PSYC 5090: Topics in Mathematical Psychology

Tarleton State University — Homework 4

Rubin and Baddeley (1989) measured the proportion of participants who correctly recalled details from a past colloquium talk as a function of time in years. Let's assume there were $N = 100$ participants. Then the data are as follows:

Time (years)	Number of correct recalls
0.05	38
0.25	26
0.30	22
0.60	20
0.95	11
1.30	7
1.40	16
1.60	10
1.80	8
2.50	5
2.70	1

1. Use maximum likelihood estimation to fit a power model (Model 1) and an exponential model (Model 2) to these forgetting data.
2. Plot the two models on top of the original data. Be sure to use different line types in R to distinguish your two models in the plot.
3. Compute the AIC for each model. Which is the better fit? Explain.
4. Compute the BIC for each model. Which is the better fit? Explain.
5. Use the BIC values to estimate a Bayes factor for the better model. What does this Bayes factor tell you?