Subject: Weighted multilevel models using Tanzania SPA
Posted by cmoucheraud on Wed, 28 Feb 2018 19:51:00 GMT
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Hello,

I am trying to run a multilevel model using Tanzania SPA data (including facility, provider and client levels) -- but I cannot get any of these models to converge when the multiple levels' sampling weights are included. We have isolated the problem as due to the extremely skewed distribution of the facility-level sampling weight (it has a very long right tail with interruptions).

Has anyone found a way to work with multilevel models & multiple levels of survey weights, with the Tanzania SPA dataset or any of the other SPA datasets that have a similarly skewed distribution of facility weights?

Thanks in advance!,
Corrina

Subject: Re: Weighted multilevel models using Tanzania SPA
Posted by Liz-DHS on Fri, 06 Apr 2018 13:18:28 GMT
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Dear User,
A response from sampling experts, Dr. Ruilin Ren:
Quote:
Firstly, about the multilevel modeling with SPA data, we do not know if other people did the same research or not, this question was never asked before. When talking about the multilevel weights, it needs additional attention because the weights we developed in the SPA data may not be "multilevel" since the provider weights and client weights all use the facility weights as base weights. This means the provider weights and client weights already take the multi-stage selection into account, they do not just reflect the selection of providers and clients in the second stage. Secondly, about the skewed distribution of the sampling weights, this should be the case for SPA surveys by facility type because the important health facilities such as hospitals and health centers are included with probability one in the sample, so their sampling weight should be small compared with facilities of other types which are sampled. If the skewed weight distribution is a problem for your modeling work, you may need to take the facility type as a co-variable. This may make more sense for your analysis because of the big difference on the role played by different types of facility in the health system.

Subject: Re: Weighted multilevel models using Tanzania SPA
Posted by cmoucheraud on Sat, 22 Sep 2018 21:33:36 GMT
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Thank you very much!

Subject: Re: Weighted multilevel models using Tanzania SPA
Posted by shakim on Thu, 04 May 2023 13:06:22 GMT

Dear DHS Experts and SPA Users,

I want to know the hierarchical structure of SPA datasets. Can I apply a multilevel modeling approach to SPA datasets? If I can, then what variables will be included in level 1, level 2 and level 3? Will I use facility weights in all stages of multilevel modeling?

Many thanks,

Subject: Re: Weighted multilevel models using Tanzania SPA
Posted by SaraDHS on Mon, 15 May 2023 19:07:28 GMT

As you can see from Dr Ren's answer, the provider and client weights already take into account the multi-stage selection of facilities, so using both the facility weight AND the provider or client weight in the same model is not appropriate.

In the past, we have used facility weight as the first level weight, and assumed equal weight for all clients in the same facility, which may not be true. For some services, like family planning, it is often the case that all clients in a facility on the day of data collection are observed and interviewed, while for others it is not true. You can explore your data and see what is the case and what might make sense. There is no clear cut answer for this question.

Best,
Sara