

Learning outcomes: Chapter 3

1. You should know how to obtain parameters for a prior distribution for θ given some suggested prior summaries for θ . For example,
 - parameters for the gamma distribution for θ given $E(\theta)$ and $Var(\theta)$;
 - parameters for the beta distribution for θ given the mode for θ and a probability for θ .
2. You should be able to describe the *trial roulette* and *bisection* methods of prior elicitation. You should also be able to:
 - Interpret output from the *MATCH* elicitation tool;
 - explain the processes of *feedback* and *refinement*;
 - explain the role of *feedback percentiles*, and be able to transpose these into suitable questions to ask a non-statistician.
3. You should be able to explain how we might operate Bayes' theorem with *vague prior knowledge*, and you should be able to obtain posterior distributions in circumstances when our prior knowledge about θ is indeed vague.
4. You should be able to explain *prior ignorance*; you should know how to construct ignorance priors for θ , including Jeffreys priors.
5. Given a model $f(\mathbf{x}|\theta)$, you should be able to obtain the asymptotic posterior distribution for θ .

Note that Section 3.3 (Parameter Constraints) and the proof of the asymptotic posterior are non-examinable in 2020/21.