Subject: 3 Level Hierarchical Models with DHS data
Posted by Mayank_Ag on Sun, 10 Feb 2019 18:32:52 GMT
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I have pooled 3-4 waves each from 25 countries making the total samples as 95. No PSU information is missing.

About the model
My dependent variable is neghaz (negative of height for age (cm/months)) which is continuous in nature. My regression specification includes several control variables including square terms and interaction terms. The specification also includes variables that have been calculated at PSU level (Mean Employment Rate in the Cluster, etc) and also variables at country level (GDP, Average Life Expectancy etc.). I have already de-normalized the weights.

Issue
I am trying to evaluate the following 3 level hierarchical model (respondents <- clusters <- surveys)
mixed neghaz $controlset [pw=weight] || psu: || survey:
Survey represents each of the 95 samples in the data.
The model failed to converge. After that I tried a null model. The null model also failed to converge. I am not able to understand why null model fails to converge when there are 95 surveys and every survey has 300 clusters at least.

I also tried the null model after converting neghaz in to a dichotomous variable (xtmelogit) stunted which takes the value 1 if the child is stunted. The convergence failed again. Can somebody help me to understand why is this happening and how to fix it?

Afterwards, I tried running 2 level models with PSUs and Surveys independently. The models worked with the full controlset. However, the standard errors were different in the two models.

ICC for model with PSU 0.98
ICC for model with survey 0.02

Can I safely neglect the survey random effects in this case?

Is there any other way of combining the survey effects along with the PSU random effects?

I also tried models with only survey fixed effects (i.survey with normal ols) However, the standard errors were different. What model shall i finally use in such a case?

Sorry for the long post.