

# Untitled

*Heather E. Wheeler*

*May 29, 2015*

**glmnet** solves the following problem

$$\min_{\beta_0, \beta} \frac{1}{N} \sum_{i=1}^N w_i l(y_i, \beta_0 + \beta^T x_i) + \lambda \left[ (1 - \alpha) \|\beta\|_2^2 / 2 + \alpha \|\beta\|_1 \right],$$

over a grid of values of  $\lambda$  covering the entire range.

The elastic-net penalty is controlled by  $\alpha$ , and bridges the gap between lasso ( $\alpha = 1$ , the default) and ridge ( $\alpha = 0$ ). The tuning parameter  $\lambda$  controls the overall strength of the penalty.

$\alpha = 0, 0.05, 0.1, \dots, 0.90, 0.95, 1$