Week 2

Stationarity, Autocorrelation and Seasonality

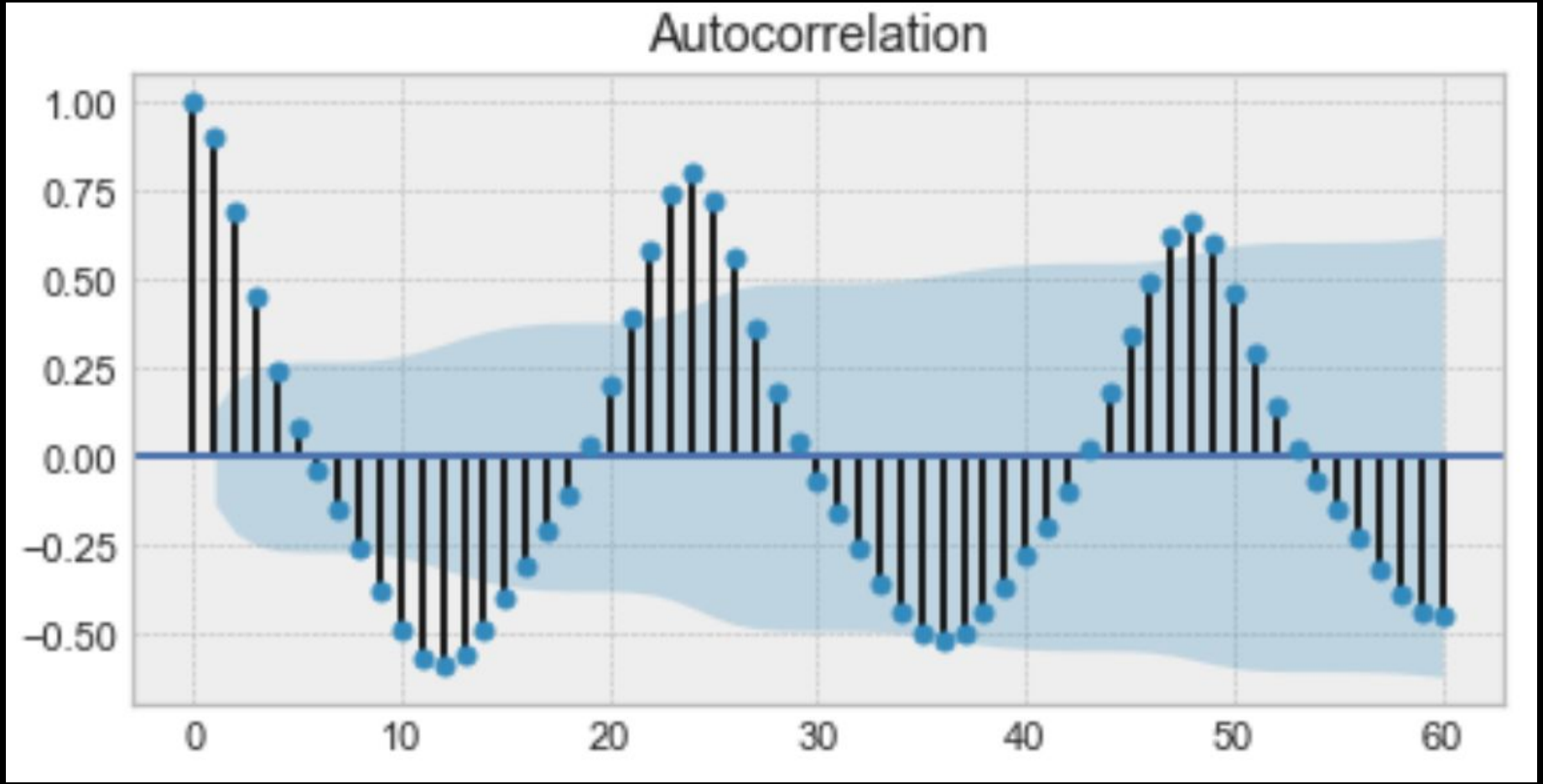
Autocorrelation

A few more things.

Informally, **autocorrelation** is the similarity between observations as a function of the time lag between them

Autocorrelation is a type of serial dependence. Specifically, autocorrelation is when a time series is linearly related to a lagged version of itself. By contrast, correlation is simply when two independent variables are linearly related.

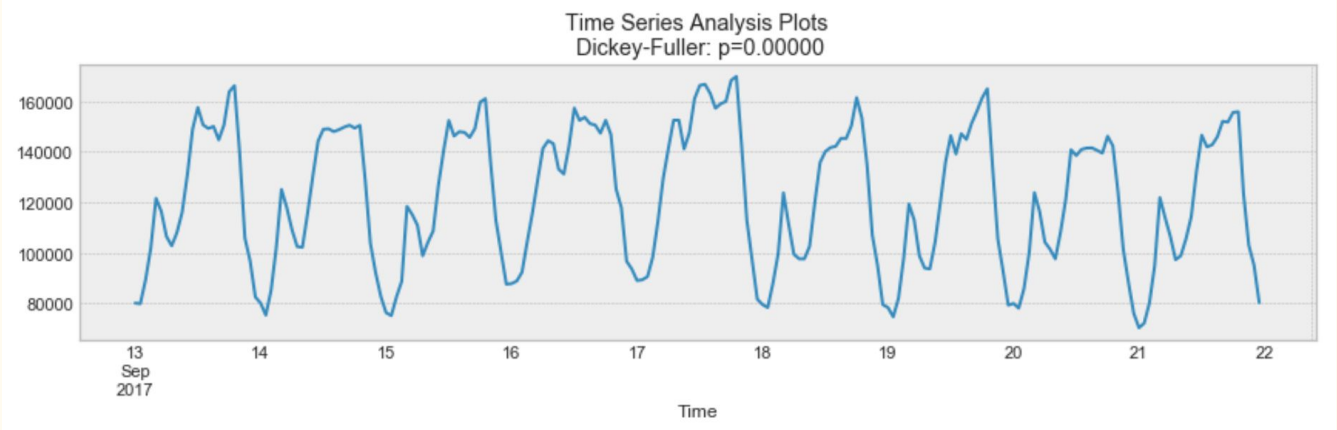
Perason Correlation Coefficient - The Pearson correlation coefficient is a measure of the linear correlation between two variables. The Pearson correlation coefficient has a value between -1 and 1, where 0 is no linear correlation, >0 is a positive correlation, and <0 is a negative correlation. P


Autocorrelation
1.00
0.75
0.50
0.25
0.00
−0.25
−0.50
0
10
20
30
40
50
60

Seasonality

A few more things.

Seasonality refers to periodic fluctuations. For example, electricity consumption is high during the day and low during night, or online sales increase during Christmas before slowing down again



Stationarity

A few more things.

In the most intuitive sense, stationarity means that the statistical properties of a process generating a time series do not change over time. It does not mean that the series does not change over time, just that the *way* it changes does not itself change over time.