Applied Qual Overview

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Exam overview

The applied exam is 5 hours long and is typically comprised of 6 questions. This year's qual will cover material from (A) linear models and introductory Bayesian statistics, (B) GLMs and exponential families, and (C) multivariate statistics. Unlike the other two qualifying exams, there is not very much time pressure on the applied exam, so you will have plenty of time to think carefully about each question. Futhermore, the types of questions that come up on the exam are relatively predictable, so the questions from previous years are very representative of what you will see on your exam.

It is important to keep in mind that for the applied exam, *you do not need to formally justify every statement that you make*. Indeed, sometimes a question is only checking whether you know some fact. For example, in most problems, it would be fine to say "if two variables are highly correlated, then their regression coefficients are negatively correlated" without proving such a statement. Secondly, *there may be many possible correct answers*. For some questions, your goal is to come up with one good answer to the question at hand.

Tips

Here are a few tips to keep in mind for the applied exam:

- **Read the whole question first.** You should generally read the whole question, and then spend 1-2 minutes outlining which material that you learned in the first year may be relevant for the given problem.

- **Write all of your observations.** It is a good idea to write down all of your thoughts about the problem, even seemingly small observations. Furthermore, it is sometimes useful to several layers of an answer to a problem at increasing levels of complexity. If time permits, I encourage you to give several correct answers for open-ended questions.

- **Remember LMs, GLMs, and the bootstrap**. If you don't know what to do, think about these three things. In particular, for problems that ask you to come up with a model, you can almost always formulate a solution as an LM or GLM.