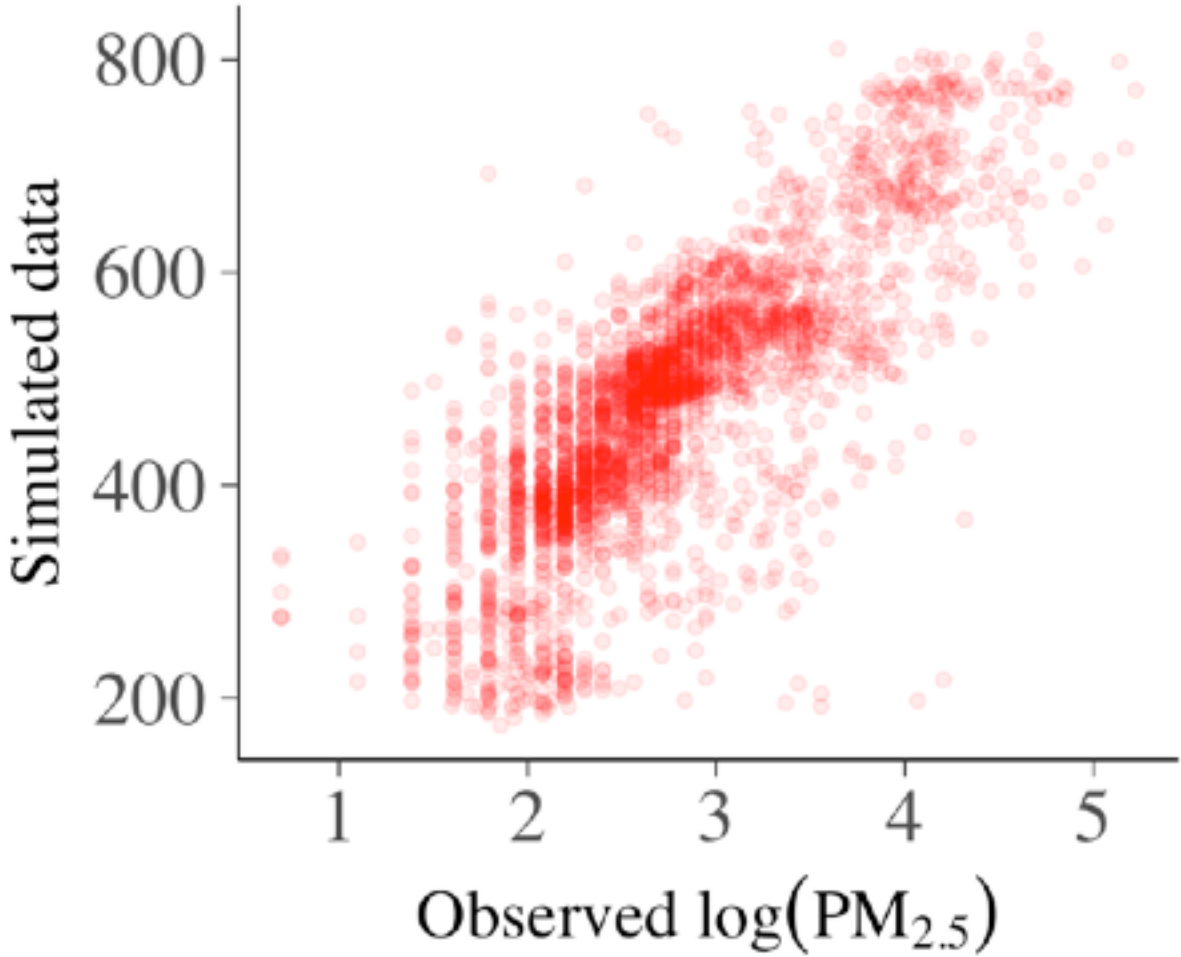
What do vague/non-informative priors imply about the data our model can generate?


800
600
400
200
Simulated data
1
2
3
4
5
Observed log(PM2.5)

$$\alpha_0 \sim N(0, 100)$$

$$\beta_0 \sim N(0, 100)$$

$$\tau_\alpha^2 \sim \text{InvGamma}(1, 100)$$

$$\tau_\beta^2 \sim \text{InvGamma}(1, 100)$$

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fake data is almost as useful as real data

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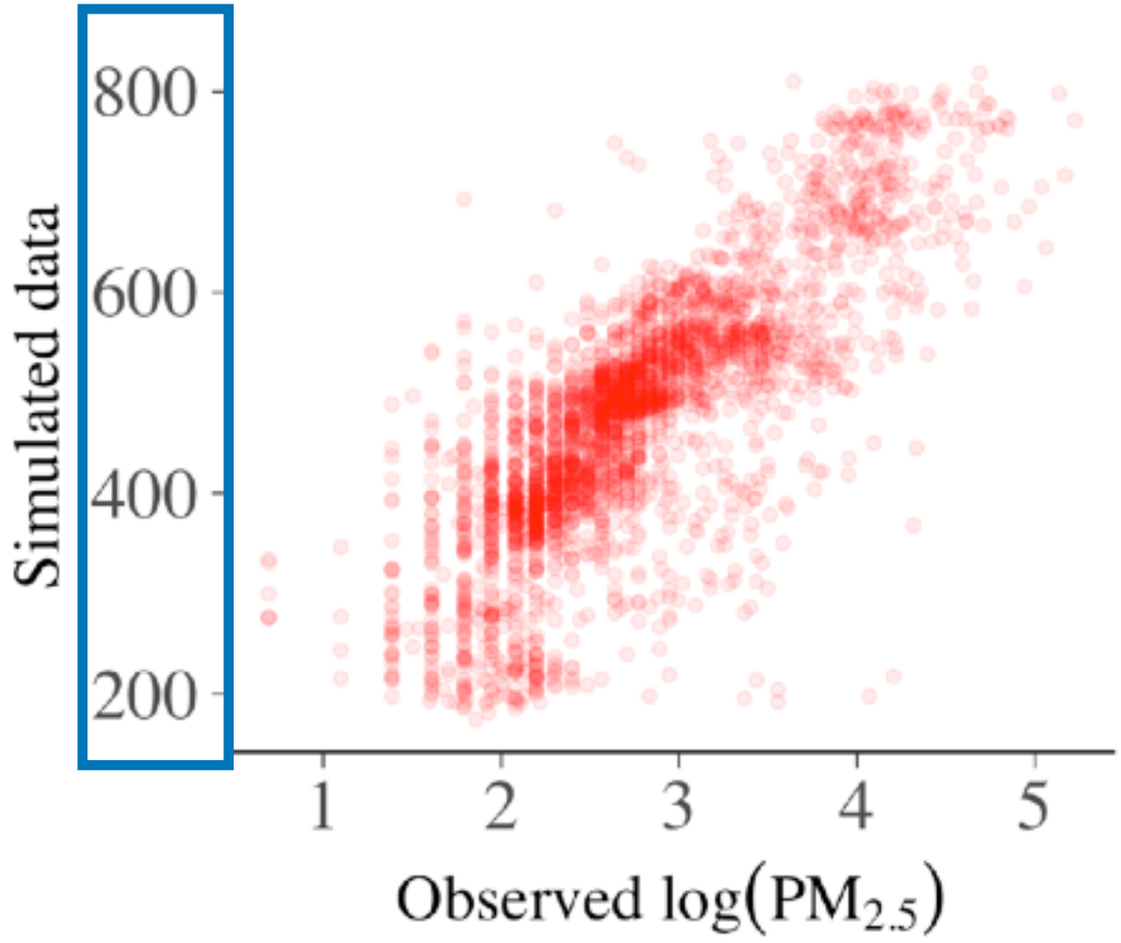

Prior predictive checking:
fake data is almost as useful as real data

- The prior model is **two orders of magnitude** off the real data
- Two orders of magnitude **on the log scale!**