
Subject: Weighting in multilevel model with pooled data

Posted by [dgodha](#) on Fri, 09 Feb 2018 15:26:27 GMT

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Hi,

I wish to do a multi-level model to look at the determinants of LBW at both individual level and community levels. The main focus is to get the determinants for each country and also for the region. I have pooled the latest DHS data from 5 countries in the region so as to get a good sample size- number of groups and average number of observations within groups. Accordingly, I am planning to use either districts or provinces as the group in my multilevel model. I am facing two problems:

My first problem is that 'melogit' is not allowing survey weights in any way. I think the reason is because it needs weights at each of the two levels and DHS data does not have those. I cannot use a pooled data without weighting. I plan to weigh the data by number of observations in each survey for country level estimations as has been explained in other threads and also proportionate to population size for regional analysis. If I use individual country data, then it falls short on either the number of groups or the average number of observations per group. The other option is to conduct a logistic regression analysis but then I will not be able to use the community level factors that are proxy for context.

My second problem or question relates to the creation of community level variables or prevalence. Is it ok if I create them at the PSU level when my group variable in the multi-level model is a higher unit?

I will really appreciate if someone can point me in the right direction.

Many thanks

Subject: Re: Weighting in multilevel model with pooled data

Posted by [Bridgette-DHS](#) on Mon, 12 Feb 2018 18:01:10 GMT

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Following is a response from Senior DHS Stata Specialist, Tom Pullum:

I'm sorry that we do not have a solution for the melogit problem--the requirement of sampling weights for each level, i.e. for the selection of clusters within a stratum and the selection of households within a cluster. We hope to develop a "workaround". If any users have suggestions, I hope they will post them.

Yes, you can use a single-level logit regression, with macro-level variables attached to each respondent through the cluster or region or country code but without separate weights for each level, since you don't have them. It will not be optimal but it may be the best one can do. That's my opinion; other researchers may disagree.

Also, yes, you can construct variables from the individual-level data by aggregating within clusters, within regions, or within countries, and attaching those compositional variables to the individual-level data. As you go to the regional and national level you will have a reduction in degrees of freedom that will limit the use of variables at those levels.

Subject: Re: Weighting in multilevel model with pooled data

Posted by [dgodha](#) on Tue, 13 Feb 2018 13:30:26 GMT

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Hi Tom,

I have found the following options on weighting for a two-level structure:

1. Assume equal probability sampling at group level

2. Rescale the weights The references for the above are as follows:

- Carle, A. Fitting multilevel models in complex survey data with design weights:

Recommendations. BMC Medical Research Methodology, 2009 9:49.

- Rabe-Hesketh and Skrondal. Multilevel modeling of complex survey data. J. R. Statist. Soc. A (2006) 169, Part 4, pp. 805827

- Stata MultiLevel Mixed-Effects Reference Manual, Chapter: mixed- Multilevel mixed-effects linear regression, Section: Survey data I am trying to apply the above to melogit. And this is only related to sampling part for each survey.

I have to still figure out how to apply the weighting for pooling across countries or time (if I decide to use DHS within country to improve my sample size).

Any suggestions are welcome

Many thanks

Subject: Re: Weighting in multilevel model with pooled data

Posted by [Bridgette-DHS](#) on Tue, 13 Feb 2018 18:35:30 GMT

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Please do a search on the forum. There are already many posts on pooling surveys across countries or time.

Subject: Re: Weighting in multilevel model with pooled data

Posted by [dgodha](#) on Wed, 14 Feb 2018 09:44:28 GMT

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Thanks Bridgette.

I agree with you and I have a good understanding of what kind of weighting will be required because of all that information out there. The threads are so helpful. What I meant was applying

all that into my survey weighting commands.

I am sorry for the misunderstanding
Best
