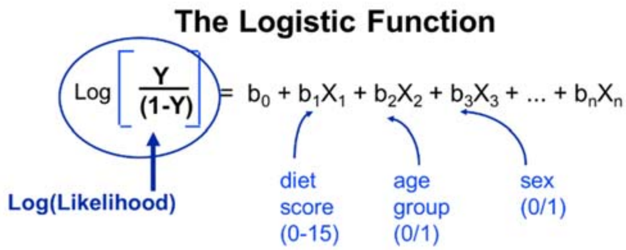
Logistics Regression



Checking Assumptions

Assumption #1: You have one dependent variable that is dichotomous (i.e., a nominal variable with two outcomes).
Assumption #2: You have one or more independent variables that are measured on either a continuous or nominal scale.
Assumption #3: You should have independence of observations and the categories of the dichotomous dependent variable and all your nominal independent variables should be mutually exclusive and exhaustive.
Assumption #4: You should have a bare minimum of 15 cases per independent variable, although some recommend as high as 50 cases per independent variable. As with other multivariate techniques, such as multiple regression, there are a number of recommendations regarding minimum sample size. Indeed, binomial logistic regression relies on maximum likelihood estimation (MLE) and the reliability of estimates declines significantly for combinations of cases where there are few cases.
Assumption #5: There needs to be a linear relationship between the continuous independent variables and the logit transformation of the dependent variable.
You only need to test the assumption of linearity for continuous independent variables. You do not need to do this for categorical independent variables (i.e., nominal or ordinal independent variables).
For a binomial logistic regression to be valid, the continuous independent variables need to be linearly related to the logit of the dependent variable. This assumption can be tested using the Box-Tidwell (1962) procedure, which requires two procedures in SPSS Statistics:
The first part of the Box-Tidwell (1962) procedure requires that all continuous independent variables are first transformed into their natural logs.
The second part of the Box-Tidwell (1962) procedure requires that you create interaction terms for each of your continuous independent variables and their respective natural log transformed variables
If the interaction term is statistically significant, the original continuous independent variable is not linearly related to the logit of the dependent variable (i.e., it has failed the assumption of linearity).
Now although it is common practice to not correct for multiple comparisons when interpreting terms in regression, it has been recommended as sensible to apply a Bonferroni correction based on all terms (including the intercept) in the model when assessing this linearity assumption (Tabachnick & Fidell, 2014).

To calculate the new alpha (α) level (i.e., p-value) for your own research, you need to divided the alpha level ($p < .05$) by the number of terms in your model. Formulaically, this is:

adjusted alpha level = original alpha level ÷ number of comparisons

Assumption #6: Your data must not show multicollinearity
Assumption #7: There should be no significant outliers, high leverage points or highly influential points. Testing for outliers using case diagnostics