In an AR model, we also check the *normality*, *homoscedasticity*, and *independence* of the residuals to confirm they resemble *white noise*. These checks ensure that the AR model has captured all meaningful patterns, leaving only random noise.

Here's a breakdown of how each condition applies to white noise in AR models:

1. **Normality**: While strict normality isn't always required, many statistical tests and confidence intervals assume that the residuals are approximately normally distributed. This can be tested using the Shapiro-Wilk test, Anderson-Darling test, or a Q-Q plot.
2. **Homoscedasticity**: The residuals should have constant variance over time, similar to what we check for in linear regression. Variability should be consistent and not show any increasing or decreasing pattern over time. You can check this by plotting residuals or using tests like the Breusch-Pagan test.
3. **Independence**: The residuals should show no autocorrelation (correlation over time), as any remaining correlation would indicate patterns the AR model didn't capture. The Ljung-Box test or examining the residual autocorrelation function (ACF) plot can help determine whether residuals are truly independent.

If these tests confirm normality, homoscedasticity, and independence, we can be confident that the residuals are indeed white noise, and our AR model is likely capturing the time-dependent structure in the data well.