H2O.ai

What is the Generalized Linear Model (GLM)?

- Class of models that relate X (inputs) to Y (output)

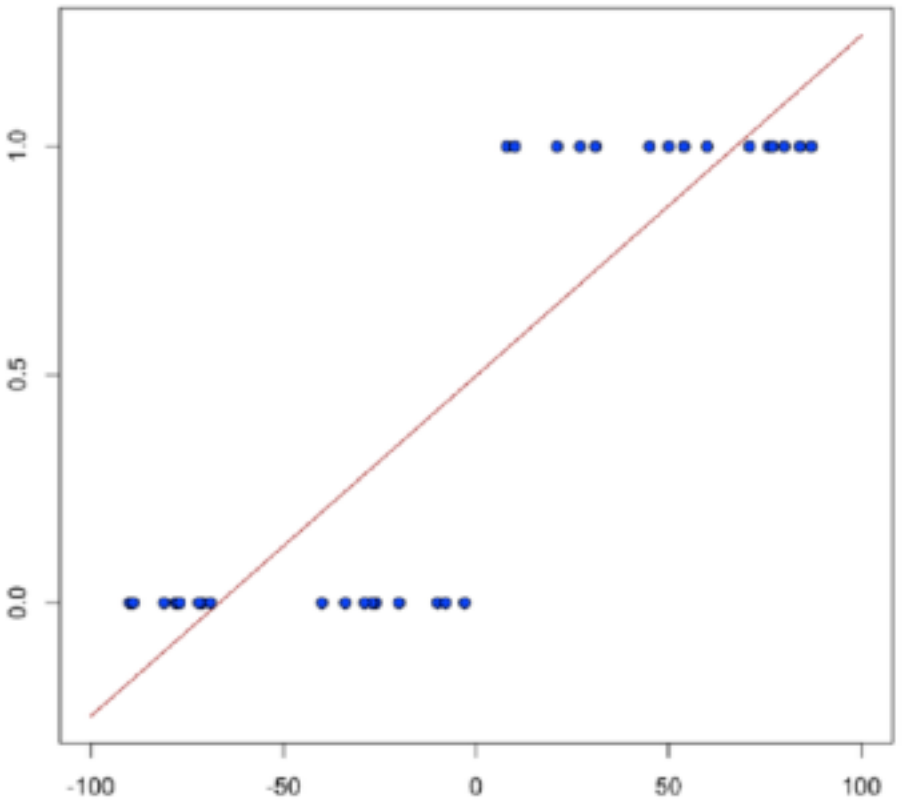
- Allows for a unification of models that have errors of the following form:
  - Normal (Gaussian)
  - Poisson
  - Gamma
  - Tweedie
  - Binomial (Logistic)
  - Multinomial
- MLE is found by iteratively reweighted least squares

$$\mathrm{E}(\mathbf{Y}) = \boldsymbol{\mu} = g^{-1}(\mathbf{X}\boldsymbol{\beta})$$

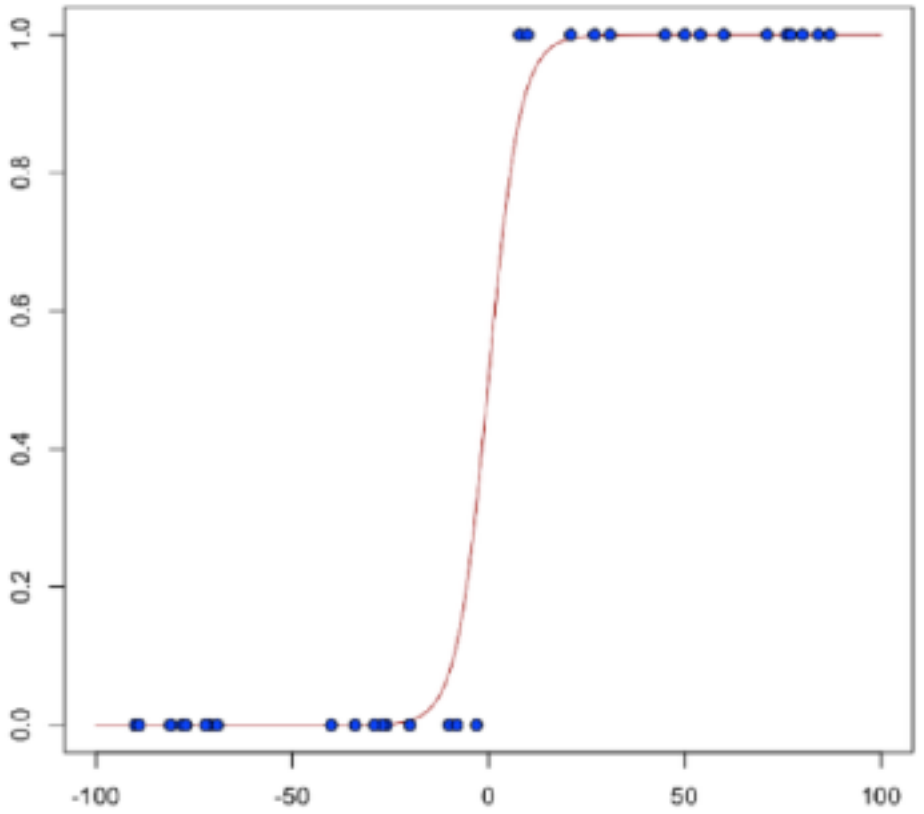
$$\operatorname{Var}(\mathbf{Y}) = \operatorname{V}(\boldsymbol{\mu}) = \operatorname{V}(g^{-1}(\mathbf{X}\boldsymbol{\beta})).$$

Same predictors, different family and link functions

Linear Regression fit
(family=gaussian,link =identity)



Logistic Regression fit
(family=binomial,link = logit)



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