

Minimum Requirements for Project

Here are some guidelines for the project that makes up 25% of your grade. These are *minimum* requirements.

1. Find a data set that you would like to analyze. These could be from a research project in which you've been involved. If you don't have access to such data, the Internet is a great resource for data. See for example

<http://www.statsci.org/datasets.html>.

2. The data set and your model for how it was generated should not be "trivial." Examples of settings that are too trivial: (1) A one sample problem with a model having fewer than four parameters. (2) Straight line regression with normal errors. Check with me if you have any doubts about the suitability of your data set.
3. Propose a probability model that might have generated the data.
4. Provide some justification that your probability model (i.e., likelihood) is appropriate for the data. Your justification can involve the use of frequentist methods.
5. Formulate a prior distribution for the parameters of the model.
6. Find the parameter values that maximize the posterior distribution.
7. Find an approximate 95% HPD region for each parameter in the model.
8. Find an approximate 95% HPD region for some pair of parameters in your model.
9. Repeat 5-8 for a *different* prior distribution.
10. Write a report summarizing your analysis. This should include an explanation of how you chose the probability model and the prior distributions, a discussion of how the prior affects your inferences, and also your conclusions about the population from which the data were drawn.

The project is due Wednesday, December 15.