**Wk 9 Req'd Partipipation Discussion: Exercising your model**

Some modelers recommend that one should spend at least as much time "exercising" a model as the time it took to create the model. Do you agree or disagree? Why?

I would most definitely agree with that summation. Let us say that a model takes you 2 hours to complete to the point of testing. Each test you will run has the potential to fail. Simply running the battery of “first tier” tests plus recording the results will take an hour at least, assuming that nothing comes back with unexpected results. If anything comes back erroneous, you must now debug, which is necessarily a slower process as you are being meticulous and methodical. At least you should be meticulous and methodical while debugging code.

Within each test, there are subroutine tests which must be run, and debugged should anything go awry, which it always does. By this time you will likely have spent three hours at least of the running, debugging, rerunning, re-debugging, repeat, and finally recording results; before you can actually run the tests and start to record results that answer the question which you are doing all of this for. I have found that I spend close to three times as long in validating and debugging my code, before I ever get to start testing hypothesis.

## Fine guideline, a bad rule

Jeffery Carpenter posted Mar 10, 2018 12:00 PM

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Ideally, I build a model not to learn the relationships between the nodes, but rather to optimize a process or a system. And that's a model I'll use and reuse for years, not something I'll build for one problem, then discard. Therefore, ideally, I'd use the model thousands of times longer than it took to build. Take, for instance, a model of a nuclear power plant as an example of something you'd reuse often, and only modify as you brought in new components, upgraded technologies, old components begin to measurably fail/degrade, and so forth. Keep optimizing the model against the actual plant, and optimize the plant based on the analysis of the model.

Even the example from Sterman of the auto resale industry is a model where the most use came from building the model, and little use came from exercising it. The payout was in the discussion of the relationship between the used-car market and the new-car market. Once the relationship was found/proven/shown, the Eureka! moment to executives and their strategy.

Use the model as long as there's value.

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I would agree with your summation that it is a good rule, but needs to be taken as an approximation rather than a dictate. I have been finding that I can debug, validate code and document it all for far longer than I need to create or experiment with the model.

Bottom of Form