# Starting to explore time series data

TREND ANALYSIS IN POWER BI

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# What is a "time series"?

**Definition:**

- *A series of data points graphed in chronological order.*
- *Most commonly, it is a sequence taken at successive equally spaced points in time.*

[1] https://en.wikipedia.org/wiki/Time_series

# Use cases for time series analysis

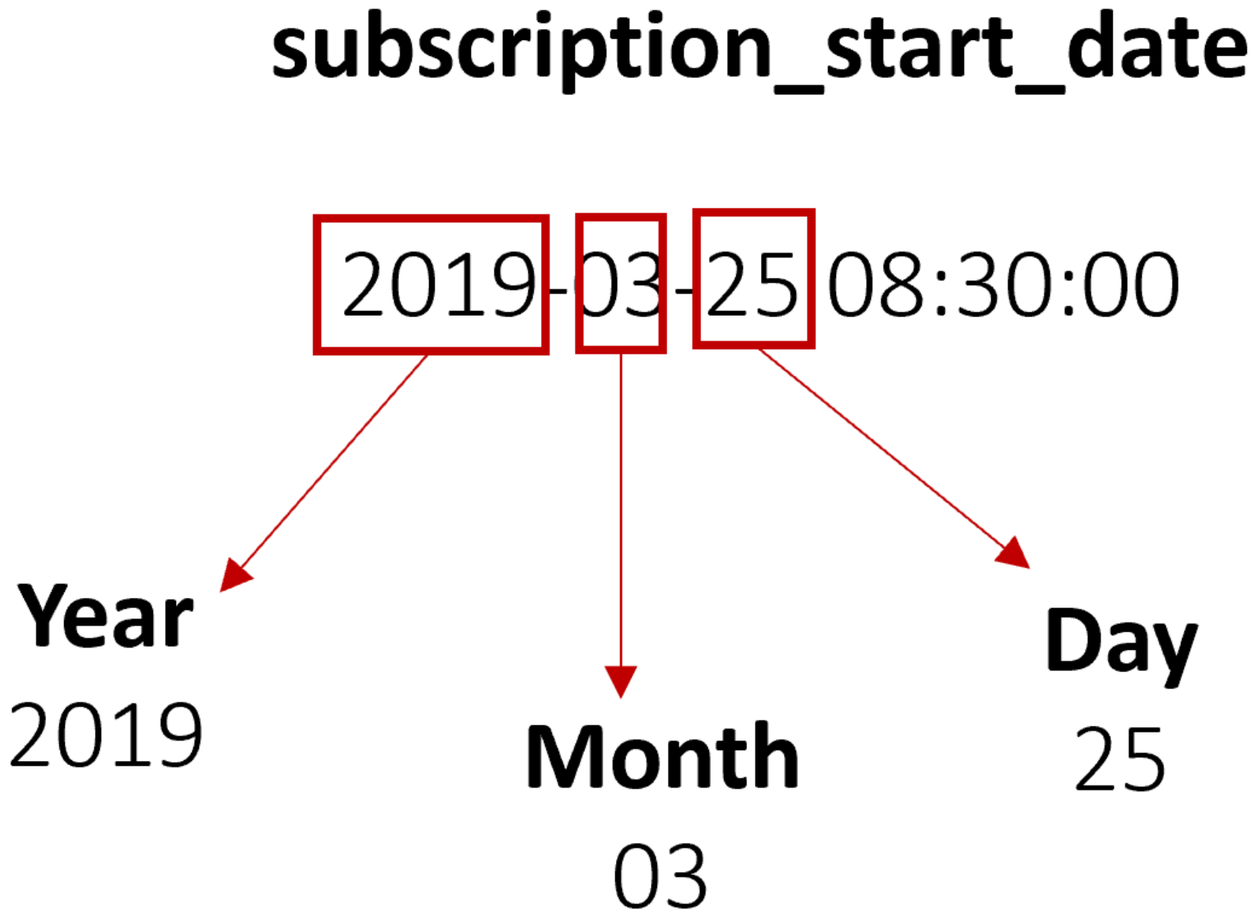
**Use Cases:**

- Patterns (e.g. cyclical) in a variable
- Season-specific trends
- Systemic challenges
- Relationships with a target outcome
- Informing a forecasting model

**Examples:**

- Weather
- Heart rate monitoring
- Quarterly sales
- Interest rates

# Analyzing at different date grains



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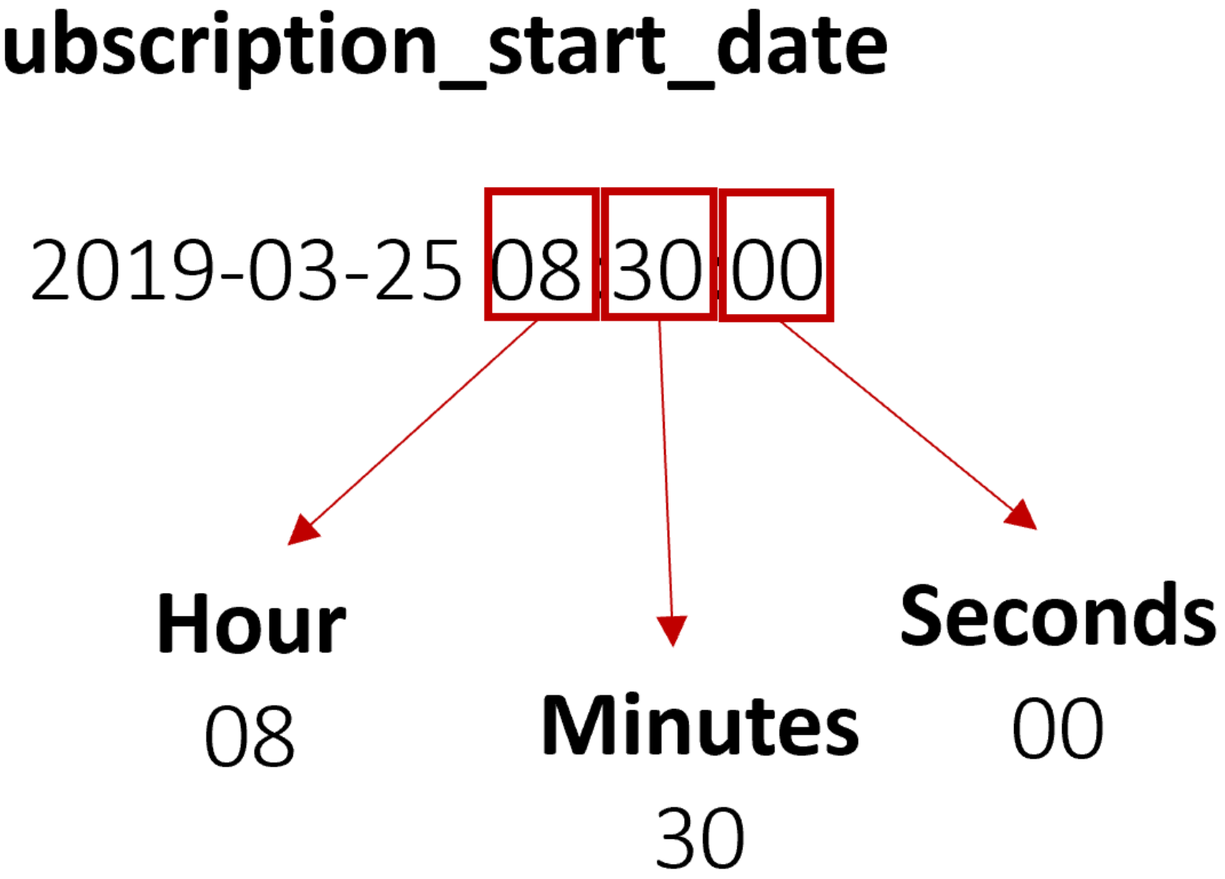
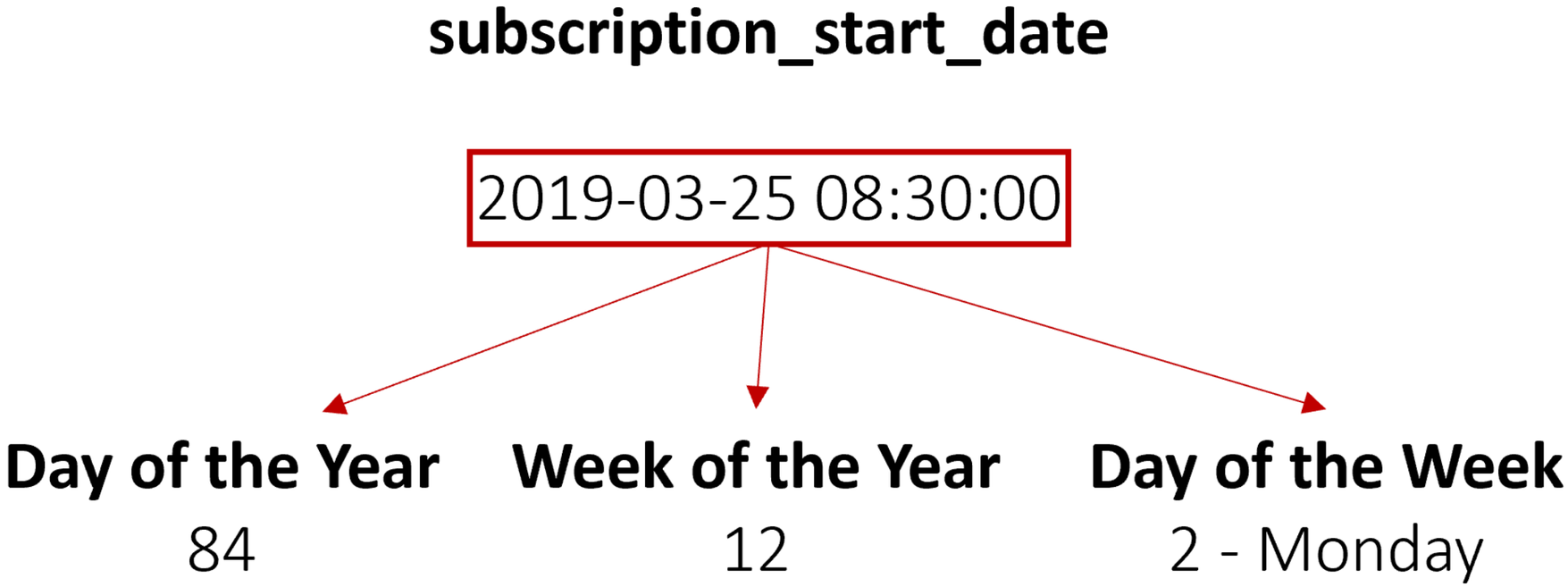


# Mutating into different time variables



# Mutating into different time variables

| **subscription_start_date** | **age**: 1,003 days | **current_date** |
| --- | --- | --- |
| 2019-03-25 08:30:00 | **age_group**: old | 2021-12-22 12:00:00 |

# Measuring the change over a period of time

## Period-over-period change

$$\frac{current_period - previous_period}{previous_period}$$

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**Period-over-period change**

$$\frac{current_period - previous_period}{previous_period}$$

| Month | Stock Price | MoM Change |
|---|---|---|
| Jan 2018 | $20.67 | -- |
| Feb 2018 | $19.79 | -4.3% |
| Mar 2018 | $21.34 | 7.9% |
| Apr 2018 | $21.25 | -0.4% |
| May 2018 | $22.12 | 4.1% |
| Jun 2018 | $22.85 | 3.3% |

# DAX functions for dates

`DATE()` : constructs a date value from parts (e.g. year, month, and day)

`LEFT()` : extracts a given number of characters from a set of characters, starting from the left side.

`RIGHT()` : extracts a given number of characters from a set of characters, starting from the right side.

`MID()` : extracts a given number of characters from a set of characters, starting from a defined place in the set.

`WEEKDAY()` : returns the day of the week as a number; default is to use the number 1 for Sunday.

# Let's practice!

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# Exploring AirBnB time series

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