysis File

1. Create a file in the `analyses` directory, e.g.,
`analyses/customer_lifetime_value.sql`:

sql

```
WITH customer_orders AS (  
  SELECT  
    customer_id,  
    SUM(amount) AS total_spend,  
    COUNT(order_id) AS order_count,  
    MIN(order_date) AS first_order_date,  
    MAX(order_date) AS last_order_date,  
    DATEDIFF('day', MIN(order_date), MAX(order_date)) AS  
customer_lifetime_days  
  FROM {{ ref('stg_orders') }}  
  GROUP BY 1  
)  
  
customer_lifetime_value AS (  
  SELECT  
    customer_id,  
    total_spend,  
    order_count,  
    first_order_date,  
    last_order_date,
```

```

        customer_lifetime_days,
        CASE
            WHEN customer_lifetime_days = 0 THEN total_spend
            ELSE total_spend / customer_lifetime_days * 365
        END AS annual_value,
        CASE
            WHEN customer_lifetime_days = 0 THEN 1
            ELSE customer_lifetime_days / 365.0
        END AS lifetime_years
    FROM customer_orders
)

SELECT
    c.customer_id,
    c.first_name,
    c.last_name,
    c.email,
    clv.total_spend,
    clv.order_count,
    clv.annual_value,
    clv.annual_value * 3 AS three_year_value -- Simple LTV projection
FROM {{ ref('stg_customers') }} c
JOIN customer_lifetime_value clv ON c.customer_id = clv.customer_id
ORDER BY three_year_value DESC

```

Using Analysis for Ad-hoc Queries

Running Analysis Files

To run an analysis file:

bash

```
dbt run-operation run_analysis --args '{name: customer_lifetime_value}'
```

The output will be displayed in your console.

Compiling Analysis Files

To see the compiled SQL without running it:

bash

```
dbt compile --models analysis:customer_lifetime_value
```

This will generate the compiled SQL in the `target/compiled/your_project/analyses/` directory.

Integrating with Business Intelligence Tools

Analysis files are particularly useful when working with BI tools:

1. Development Workflow:

- Write and test queries in DBT analysis files
- Use `dbt compile` to generate the final SQL
- Copy the compiled SQL to your BI tool

2. Documentation:

- Keep complex query logic in version control
- Document the analysis in the same repository as your models
- Ensure consistency between ad-hoc analysis and production models

