| Assumptions (Pearson and Predictive Correlation) | How assumption is tested/determined | If test statistic - Value | Significance (p-value) | Assumption met? Yes or No |
|---|---|---|---|---|
| Linear Relationship | Scatterplot of interval or ratio data | | | Yes |
| Outliers assessment | Exploratory statistics (PP and QQ plot) Standardize and values > 3.29 = outliers | | | Yes |
| Independence of residuals (no autocorrelation) | Durbin-Watson's d test. Null = no autocorrelation. | 1.765 | Critical value range 1.76-1.78 (n=200) OR 1.5 < d < 2.5 | Yes (accept null) |
| Homoscedasticity | Goldfeld-Quandt Test (python) or Visual inspection of scatterplot | | | Yes |
| Residuals are normally distributed | Histogram, P-P or Q-Q plot | | | Yes |

# Linear Regression (Predictive models) Assumption Flow

Step 1

1. Linear relationships between variables
2. No significant outliers

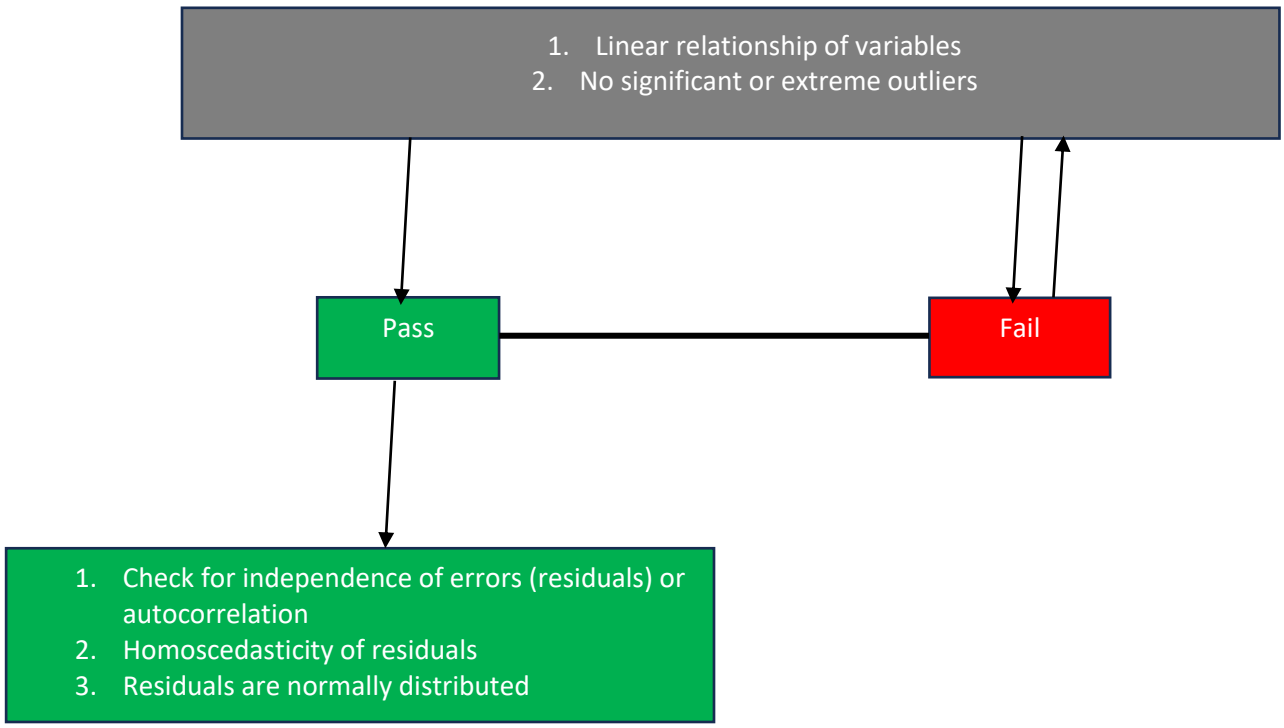
Step 2

3. Step 1 fail:
    - Corrections (remove outliers)
    - Re-assessment of step 1
4. Step 1 Pass:
    - Move to step 3

Step 3

5. Check for independence of errors (residuals) or autocorrelation
6. Homoscedasticity of residuals (variance of residuals should be constant)
7. Residuals are normally distributed

# Linear Regression Flow Chart



| Assumptions (Spearman Rank) | How assumption is tested/determined | If test statistic - Value | Significance (p-value) | Assumption met? Yes or No |
|---|---|---|---|---|
| Continuous or ordinal variables | Inherent in data | | | Yes |
| Paired variables per subject | Inherent in data | | | Yes |
| Monotonic relationship between the 2 variables | Scatterplot showing that data only takes one slope direction | | Sloped and possibly not linear (outliers accepted) | Yes |

| Assumptions (Spearman Rank) | How assumption is tested/determined | If test statistic - Value | Significance (p-value) | Assumption met? Yes or No |
|---|---|---|---|---|
| 1 continuous vs 1 dichotomous | Inherent in data | | | Yes |
| Normal continuous variable | Histogram and P-P plot | | | Yes |
| Homogeneity of variance met | Lavene's test | | | Yes |