Lucid Notes

Hypothesis Tests

Transformation (Stabilization of Variance)

|  |  |  |
| --- | --- | --- |
| Test Name | R Package | R code |
| BoxCox Transformation | forecast | BoxCox.lambda(x) |

Trend Test

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Test Name | Null Hypothesis | Alt Hypothesis | R Package | R code |
| Mann-Kendall | There is no trend present | There is a trend present | trend | trend::mk.test(x) |
| Sen’s Slope Test | There is no trend present | There is trend present | trend | trend::senMK(x) |

Stationary Test

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Test Name | Null Hypothesis | Alt Hypothesis | R Package | R code |
| ADF | The series is **NOT** stationary | The series **IS** stationary | tseries | adf.test(x) |
| PP | There series is **NOT** stationary | The series **IS** stationary | tseries | pp.test(x) |
| KPSS | The series **IS** stationary | The series is **NOT** stationary | tseries | kpss.test(x) |

Normality Test

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Test Name | Null Hypothesis | Alt Hypothesis | R Package | R code |
| Shapiro-Wilk Test | The data is drawn from a normal distribution | The data is not drawn from a normal distribution | stat | Shapiro.test(x) |
| Kolmogorov Smirnov Test | The data does not differ significantly from a normal distribution’s CDF | The data differ from a normal distribution’s CDF | stat | ks.test(x, ‘pnorm’, mean=mu, sd = sigma) |
| Anderson-Darling test | The data does not deviate significantly from a normal distribution | The data deviates significantly from a normal distribtion | nortest | Nortest::ad.test(x) |

Model Diagnostic

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Test Name | Null Hypothesis | Alt Hypothesis | R Package | R code |
| Ljung-Box Test | The model is appropriate | The model is not appropriate | stat | Box.test(x) |