1. Descriptive Techniques

Descriptive Techniques

Types of Variation

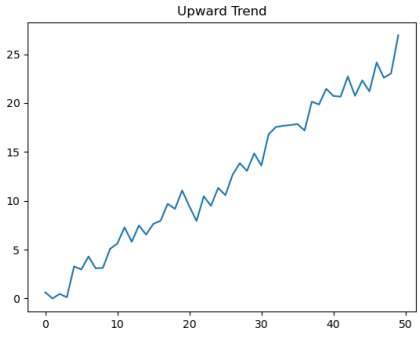
When the graph of a time series is plotted, we observe some haphazard changes in the graph over time. A part of this change, called the **systematic part** and can be accounted for while the remaining part is irregular. The systematic parts consist of :

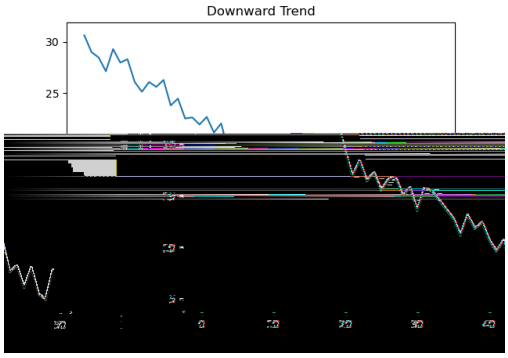
- Secular Variation / Trend
- Seasonal Variation
- Cyclical Variation

Thus the value of the time series at time t, Y_t is the resultant of the combined effect of trend (T_t), seasonal variation (S_t), cyclical fluctuations (C_t) and irregular variations (I_t)

Trend

The smooth, regular, long-term movement of a series observed over a long period of time is called **trend**





Seasonal Effect

Cyclic Changes

Irregular Fluctuations

Model

Additive and Multiplicative

Measurement of Trend

To measure trend we need to eliminate the other elements, mainly cyclical and seasonal since irregularity is hard to remove.

Methods of Measuring trend

1. Method of free-hand curve fitting (pretty much useless)
2. Method of moving averages
3. Method of mathametical curves

> **Note**
> if your data has cyclicality and proper seasonality, method of moving average is the best. If your data doesn't have cyclicality then method of mathametical curves is preferred.