

# Re: WinBugs Conditional Formulation

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- *From:* "Anon." <[bob.ohara@xxxxxxxxxxx](mailto:bob.ohara@xxxxxxxxxxx)>
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Jean wrote:

I realize that this should probably be an easy question, but I'm drawing a mental block. Any suggestions on the following problem would be appreciated.

Problem: I have a large simulation program that, given a set of fixed input conditions, provides a random response  $D$ .

The general problem is structured:  $P(D|a,g,h) P(g) P(h) P(a | b) P(b|c) P(c)$ .  $G, H, C$  are random variables with random statistical characteristics, e.g. mean and variance are random variables. Once  $C$  is sampled, I know  $P(b|c)$  and  $P(a|b)$  [fixed probabilities]. One goal of the analysis is to characterize the CDF of  $P(D|c)$ .

It seems to me that this should be relatively easy to setup in WinBugs, but I seem to be making it more complicated than it should be. Can I treat the parameters  $P(a | b)$  and  $P(b|c)$  as just weights? Any suggestions on a WinBugs formulation would be very welcome.

No, they're stochastic nodes: draw the DAG and it should become clear. Of course, your probability densities have to be ones that BUGS supports (unless you want to start playing with the ones trick).

It's difficult to give more precise advice, without knowing the details of the model.

Bob

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