

If our priors are *normally distributed*, the estimator for the posterior mean can be written as:

The diagram illustrates the components of the posterior mean estimator equation. Red lines connect the terms in the equation to their respective labels in red boxes: $\tilde{\beta}$ to Posterior mean, $(X'X + A)^{-1}$ to Precision matrix, $X'X\hat{\beta}$ to OLS estimate, and $A\bar{\beta}$ to Priors.

$$\tilde{\beta} = (X'X + A)^{-1}(X'X\hat{\beta} + A\bar{\beta})$$

Posterior mean

OLS estimate

Priors

Precision matrix