**Assess effect measure modification: Main effects models, product interaction terms and the constancy assumption**

* Generalized linear models can be used to estimate adjusted effect measures. Like pooling and the Mantel-Haenszel method, model-based estimates assume constancy. In this section of the lab, we will begin by testing the constancy assumption using likelihood ratio tests (LRT).
* We assess effect modification by comparing two models, such as:
  + Main effects only P(death) = β0 + β 1(X1) + β 2(X2)
  + Main effects with interaction terms P(death) = β0 + β 1(X1) + β 2(X2) + β 3(X1 \* X2)
* We evaluate the difference between the models using a) likelihood ratio test or b) the test statistic for the interaction term estimate β 3 (more on this topic below).
* The main effects model assumes constancy (i.e., the association between the outcome and X1 is the same for all levels of X2 (and the converse).

Consider the main effects model: Risk(death) = 0 + 1(bord5) + 2(male):

The RD for high birth order vs. low birth order among male children is:

RDbord5=1 vs. bord5=0 = [0 + 1(1) + 2(1)] - [0 + 1(0) + 2(1)] = 1(1)

The RD for high birth order vs. low birth order among female children is:

RDbord5=1 vs. bord5=0 = [0 + 1(1) + 2(0)] - [0 + 1(0) + 2(0)] = 1(1)

The RD for male children vs. female children among those with high birth order is:

RDmale=1 vs. male=0 = [0 + 1(1) + 2(1)] - [0 + 1(1) + 2(0)] = 2(1)

The RD for male children vs. female children among those with low birth order is:

RDmale=1 vs. male=0 = [0 + 1(0) + 2(1)] - [0 + 1(0) + 2(0)] = 2(1)