Benchmarks Models

# 1. Seasonal Naïve Approach

The naïve approach is considered to be the most cost-effective forecasting model; it also serves as a benchmark for developing much more sophisticated models. In the naïve approach, the forecast is taken as the previously observed value; this type of forecast is only suitable for time series data. This approach works best if the previous observation has a high similarity with the current; it is sometimes called the similar day approach. If there is seasonality in the time series; the seasonal naïve approach is preferable, because forecasts will be equal to the value from the last season. The seasonal naïve approach is mostly useful when there is very high level of seasonality in the dataset.

The naïve approach, when used as a baseline for other methods; it gives us an understanding about how much value is being added to the current forecasting process. The reason for the benchmarking is because, thou the naïve approach is very simple and straightforward; it performs very well in time series when there is a very high similarity in the data. The formula for the naïve approach, and the seasonal naïve approach are shown below respectively;



Where;  is the time series,  is the forecast horizon, is the seasonal period, and is the integer part of . In summary, the naive formula takes the last observed value as the future value, while the seasonal naive formula takes the value from the previous season.

# 2. Auto Regressive Integrated Moving Average with Exogeneous Input (ARIMAX)