Analyzing Rat Bioassays

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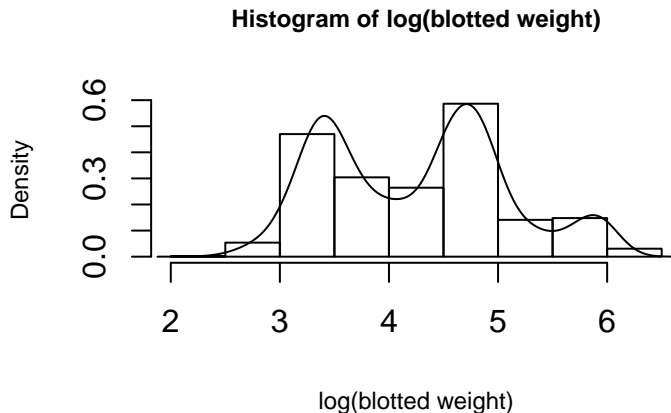# The Data

lab	categorical (19 levels)	lab where bioassay was administered
proto	categorical (4 levels)	protocol of the bioassay
group	categorical (11 levels)	label for combination of dosage levels
dose1	continuous	amount of dose 1 that the rat receives
dose2	continuous	amount of dose 2 that the rat receives
body	continuous	body weight of the rat
wet	continuous	wet uterus weight
blot	continuous	blotted utuerus weight (response)

Previous Approaches

- Mixed-effects model (random intercept and dose 1 effect by lab)
- Kernel Regression (kernels on smoothed dose 1)

Both of these approaches assume a normally-distributed response.

Current Approach

Histogram of log(blotted weight)

- Not normally distributed
- Mixture of Gaussians

Current Approach (cont.)

- ▶ Fit model using model-based clustering in JAGS
- ▶ Predict blotted uterus weight
- ▶ Check results using cross validation and posterior predictive checks