Generalized Linear Models

GLMs consist of a wide range of models, of which the ordinary linear model is a special case. Some of the assumptions are relaxed. The generalized assumptions are:

- Given the predictor variable values, the target variables are independent (this is unchanged).
- Given the predictor variable values, the target variable's distribution is a member of the exponential family (described later).
- Given the predictor variable values, the expected value of the target variable is $\mu = g^{-1}(\eta)$, $\eta = X\beta$, where g is called the **link function**, and g^{-1} is its inverse.

If the conditional distribution of the target variable is normal (which is a member of the exponential family) and the link function is simply $g(\mu) = \mu$, we have the ordinary regression model.