

A Bayesian regression

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$$\mathbf{y} \sim \text{Binomial}(\mathbf{p} = \frac{e^{a+b\mathbf{x}}}{1+e^{a+b\mathbf{x}}})$$

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In R syntax:

```
y[i] ~ dpois(lambda[i])  
log(lambda[i]) = a+bx[i]
```

A maximum-flexibility Bayesian GLM setup

- ▶ R
- ▶ JAGS ("Just Another Gibbs Sampler"): separate Java software akin in syntax to R
- ▶ a template to start from ...

A JAGS template

```
jagsdata <- ...

flyModel <- function(){

  # likelihood function = "model"
  for (i in 1:N){
    Y[i] ~ dpois(lambdaHat[i])
    log(lambdaHat[i]) <- beta0 + beta1 * X[i]
  }

  # priors:
  # !!!! mean and PRECISION (= 1/variance = 1/sd^2)
  beta0 ~ dnorm(0, 0.01)
  beta1 ~ dnorm(0, 0.01)
}

parameter <- ...
initfun    <- ...
fjags      <- jags(...)
```

Next time:

MCMC: what's actually going on under the hood?