

Lab Assignment 2: Bayesian Computation & Truncated Distributions

Consider two priors for θ :

1. Gamma(shape=50, scale=0.1)
2. Gamma(shape=50, scale=0.1) truncated to [4,6]

Plot both priors on the same plot. Please include this plot in your write-up.

Now, suppose $y|\theta \sim \text{Poisson}(\theta)$. Suppose further that you observe the following data (n=10): $y = (2, 1, 9, 4, 3, 3, 7, 7, 5, 7)$. Assume each y_i is conditionally independent given θ .

Plot the two posteriors on the same plot (but a different plot from the first). Please include this plot in your write-up. Report the 95% central credible interval (2.5th and 97.5th percentiles) for both posteriors and comment on the result.

Note: When submitting your assignment, please place your code at the end of your document. There is no need to include the actual output from the command line for each line of code.

1 Point Bonus: You receive a different set of data $y=(2,1,0,4,1,1,0,1,1,4)$. Using the same priors as above, plot both posteriors on a new plot. Give a brief explanation why the posterior for the truncated prior looks the way that it does.