

An Extended Beta Regression Mode

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The four parameter logistic regression model is commonly used in bioassay or immunoassay experiments.

$$Y = B - \frac{B - A}{1 + e^{-(p+qx)}} + \epsilon, \epsilon \sim N(0, \sigma^2)$$

Two disadvantages:

- Parameter A and B are interpreted as the minimum and maximum of possible responses, but model allows the responses to be unbounded.
- Responses have equal variance for all possible values of covariate X .

Beta regression model has covariate depended variance, but responses are bounded between zero and one.

