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Subject: Multilevel modelling (ML)

Posted by [Dsisso](#) on Tue, 22 Apr 2014 18:34:03 GMT

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Hello everybody,

I'm working on vaccine doses received by under-5 children. Precisely, each children may receive either one, two or three doses of this vaccine (DTP-1, 2 and 3 report cumulative numbers -children who received 3 doses are included in dose 2 which are also included in dose 1). In my best understanding, this outcome may be considered as a count on which I can apply Poisson or Negative binomial ML modelling techniques according to the distribution pattern (equivalence of mean and variance or not). The problem is that a colleague (statistician) has suggested to preferentially treated this outcome as ordered or unordered multinomial categories rather than a count. This seems very intriguing. Finally, I am wondering about the most appropriate choice in this situation.

Many thanks for your valuable assistance.

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Subject: Re: Multilevel modelling (ML)

Posted by [Reduced-For\(u\)m](#) on Tue, 22 Apr 2014 21:27:28 GMT

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Dsisso,

Not sure I can help here, but one basic question:

What are you trying to estimate? The sizes of various geo-socio-economic determinants of vaccination? Or...?

I think it basically comes down to what you think your variables of interest are likely to do in the world.

For instance - a government program that provides a free shot is likely to increase vaccination by exactly 1 (free) shot. An outcome variable of "# of shots received" might be reasonable in that case.

Access to a vaccination clinic might generate a jump from 0 shots to somewhere between 1 and 3. In this case, the multinomial logit-type model might make more sense.

I think you want to consider: a) what is the effect of my treatment/covariate likely to be in terms of increasing the extensive (0 to something non-0) or intensive (increasing # of shots) margin of vaccination; b) is this effect or program likely to last through the full course of vaccinations; and then c) how do I capture that effect with a statistical model.

Not sure if that helped, but that's how I tend to approach these problems.

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