OLS: $\hat{Y}_i = \alpha + \beta_1 X_{1i} + \beta_2 X_{2i} + \ldots + \beta_k X_{ki}$

Binary logistic - (Hosmer & Lemershow: Communications in Statistics (1980))

$$\ln\left(\frac{p_i}{1-p_i}\right) = \alpha + \underbrace{\beta_1 X_{1i} + \ldots + \beta_k X_{ki}}_{z \rightarrow \text{logito}}$$

$$\ln\left(\frac{p}{1-p}\right) = z$$

$$\left(\frac{p}{1-p}\right) = e^z$$

$$p = e^z - p e^z$$

$$p(1+e^z) = e^z$$

$$p = \frac{e^z}{(1+e^z)}$$

$$\boxed{p = \frac{1}{1+e^{-z}}}$$

$$p = \frac{1}{1+e^{-(\alpha + \beta_1 X_1 + \ldots + \beta_k X_k)}}$$

$$-\infty \leq z \leq \infty$$

Yes (p) prob	No (1-p) prob	odds (chance)
$\frac{1}{1+e^{-z}}$	$\frac{1}{1+e^{+z}}$	