Notes for page 430 – 433 of Text

The LR test on page 430-431 compares two logistic models: full model and reduced model. For example, under the logistic model (FM) with all the regressors present, to test statistical significance of these regressors jointly, the RM will have the regression coefficients all zero except β_0. This LR leads to (13.14).

The same kind of LR test (13.15), called GOF test, assesses the adequacy of a logistic regression model with a specific set of regressors. The saturated model does not involve any transformation model. Thus, if we reject the null hypothesis (i.e., logistic regression model is adequate), we will conclude that the specific logistic model is not a good fit to the data; this could mean that logit transformation is not good, logit may be okay but the linear combination of the regressors as specified is not good, or both.

On page 431-433, the notation n covers grouped cases and ungrouped cases. In ungrouped cases, each subject is a group by itself, $n_i = 1$ for all i . Then, sum of $n_i = n$ = total observations = total number of groups. In grouped cases, $n_i > 1$; Then, n = # of groups. That is why I use N = sum of n_i over n groups.

df = (# of groups) – (# of regression coefficients estimated)

HL test is used when there are no replicates on the regressors.