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Summary

The provided web content discusses the concept of stationarity in time



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Stationarity in Time Series



Stationary vs non-Stationary Time Series

A time series is said to be stationary when its statistical properties are constant and there's no seasonality in the time series. For a time series to be stationary,

- The mean of the time series is constant.
- The standard deviation of the time series is constant.
- There's no trend or seasonality in the time series.

In a non-stationary time series, the statistical properties change over time, and there is a trend and seasonality component.

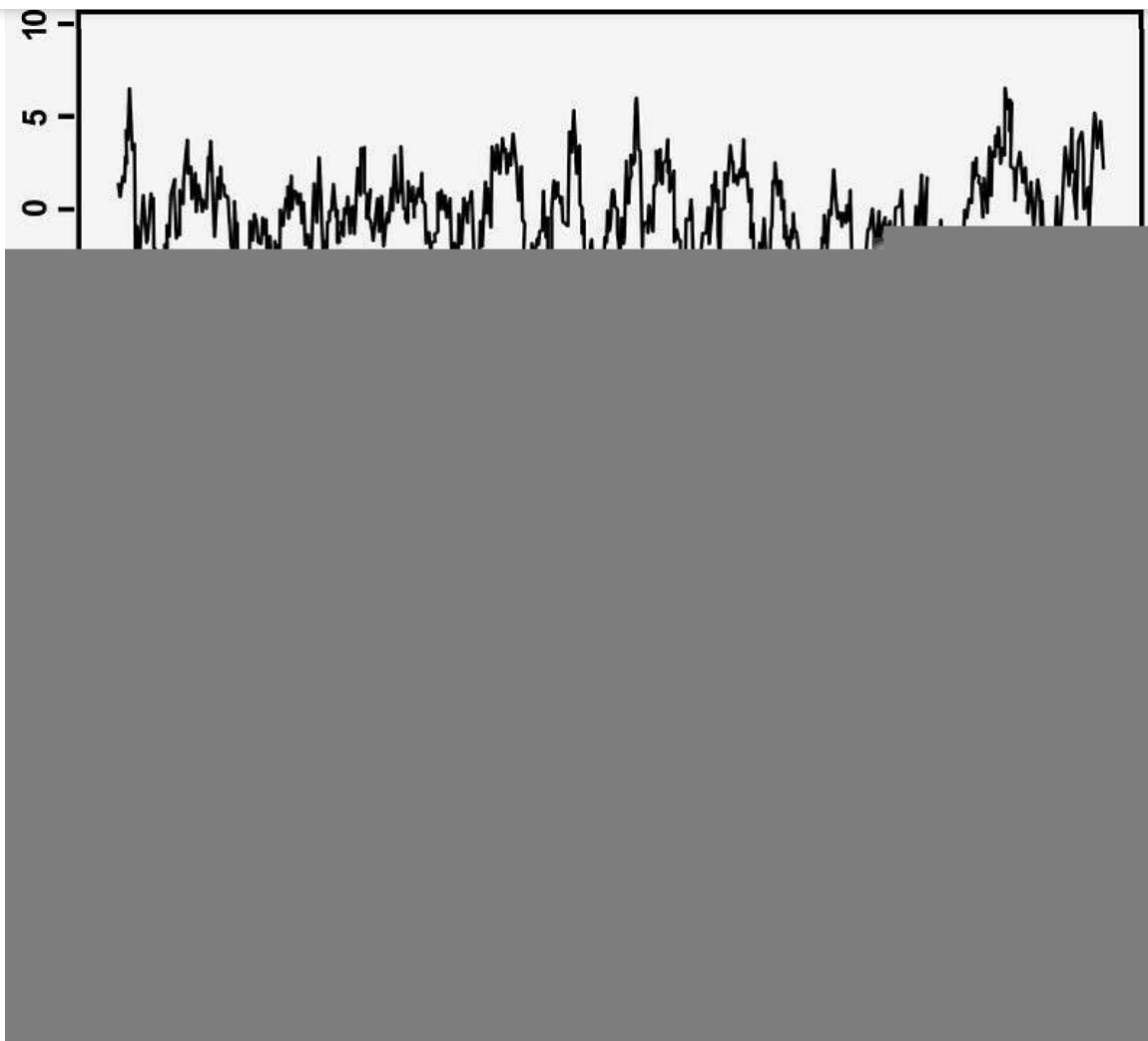


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Importance of Stationary

means that the relationships and patterns observed in the data are reliable and can be used to make accurate forecasts.

In contrast, a non-stationary time series has statistical properties that change over time, which can make it difficult to draw reliable inferences or make accurate forecasts. As the statistical properties of the data keep changing, any model or analysis based on a non-stationary time series may not provide reliable results.

Therefore, analyzing stationary data is easier and more reliable than non-stationary data. Stationary data allow for the use of simpler models and statistical techniques, as well as more accurate predictions. Using non-stationary data can lead to inaccurate and misleading forecasts, as the underlying statistical properties of the data keep changing with time.

Test for Stationarity

To test whether a time series is stationary, there are several methods that can be used. Here are some common techniques:

- **Visual Inspection:** Plot the time series data and observe whether there is a clear trend or seasonality. If the data appears to fluctuate around a consistent mean with no noticeable pattern, it is likely stationary.

constant, the time series may be considered stationary.

- **Dickey-Fuller Test/Augmented Dickey-Fuller (ADF) Test:** This is a statistical test that checks for the presence of a unit root in the time series. If the test indicates that there is no unit root, then the time series is likely stationary.
- **Kwiatkowski-Phillips-Schmidt-Shin (KPSS) Test:** This test checks for the presence of a trend or structural break in the time series. If the test indicates that there is no trend or structural break, then the time series may be considered stationary.

References

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