Subject: Multilevel modeling in DHS-Sri Lanka
Posted by dga1n@soton.ac.uk on Sat, 24 Nov 2018 20:52:44 GMT
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Dear DHS specialists,

For the first time as I have noticed, I am doing Multilevel analysis on DHS-2016 Sri lanka. This data is country specific and the codes seem different from the standard way. . Like the other DHS datasets I could not see variable called hv021 (primary sampling unit) but there is variable called cluster number, so I am using this as my PSU, without doing any alterations.

My questions are

1. I am using xtmelogit low_birth_wt , || QACLUST :, covariance(independent) STATA command which is low birth weight is a binary variables and cluster as PSU. Is this correct?

2. For null model I used the above command, which shows ICC of 7%..which does not show significant variance. Hence I used household ID as a next level.xtmelogit low_birth_wt , || hhid, which shows the ICC of 50%.

I need to know whether my path is correct and the variables I am using are correct. It is extremely hard to deal with different variables.

Kindy help me to sort out this.

Thanks in advance

Gaya

Subject: Re: Multilevel modeling in DHS-Sri Lanka
Posted by Bridgette-DHS on Tue, 27 Nov 2018 21:24:17 GMT
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Following is a response by Senior DHS Stata Specialist, Tom Pullum:

The only survey DHS has done in Sri Lanka was in 1987. Can you give me a link to the survey you say was done in 2016?

The PSU or cluster is usually given by both hv001 and hv021. There have been a few surveys in which those two variables were not equal, and for those cases hv021 would be given priority.

The problem with using household id as a level 2 unit is that most outcomes are for children under 5 or for women 15-49, and a high percentage of households have only one member with the outcome. The ICC can only be estimated for households with at least two cases at level 1 (children under 5 or women 15-49). An estimate of 50% may be misleading.

Your Stata syntax looks good to me. If it is actually executing, then it is probably ok. I'm sure you can find faculty at Southampton who will help you.

Subject: Re: Multilevel modeling in DHS-Sri Lanka
Posted by dga1n@soton.ac.uk on Wed, 28 Nov 2018 11:03:52 GMT
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Dear Dr. Tom,

Many thanks for your reply. DHS in Sri Lanka has done in 2016 and here is the link for the report.

http://www.statistics.gov.lk/page.asp?page=Health

I have received the the data from the Department of Census in Sri Lanka. So it seems that most of the respondents are limited to 1, so the HH level is not meaningful to use.
When I use cluster as my PSU, my ICC shows only 7% in null model and it further decreases when adding covariates.Does this still valid to report in a DHS.
Kindly let me know your opinion on this.

Thanks

Subject: Re: Multilevel modeling in DHS-Sri Lanka
Posted by Bridgette-DHS on Wed, 28 Nov 2018 14:42:49 GMT
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Following is another response by Senior DHS Stata Specialist, Tom Pullum:

This Sri Lanka survey was not officially part of the DHS program and the data files are not on our website. However, it was very similar to a DHS survey and ICF provided some technical support.

I recommend that you always include adjustments for weights, clusters, and stratification. The weights will compensate for over- and under-sampling and non-response and will minimize bias. The cluster adjustment will tend to increase the standard errors and the stratification adjustment will tend to do the opposite, to decrease the standard errors. In Stata it's very easy to include these adjustments with svyset.

In your multi-level modeling, it is normal for the ICC to decrease as cluster-level covariates are added. Indeed, you are looking for covariates that will account for that kind of variation. If your

final model includes individual-level and cluster-level covariates and the latter account for most of the ICC then (in my view) there is little to be gained from a multi-level specification, but I expect some other users would stay with the multi-level specification to emphasis the difference between the two levels of covariates. The ICC depends on the outcome and the survey/country.

Subject: Re: Multilevel modeling in DHS-Sri Lanka
Posted by dga1n@soton.ac.uk on Mon, 03 Dec 2018 20:12:57 GMT
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Dear Tom,

Thanks for your reply and classification. I have nearly 25% of households which have two eligible women completed the question on child birth weight. Hence, I was thinking of using my multilevel model of using household as a grouping factor which shows 56% of ICC instead of cluster which had 7% of ICC.

Is this can be correct at the DHS survey? AS I could see many users only used cluster as the PSu for multilevel models.I would like to know you opinion on this.

Thank You in advance

Subject: Re: Multilevel modeling in DHS-Sri Lanka
Posted by Bridgette-DHS on Wed, 12 Dec 2018 18:36:14 GMT
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Following is another response by Senior DHS Stata Specialist, Tom Pullum

There have been a few studies using the household or mother as a level 2 unit. Conceptually, it makes sense. However, because the mean number of level 1 units (children under 5) per level 2 unit (mother) is empirically so low, I personally would not do it. I would treat clusters as the level 2 unit, rather than as a level 3 unit, but other researchers would probably treat the mother as the level 2 unit.

Subject: Re: Multilevel modeling in DHS-Sri Lanka
Posted by dga1n@soton.ac.uk on Tue, 12 Feb 2019 16:21:39 GMT
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Dear DHS specialists,

I have some concerns regarding multilevel models. Since I have very low cluster effect (ICC:0.077) I used mother level as my second level..So since mothers are nested in households, it is correct to use mother ID as a second level or? instead of mother can we use Household

level..

2. DO I have to use xtmelogit binary_bw , || qa cluster: || mother ID/ Household ID :, covariance(independent) (three level model)

OR Do I need to consider only two levels xtmelogit binary_bw , || mother ID/household ID :, covariance(independent), ignoring the cluster since the cluster variance is low?

Kindly clarify this for me.. Thanks

Subject: Re: Multilevel modeling in DHS-Sri Lanka
Posted by Bridgette-DHS on Fri, 22 Feb 2019 18:37:52 GMT
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Following is a response from Senior DHS Specialist, Tom Pullum:

Decisions such as this are at the discretion of the researcher, and can vary from one country to another, and are not something for which we maintain a rule book. The adjustment for clustering by PSU basically comes from the survey design. We always recommend including that adjustment in svyset, which is equivalent to including it as level 2 in a hierarchical model. I am surprised that the ICC is so low in this survey.

You could look at this as an empirical matter, I suppose, and let either the mother or the household be the level 2 unit if they have a higher ICC than the PSU does. Ideally, or conceptually, I think of a hierarchy of children/mothers/households/PSUs, and, but (a) methods to include all levels are complex and (b) the impact, which is limited to the standard errors of the coefficients, can be small.

So yes, in my opinion at least, if you find a higher ICC at the level of the mother or the household than at the level of the PSU, and you are limited to a two-level model, you would be justified in placing level 2 where it would have the largest effect.

Also there is a cumulative nature to these effects. For example, if you include a mother-level adjustment, you will definitely account for most of a household-level ICC and possibly for most of a PSU-level ICC.
