Subject: Country-level weights for MLM
Posted by AConklin on Tue, 05 May 2015 23:15:52 GMT
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Hello,

I have a unique dataset comprising about 27 countries from DHS with anthropometric data (18 low-income, and 9 low-middle income countries). I understand that much of the forum discussion about using the sampling weight for analyses of multiple countries (with/without multiple survey years) requires de-normalising the weight variable (v005) which can then be used to set the data structure.

but, I haven't found any discussion of whether or not there is a country-level weight that can/should be used in a MLM (2-level) regression which my statisticians indicate is necessary if I am to also use the women's sampling weights. Does DHS have such a variable? If not, then is it fair to assume that the countries contained in DHS are a random sample of the world's developing countries? That is, can I safely create a country weight equal to 1 for the 27 countries?

My predictor of interest is a level 2 variable (nationally legislated minimum wage) and my outcome is adverse anthropometric outcomes in adult women aged 24-49.

Many thanks in advance,
A Conklin

Subject: Re: Country-level weights for MLM
Posted by user-rhs on Wed, 06 May 2015 00:14:53 GMT
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A Conklin,

You should ask yourself why it is we weight data during analysis, which is to account for probability of selection into the sample. There are more than 27 low/middle income countries in the world, so what you are proposing (assign weight of 1/27) won't "correct for selection," as you are giving equal weight to each country. That is, you will get the same estimates weighted as unweighted. If you assume the countries were selected at random regardless of population, you don't need a "country weight." De-normalising the weights should account for the differential base populations represented in each country at each survey weight (the "individual"-level weights).

I'm not sure how countries were "selected" for DHS. I imagine it was initially purposive at the start back when DHS was the World Fertility Survey, rather than random, but I am no DHS historian. Note that one danger of assigning incorrect weights without knowing the underlying "sampling design" is that you may introduce even more bias into your estimates. Anyway, I think the pweight is the more important weight here to get right.

RHS

Subject: Re: Country-level weights for MLM
Posted by Reduced-For(u)m on Wed, 06 May 2015 23:35:14 GMT
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Piling on to what RHS had to say (which I agree with):

The de-normalization of weights is used in order to do two things: 1 - maintain probability of sampling within a country (a kind of probability weight); 2 - layering a population weight on top of the probability weight. That is, it both preserves within-country probability of sampling, and then weights each country by its population (or number of households, or women, or whatever the target population is). In that sense, de-normalizing brings with it the level 2 weight that you want (if I understand what you mean by that correctly). That is - the sum of weights for some country will sum up to the appropriate population number.

I've always found the DHS method of denormalizing slightly complicated in this framework, and prefer a different method. I like to make each survey's weights sum up to 1 individually, preserving the within-country sampling probability (just divide weight by sum of weights separately for each survey). Then, I multiply those weights by the population of interest (number of people, number of women, whatever) for the country such that each country in total gets weight equal to it's population size. I believe that this is essentially the same method as the DHS recommends, but I haven't fully math'd it out. This thinking though sounds more in line with what you are trying to accomplish using your multi-level analysis. The last question you have to answer is, if you have multiple rounds per country, how you divide the country's population weight over the multiple rounds (do you weight by survey-country, by country, etc.). I don't think you have this extra complication though...

Oh - and if you want to assume that the causal effect is constant across people, then you don't need to weight at all. A person is as good as any other person. See "What are We Weighting For?" by Gary Solon (and others) which just came out in the Journal of Human Resources.

All that said - and I'm guessing a DHS person will weigh in here, since I know they are thinking about these problems because they are having a symposium coming up soon (see http://userforum.dhsprogram.com/index.php?t=msg&th=2102&start=0&S=8f564789e2f3123a911389da0a8722cd) - one other quick thing:

So a miminum wage is implemented in, say, 2005. It will not affect the height of women in 2008 - they are done growing. So you have to stick with only weight measures. But those are going to vary by season of the year and a lot of other things... most of those other things may very well be orthogonal to the minimum wage, but you want to be careful given how small an effective sample size you have (you have essentially only 25 or so effective degrees of freedom in terms of identifying variation if you only have yes/no minimum wage once for each country). But if you try to use "exposure time" or "time since legislation" you start running into concerns about when in the growth/development cycle women in your sample were exposed, and exposure at different ages can have much different impacts (exposure early in life can affect height, later in life can't, but an effect on height is also likely to affect (later) weight-for-height and weight-for-age). So I guess I just wanted to say - be careful about how you think of the short/medium/long term effects of a minimum wage on adult anthropometrics when you don't have panel data. Sorry - I know that was unsolicited advice, but thought it was worth bringing up.

Subject: Re: Country-level weights for MLM
Posted by Hassen on Mon, 07 May 2018 15:21:36 GMT
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Thanks all!!