Subject: Maternal Mortality
Posted by stellacs on Fri, 13 Nov 2015 05:12:13 GMT
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Hi There,

I am trying to replicate the DHS numbers for maternal mortality rate in Indonesia for 2012. I am following the instructions given in the http://dhsprogram.com/pubs/pdf/DHSG1/Guide_to_DHS_Statistics _29Oct2012_DHSG1.pdf However, I am not able to get the same number of maternal deaths by age groups. To calculate the age groups I am using the sister's age at death, while to calculate the period of death I am using the difference between the date of death and date of interview, truncating it to a difference of 60 (given the dates CMC format). Although the total is similar, it should be the same and the age groups distribution as well differs greatly.

	DHS	My calculation
15-19	4	7
20-24	12	10
25-29	20	18
30-34	17	17
35-39	18	21
40-44	14	13
45-49	7	7
Total	92	93

Is there any rescaling or weight factor I need to use? Is the death period correctly specified?

Thanks for any help.

Subject: Re: Maternal Mortality
Posted by Reduced-For(u)m on Fri, 20 Nov 2015 02:27:05 GMT
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Bump.

Also, did you use any of the survey weights? I'm not sure whether that is advised here or not.

Could you post a bit of the .do file you used here so that maybe the DHS staff can take a look?

Subject: Re: Maternal Mortality
Posted by pramesh on Wed, 09 Dec 2015 06:11:28 GMT
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Hi,

Using Nepal DHS 2006, how to replicate table 9.2? What variables should we be using to calculate maternal mortality since i can not see the variables that DHS guide has mentioned under adult and maternal mortality section.

Any help would be great.

Thank you so much.

S

Subject: Re: Maternal Mortality
Posted by Reduced-For(u)m on Fri, 11 Dec 2015 20:28:10 GMT
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Check out the "MM" variables for the maternal mortality calculations. These include all the information on the siblings of women interviewed (from which the maternal mortality rates are computed), their birth dates (MM4), whether they are alive (MM2), age at death (MM7), wether their death coincided with a pregnancy (MM9/10). From their you should be able to follow the DHS Guide to Statistics to calculate the rates.

Recode Manual: http://www.dhsprogram.com/pubs/pdf/DHSG4/Recode6_DHS_22March 2013_DHSG4.pdf

DHS Guide to Statistics: https://dhsprogram.com/pubs/pdf/DHSG1/Guide_to_DHS_Statistic s_29Oct2012_DHSG1.pdf

If you don't see those variables, which recode are you using?

Subject: Re: Maternal Mortality
Posted by stellacs on Fri, 18 Dec 2015 02:36:32 GMT
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Hi there, thanks for your answer. Yes once I included the weights I got the same results as in the report. Likewise, for the exposure years. This is the program I used

After reshaping

gen year_5=1 if v008-mm8_<=60
label var year_5 "deaths in the last 5 years"
gen preg_death=1 if mm9_==2 | mm9_==3 | mm9_==6
replace preg_death=0 if mm9_==1
label var preg_death "Death during pregnancy or childbearing"

```
gen age_range= trunc((mm8_-mm4_)/60)
replace age_range=age_range-2
gen mat_dead=1 if (age_range>=1 & age_range<=7) & preg_death==1 & year_5==1
replace mat_dead=0 if (age_range>=1 & age_range<=7) & (preg_death==0) & mm1_==2
replace mat_dead=0 if mm2_==1 & mm1_==2 & (mm3_>=15 & mm3_<=54)
tab age_range mat_dead if mm1_==2
sum v005
scalar k=r(mean)
tab age_range mat_dead if mm1_==2 [iw=v005/k]
```

Now I want to calculate the confidence interval. What formula shall I use? Or is there any reference you can point out? I found Hanley, J. A., Hagen, C. A., & Shiferaw, T. (1996). However, this paper is for the direct method.
Thanks for your help.

Subject: Re: Maternal Mortality
Posted by stellacs on Sun, 20 Dec 2015 22:55:42 GMT
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I have an extra question. I am now trying to reproduce the calculations of maternal mortality in Indonesia for 2007. Using the same code, that give me the same numbers as the report in 2012, I get very different results. This after adjusting some changes in the coding of some variables like mm9_.

Is it possible that the method for calculating maternal mortality changed from 2007 to 2012?
I also noticed the sample is smaller and that the proportion of respondents 15-19 is very small compared to other age ranges. Also, when compared to 2012 is less evenly distributed. Could this having an impact in the results I am finding? Was there an extra adjustment on the weights in 2007?

Thank you for your help!

Subject: Re: Maternal Mortality
Posted by Liz-DHS on Wed, 30 Dec 2015 20:10:29 GMT
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Dear User,
Your query has been sent to one of our experts. As soon as we are able we will post. Thank you!

Subject: Re: Maternal Mortality
Posted by Trevor-DHS on Sun, 03 Jan 2016 21:14:26 GMT

Below I'm giving my code for calculating the numerators and denominators for the maternal mortality rates (not the ratios) for All women samples. This code usually matches the counts given in the reports exactly, however, for Indonesia 2012 the denominators do not match exactly, although the differences are small - I think this is probably because the maternal mortality modules dates and ages were re-imputed since the tabulations for the report were produced. The program below defaults to a 7 year period, but to produce estimates for a five year period, just change the local variable for the period to be 60 (5 years) instead of 84 (7 years):

```
* Adult and maternal mortality counts - Trevor Croft - April 25, 2015
* This version applied to Indonesia DHS 2012 - Jan 3, 2016
cd "C:\Data\DHS_Stata"
use "IDIR63FL.DTA", clear

* keep only the variables needed
keep caseid v001 v002 v003 v005 v008 v011 v012 v013 awfactt mm* mmc*

* Rename all of the repeating variables to drop the leading 0 to help with reshaping
rename mm*_0* mm*_*

* Reshape the file into a sibling history file
* This will be slow to run and could take several minutes or more.
reshape long mmidx_ mm1_ mm2_ mm3_ mm4_ mm5_ mm6_ mm7_ mm8_ mm9_ mm10_
mm11_ mm12_ mm13_ mm14_ mm15_, i(caseid) j(mmindex)

* Rename to drop the trailing underscore on the end of the reshaped variables
rename mm*_ mm*

* Drop empty entries
drop if mmidx==.

* Check total sisters and brothers - compare total from table 15.1
tab mm1

* Drop siblings without sex or survival status
drop if (mm1 == 8 | mm1 == 9 | mm2 == 8 | mm2 == 9 | mm1 == . | mm2 == .)

* Check counts of sisters and brothers by survival status - compare with living siblings and dead
siblings from table 15.1
tab mm2 mm1


* Period to use
* 7 years (84 months) before interview or 5 years (60 months)
local period 60

* Calculate deaths and exposure for each age group.  Each woman can contribute to up to 3
different age groups in the past 7 years.
```

* Calculate upper and lower limits in CMC for inclusion for time period. Exclude month of interview.
gen upplim = v008-1
* replace upper limit with CMC date of death for siblings that died
replace upplim = mm8 if mm2 == 0
* lower limit - 7 years (84 months) before interview or 5 years (60 months)
gen lowlim = v008-`period'
* Total exposure in the time period
gen exposure = upplim-lowlim+1
replace exposure = 0 if exposure < 0

* Oldest age group
gen agegrp1 = int((upplim-mm4)/60)
* Calculate exposure in this age group
gen expo1 = min(exposure,upplim - (mm4 + agegrp1*60) + 1)
* Calculate deaths
gen deaths1 = (mm2==0 & expo1 > 0)
* Calculate remaining exposure time
replace exposure = exposure - expo1

* Middle age group
gen agegrp2 = agegrp1 - 1
* Calculate exposure in this age group
gen expo2 = min(60,exposure)
* Set deaths to 0 - all deaths are in the oldest age group
gen deaths2 = 0
* Calculate remaining exposure time
replace exposure = exposure - expo2

* Youngest age group
gen agegrp3 = agegrp2 - 1
* Calculate exposure in this age group
gen expo3 = min(60,exposure)
* Set deaths to 0 - all deaths are in the oldest age group
gen deaths3 = 0

* Reshape so that there are separate records for each age group with exposure and eaths in those age groups
reshape long agegrp expo deaths, i(caseid mmindex) j(j)

* Only keep the deaths and exposure in age groups 3 (15-19) through 9 (45-49)
keep if agegrp >= 3 & agegrp <= 9
label define agegrp 3 "15-19" 4 "20-24" 5 "25-29" 6 "30-34" 7 "35-39" 8 "40-44" 9 " 45-49"
label values agegrp agegrp

* Sample weight
gen wt = v005/1000000

* Deaths from table 15.3
tab agegrp mm1 [iw=deaths*wt]
* Exposure from table 15.3 (expo is in months, division by 12 to give years)
tab agegrp mm1 [iw=expo*wt/12]

* Deaths from table 15.4 - restict to maternal deaths
tab agegrp [iw=deaths*wt] if mm1 == 2 & mm9 >= 2 & mm9 <= 6
* Exposure from table 15.4 (expo is in months, division by 12 to give years) - restrict to women only
tab agegrp [iw=expo*wt/12] if mm1 == 2

The problem you are having is probably that the 2012 Indonesia survey was an All Women sample while the 2007 Indonesia survey was an Ever-Married Women sample. When analyzing ever-married women samples you need to make assumptions about the never-married women. For example in fertility analysis in surveys using ever-married women samples we assume that never-married women had no children. For maternal mortality where we analyze siblings of respondents we would have to make assumptions about the age and survival status of siblings of never-married women. There are two obvious choices we could make: 1) The simplest - just analyse the siblings of the ever-married women (which is presumably what you have tried), 2) Assume that the distribution of the ages and survival statuses of the siblings of never-married women is the same as that for the ever-married women of the same age, and just apply the all women factors to the siblings data. Unfortunately neither of these assumptions is very good. The first is probably biased as it is excluding siblings of never-married women and never-married women tend to be younger, thus the siblings are biased toward older ages. The second is probably biased as it assumes that ages and survival status of the siblings of never-married women of a certain age is the same as that of ever-married women of the same age, and it seems unlikely that this is true, e.g. less educated women women may marry younger, may have more siblings, and more of them may die at younger ages.

To use the second option using the all women factors, you can just multiply the weight by the all women factor. In other words, replace:
gen wt = v005/1000000
with
gen wt = (v005/1000000)*(awfactt/100)
I tried to reproduce the maternal mortality tables in the report with the second option and I come close to what is shown in the report. When I looked further at our archives I found a re-run version of the tables which I am able to match with the current dataset. I checked for an explanation and do not find one, but it appears that the maternal mortality in the dataset or the maternal mortality tabulation program were modified and the tables in the report do not match what is produced with the current version of the dataset.

Subject: Re: Maternal Mortality
Posted by stellacs on Mon, 04 Jan 2016 04:31:08 GMT

Hi Trevor,
Thanks a lot for your reply and your help. All is very clear now. Once I use the awfactt weight I obtain the exact same results as the report in 2007. Also, using the IDIR62FL.DTA I get the exact same results for 2012. Although the reports seem to have different reference periods, both were calculated using a 5 years period.

Subject: Re: Maternal Mortality
Posted by stellacs on Mon, 04 Jan 2016 04:32:33 GMT

Hi Trevor,
Thanks a lot for your reply and your help. All is very clear now. Once I use the awfactt weight I obtain the exact same results as the report in 2007. Also, using the IDIR62FL.DTA I get the exact same results for 2012. Although the reports seem to have different reference periods, both were calculated using a 5 years period.

Subject: Re: Maternal Mortality
Posted by pramesh on Fri, 15 Jan 2016 07:04:15 GMT

Hi, Can i use the same code for Nepal as well?

Subject: Re: Maternal Mortality
Posted by Liz-DHS on Mon, 25 Jan 2016 17:57:55 GMT

Dear User,
Do you still need assistance with this post?
Thank you!

Subject: Re: Maternal Mortality
Posted by pramesh on Wed, 03 Feb 2016 07:10:35 GMT

Hi,

I tried to calculate mortality using the same code. it worked!
Thank you

S

Subject: Re: Maternal Mortality
Posted by pramesh on Thu, 04 Feb 2016 01:12:52 GMT
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Hi,

The coding worked for Nepal DHS 2006 data as well. It matches the number (39 deaths).
However, i found difficult to restrict the population into 26378 sisters which has been reported in
NDHS 2006.

Is there any coding to restrict the population into 26378 sisters with 39 deaths?

Thanks

Subject: Re: Maternal Mortality
Posted by RAJEEV KUMAR on Thu, 18 Feb 2016 06:23:22 GMT
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sir,

i am a student of M.Phil iips mumbai. i am working on maternal and child mortality in nigeria. i
want to calculate maternal mortality rate and ratio of nigera DHS 2013 data. i have found problem
with calculating maternal mortality rate and ratio of nigeria DHS data 2013 through stata.

please send me stata do file how to calculate maternal mortality rate and ratio of nigeria
DHS-2013 data.

Subject: Re: Maternal Mortality
Posted by Liz-DHS on Thu, 25 Feb 2016 19:07:40 GMT
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Dear User,
Please refer to message #8851 http://
userforum.dhsprogram.com/index.php?t=msg&th=4678&got
o=8851&S=88552d01e5e51abc62a9ddeb9a547d04#msg_8851 posted by one of our subject
experts. You should be able to adapt the code for your own analysis. Other resources are The
Guide to DHS Statistics http:// www.dhsprogram.com/publications/publication-dhsg1-dhs-questi
onnaires-and-manuals.cfm and The Standard Recode Manual http://

www.dhsprogram.com/pubs/pdf/DHSG4/Recode6_DHS_22March2013_DH SG4.pdf. After reviewing these resources, if you still have a question, please feel free to post again. Thank you!

Subject: Re: Maternal Mortality
Posted by RAJEEV KUMAR on Mon, 07 Mar 2016 09:55:18 GMT
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sir,
 I rajeev kumar a student of M.phil, I am working on maternal mortality in nigeria using DHS data 2013. I found some problem for calculating Age Adjusted General Fertility Rate and also facing Problem to calculatin Age Adjusted mortality rate. sir please send me do file for calculation of Age Adjusted General Fertility Rate and Age Adjusted mortality rate.

Subject: Re: Maternal Mortality
Posted by RAJEEV KUMAR on Mon, 07 Mar 2016 10:04:06 GMT
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I rajeev kumar a student M.Phil. I have facing problem in calculating Age Adjusted General Fertility rate and Age Adjusted mortality rate. please help me how to calculate Age Adjusted General Fertility rate and Age Adjusted mortality rate using DHS-2013 data in nigeria. please send me do file for age adjusted general fertility rate and age adjusted mortality rate using stata.

Subject: Re: Maternal Mortality
Posted by Trevor-DHS on Thu, 24 Mar 2016 14:53:46 GMT
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We do not have a do file for calculating the maternal mortality ratios. The Guide to DHS Statistics is a good reference to how to compute the maternal mortality ratio, and the attached spreadsheet provides an example of how the age standardization works (column F comes from table 3.1 in most reports).

```
File Attachments
1) MMR calculation example.xlsx, downloaded 1343 times
```

Subject: Re: Maternal Mortality
Posted by Resty on Mon, 18 Jul 2016 09:23:20 GMT
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Hi,

I am using IDHS in 2012 to calculate the maternal mortality rate in Indonesia. I've changed the file from wide to long data. However, the number of maternal deaths that I got is 372 while in the Indonesia Demographic Health Survey is 92 (Table 15.4). How could be it different?

thanks

Subject: Re: Maternal Mortality
Posted by Trevor-DHS on Mon, 18 Jul 2016 14:13:06 GMT
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Have you restricted the time period to the same time period used in the report (usually the 7 years [0-6] preceding the survey), and have you used weights in your analysis?

Subject: Re: Maternal Mortality
Posted by Resty on Tue, 02 Aug 2016 10:27:57 GMT
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thanks, all is clear now.

Subject: Re: Maternal Mortality
Posted by Opeyemi on Mon, 28 Nov 2016 08:23:21 GMT
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Hello,

Please I would like to have a few clarification to help me with my analysis. I want to calculate the women persons years from the 2008 and 2013 NDHS data set. Please How do I go about that?

Subject: Re: Maternal Mortality
Posted by Opeyemi on Tue, 29 Nov 2016 05:47:11 GMT
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Opeyemi wrote on Mon, 28 November 2016 09:23Hello,

Please I would like to have a few clarification to help me with my analysis. I want to calculate the women persons years from the 2008 and 2013 NDHS data set. Please How do I go about that?

I have an additional question...I developed a complex sample analysis plan as i watched on the vidoes
 /PLAN FILE='C:\Users\....................\Complex Plan for MM.csaplan'
  /PLANVARS ANALYSISWEIGHT=WGT
  /SRSESTIMATOR TYPE=WR

```
 /PRINT PLAN
 /DESIGN STRATA=V022 CLUSTER=V021
 /ESTIMATOR TYPE=WR.
```
However, I am not sure if the Generalized linear module under the Complex plan is as robust as the GLM under the mixed model. The core of my real analysis is the random/mixed model.

So I would like to ask if I can use the mixed model model and then fix the newly weight variable generated with WGT/1000000 as the weight offset value and still get a reasonable result.

Thank you.

Subject: Re: Maternal Mortality
Posted by Trevor-DHS on Tue, 29 Nov 2016 19:07:40 GMT
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Here is some SPSS code that I have used for calculating the DHS maternal mortality tabulations. You can extract code from this to calculate the women person years that you need.

```
File Attachments
```
1) MatMort_DHS.sps, downloaded 1242 times

Subject: Re: Maternal Mortality
Posted by Trevor-DHS on Tue, 29 Nov 2016 19:11:24 GMT
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I don't use GLM and I have never tried using it under the Complex Survey plan, but in general, if you don't take into account the clustered sampling and stratification, and you basically treat the survey as a simple random sample then any confidence intervals will generally be too narrow and any significance tests will over estimate the significance.

Subject: Re: Maternal Mortality
Posted by Opeyemi on Tue, 29 Nov 2016 20:32:31 GMT
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I really appreciate this. I would let you know the outcome, please.

Subject: Re: Maternal Mortality
Posted by Opeyemi on Wed, 30 Nov 2016 14:11:08 GMT
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Thank you so much for the codes again. It has really helped my analysis. I would like to confirm though, the total maternal death (md) generated for the period of interest summed up to 104. Is

that right? How is the 398 from the NHS 2008 report calculated?

Subject: Re: Maternal Mortality
Posted by Opeyemi on Tue, 06 Dec 2016 13:40:04 GMT
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Thank you so much for the codes again. It has really helped my analysis. I would like to confirm though, the total maternal death (md) generated for the period of interest summed up to 104 unweighted and 110 weighted counts. Is that right? How is the 398 from the NDHS 2008 report calculated?

Subject: Re: Maternal Mortality
Posted by Resty on Thu, 15 Dec 2016 13:04:30 GMT
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Hi,

I have a question again. I am using IDHS in 2012 to calculate the maternal mortality rate in Indonesia. I've changed the women data set into sibling's record, but I want to know which one is the respondent and which one is the siblings in the long dataset. After reshaping, however, only the respondent has the unique number and as I reshaped the data into long format, the respondent shared the same id number with her siblings. And I want to know how many the respondents have 1, 2, or more siblings?, does each sibling also have unique id number to differ them from the respondent?. I've read about the egen command in many literature, but I need the unique number of the siblings.
many thanks

Subject: Re: Maternal Mortality
Posted by Trevor-DHS on Thu, 22 Dec 2016 07:14:59 GMT
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The respondent is not included in the sibling history. The sibling history includes all siblings except for the respondent. The unique number for the sibling is given by MMIDX in conjunction with CASEID.

Subject: Re: Maternal Mortality
Posted by Resty on Fri, 20 Jan 2017 12:45:28 GMT
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Thanks, Trevor.

Another question, how can I calculate the confidence interval for the maternal mortality rates in

---

Indonesia (IDHS 2012)?

Regards,
Resty

Subject: Re: Maternal Mortality
Posted by Resty on Wed, 25 Jan 2017 18:37:14 GMT
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Hi again,

I found no guide on how to calculate confidence interval in MMR in Guide to DHS statistics.
However, I've read the other papers using sisterhood method as well as the IDHS 2012.
It is said that Jackknife repeated replication method is used for variance estimation of more complex statistics such as fertility and mortality rates.
How can I calculate the Standard Error in Maternal Mortality Ratio using the Jackknife repeated replication method?
I hope anyone can help me since I didn't find the guide to calculate in Stata.

best regard,
Resty

Subject: Re: Maternal Mortality
Posted by dimas on Tue, 06 Jun 2017 03:35:47 GMT
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hi, i want to calculate maternal mortality in Indonesia by province (smaller region). Can i use just the ratio of dataset to count the maternal mortality rate by province or is there any weight to count this number? thank you

---

Subject: Re: Maternal Mortality
Posted by Trevor-DHS on Tue, 06 Jun 2017 15:09:05 GMT
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Hi Resty and Dimas, This survey does not have a sufficient number of cases of maternal deaths to produce an estimate of maternal mortality for any areas other than for a national estimate. The sample is too small for provincial estimates of the relatively rare event of maternal mortality. We do not have code in Stata for calculating the maternal mortality ratios using the Jackknife repeated replication method.

Subject: Re: Maternal Mortality
Posted by dimas on Tue, 06 Jun 2017 23:41:31 GMT

Hi Trevor,thanks for the information that you give. maybe I will use the other source to count MMR number.

Subject: Re: Maternal Mortality
Posted by moombasp on Tue, 02 Jun 2020 10:44:26 GMT

Hi,

I am trying to use the same code using Zambia data for 2013-14 and 2018 but I can't get the same figures as those in the report. The reference period is 7 years (84 months). What could I be doing wrong?

Subject: Re: Maternal Mortality
Posted by Liz-DHS on Tue, 02 Jun 2020 13:22:31 GMT

Dear User, check out this link It contains Stata code to produce Demographic and Health Survey Indicators. Another great resource is The Guide to DHS Statistics.

Subject: Re: Maternal Mortality
Posted by moombasp on Tue, 02 Jun 2020 13:55:51 GMT

Thanks for the guide, the link is not opening though.

Subject: Re: Maternal Mortality
Posted by Liz-DHS on Tue, 02 Jun 2020 14:53:35 GMT

Apologies. Please check link again. Thank you!

Subject: Re: Maternal Mortality
Posted by placidplus on Sun, 09 Aug 2020 04:02:47 GMT

Hello Trevor,
     Thanks for your quality contribution is the estimation of maternal mortality rates. Please I want

to find out how derived column F. Was it from column C. I tried computing column F from C and it does not match. For instance, (11/102)* 100 does not equal 19.6%. I will appreciate your help. I was trying to replicate this for the Nigeria situation. I have just attached the rerun script and output for your guide. This was from the script you shared. Thank you.

Kind Regards,
Placid.

File Attachments
1) mortalityrate.txt, downloaded 665 times

Subject: Re: Maternal Mortality
Posted by Trevor-DHS on Mon, 10 Aug 2020 13:49:07 GMT
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I think you are referring to the Excel spreadsheet linked to message 9302. Column F is simply the proportion of all respondents in each age group from the IR dataset. Just use tab v013 to get the distribution.

Subject: Re: Maternal Mortality
Posted by placidplus on Tue, 11 Aug 2020 23:22:37 GMT
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Hello Trevor,
    Thanks for the guide in estimating maternal mortality rates/ratio. I think I am almost there. The attached file is the improvement I made concerning your earlier correction. I am wondering how you computed the "Unweighted Ns(Maternal Deaths & Exposure". On the table at the left. I got my exposure by Exposure (years) in the excel by running the following script

* EXPOSURE NUMBER OF YEARS BY AGE GROUP
tab agegrp [iw=expo*wt/12] if mm1 == 2

I also got deaths as shown on the excel by running:
* Deaths from table 15.4 - restict to maternal deaths
tab agegrp [iw=deaths*wt] if mm1 == 2 & mm9 >= 2 & mm9 <= 6

I am actually trying to arrive at how you got your 107.
Based on the excel sheet, would you also say that the estimated mortality rate is 357? I was thinking that the value should be a ratio(fraction) instead of an absolute value as big as 357. Though, based on your values I got 355.
Please I will also want to find out how you got your TFR (7 years). Finally, I will need an assistance on how to get 95% CI for the maternal mortality rate/ration estimated value.

File Attachments

Subject: Re: Maternal Mortality
Posted by Trevor-DHS on Wed, 12 Aug 2020 15:03:18 GMT
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Hi Placid

First I should note that DHS no longer calls this the maternal mortality ratio, but rather the pregnancy-related mortality ratio. In newer surveys we calculate both the pregnancy-related mortality ratio, and an updated calculation of the maternal mortality ratio. Please see the Guide to DHS Statistics chapter 16 for more information about the calculation of both the pregnancy-related mortality ratio and the maternal mortality ratio. In particular, the calculation of the numerator differs between the two:
Numerators:
1)   Pregnancy-related mortality: Number of female siblings of respondents who died during pregnancy, delivery or within two months of delivery (mm1 = 2 & mm2 = 0 & mm9 in 2:6) in the period 0-6 years prior to the interview by five-year age group at time of death (this is what you have currently)
2)   Maternal mortality: Number of female siblings of respondents who died during pregnancy, delivery or within 42 days of delivery (mm1 = 2 & mm2 = 0 & mm9 in 2:6 & mm12 in

period 0-6 years prior to the interview by five-year age group at time of death.

Older surveys do not include variables mm12 and mm16 and it is only possible to calculate the pregnancy-related mortality ratio.

For more information on the difference between pregnancy-related mortality and maternal mortality, see the Youtube video

To answer your questions, you get the unweighted numbers by using the same commands, but without the sample weight (wt), as follows:

* Deaths from table 15.4 - restrict to pregnancy-related deaths
tab agegrp [iw=deaths] if mm1 == 2 & mm9 >= 2 & mm9 <= 6
* Exposure from table 15.4 (expo is in months, division by 12 to give years) - restrict to women only
tab agegrp [iw=expo/12] if mm1 == 2

For the pregnancy-related (or the maternal) mortality ratio, this is presented per 100,000 live births, so in the example here, the 357 means 357 women per 100,000 live births. So actually a relatively small (but important) number.

Subject: Re: Maternal Mortality
Posted by placidplus on Wed, 12 Aug 2020 23:58:59 GMT

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Thank you very much Trevor! This is useful. You hard work in providing attention globally is appreciated.

Subject: Re: MMR & PRMRatio (pregnancy related mortality ratio)
Posted by placidplus on Thu, 05 Nov 2020 03:51:08 GMT

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Dear Courtney,

Thanks for making the scripts for the Chapter 16 Stata Scripts available. I am working on estimating MMR & PRMRatio for Nigeria and specific regions of the country. After executing the "AM_gfr.do", The "AM_rates.do" ran into issues for me at the point of running the "main_adult_mm_mortality" program. Please find attached a snapshot of the error and the overall copy of the executed script. Please, I am seeking your assistance to fix this challenge. Thank you very much for your enormous sacrifices.

Kind Regards,
Placid Ugoagwu.

File Attachments
1) MMortalR.log, downloaded 803 times
2) MMR_Error.docx, downloaded 620 times

Subject: Re: MMR & PRMRatio (pregnancy related mortality ratio)
Posted by Trevor-DHS on Thu, 05 Nov 2020 04:49:40 GMT

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Hi Placid
I'm not getting the error that you are seeing when I run the code. There is a lot going on in this code, so it is difficult to highlight where the problem is. I'm fairly sure the error lies in AM_gfr.do, but because there are a lot of 'program's in this file and they run quietly it does not highlight where the problem is. I suggest modifying the code so that when it is calling a program call it noisily so that you can identify exactly where the error is coming from. For example, in AM_gfr.do on lines 333 and 342, make these
noisily setup_gfr, and
noisily make_exposure_and_births
and similarly in lines 194 and 195, change the "quietly" to "noisily".
Hopefully these will help to identify exactly which command is failing.
Also, which version of Stata are you using? It is possible that there is a Stata command that doesn't work in earlier versions of Stata.

Subject: Re: MMR & PRMRatio (pregnancy related mortality ratio)
Posted by placidplus on Thu, 05 Nov 2020 05:05:48 GMT
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Thanks for your response, Trevor. The AM_gfr.do actually ran without any errors. I noticed the error at the point of running the program referred to as "main_adult_mm_mortality" in the AM_rates.do file. This is almost at the end of the "AM_rates.do" file program script. I will try out what you just advised and see if it helps. Thank you!

Subject: Re: MMR & PRMRatio (pregnancy related mortality ratio)
Posted by placidplus on Thu, 05 Nov 2020 05:08:51 GMT
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Sorry that I forgot to respond to your question about the version. I am using version Stata version 12.1

Subject: Re: MMR & PRMRatio (pregnancy related mortality ratio)
Posted by placidplus on Thu, 05 Nov 2020 05:51:26 GMT
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Hello Trevor,
    After adding noisily to the specific program lines of "AM_gfr.do" as advised. AM_gfr.do was executed without any errors. But after running the AM_rates.do program. I had issues executing program line 1346 of the AM_rates.do file. The error says "you are using old merge syntax; see [D] merge for new syntax)" and then "unrecognized command: - invalid command name". The earlier snapshot that I sent shows the specific point of execution when the error prompts out. I am re-attaching the file again. The attached log has the run so far attained before the error. Please look at the end of the log file. I am using Stata version 12.1. Thank you so much.

Kind Regards,
Placid.

File Attachments
1) MMR_Error.docx, downloaded 616 times
2) MMortalR1.log, downloaded 625 times

Subject: Re: MMR & PRMRatio (pregnancy related mortality ratio)
Posted by Trevor-DHS on Thu, 05 Nov 2020 15:48:50 GMT
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Hi Placid
AM_gfr.do appears to run ok because all it is doing is defining up the 'program's that are being called by AM_rates.do. When AM_rates.do is running it calls the programs that are defined in AM_gfr.do, and it is n the code defined in AM_gfr.do that the error appears. The message about

using the old merge syntax is not important - it is using older syntax, but that part still works properly, as you can see by the tab _merge output that follows. We need to find the actual command that it is failing on, which is buried in the code.

Line 1346 is main_adult_mm_mortality, which calls several other programs, and it is in these programs, many of which are in AM_gfr.do that the problem occurs. For example, you can see in your output that temp1.dta is saved. This happens in line 330 of AM_gfr.do. After this the programs setup_GFR, make_exposure_and_births, and calc_rates are run. Setup_gfr is fairly simple and seems to have run. I think the issue is in the make_exposure_and_births program. Can you try commenting out the recast command on line 202? I think it is possible that the recast command does not exist in your version of Stata, and it also looks like it is not needed. Please send me your output after trying this. Good luck.

Subject: Re: MMR & PRMRatio (pregnancy related mortality ratio)
Posted by placidplus on Thu, 05 Nov 2020 18:02:31 GMT

Hello Trevor,
    Thanks for following up on this for me. I commented out the "recast" command on line 202 as advised. Please find attached the log file. Thank you.

```
File Attachments
```
1) MMortalR.log, downloaded 612 times

Subject: Re: MMR & PRMRatio (pregnancy related mortality ratio)
Posted by Trevor-DHS on Thu, 05 Nov 2020 18:27:36 GMT

Hi Placid
Can you send your AM_gfr.do file. I now think there is an extraneous character or a character missing in the code somewhere around lines 200-220.

Subject: Re: MMR & PRMRatio (pregnancy related mortality ratio)
Posted by placidplus on Thu, 05 Nov 2020 19:30:10 GMT

Okay. Please find attached both files. Thank you for your help.

```
File Attachments
```
1) AM_gfr.do, downloaded 623 times
2) AM_rates.do, downloaded 646 times

Subject: Re: MMR & PRMRatio (pregnancy related mortality ratio)
Posted by Trevor-DHS on Thu, 05 Nov 2020 19:50:40 GMT

Hi Placid
It is exactly as I thought. You code has:
```
 *---------------------------------------------------------------------
 *We now have a woman-level file that includes each woman's exposure and births
 *in each of the age intervals and in the specified time interval.

 *It will help to know the woman-years of exposure used for the GFR; call it
 *yexp_GFR to distinguish from the person-years of exposure for the mortality rates
 ---------------------------------------------------------------------*/
```
however the version on github has
```
 /*---------------------------------------------------------------------
 We now have a woman-level file that includes each woman's exposure and births
 in each of the age intervals and in the specified time interval.

 It will help to know the woman-years of exposure used for the GFR; call it
 yexp_GFR to distinguish from the person-years of exposure for the mortality rates
 ---------------------------------------------------------------------*/
```
In the version on github the comment starts with the /* in the first line and ends with */ on the last line.
In your version the first of these has been changed to just a * (meaning a single line comment, rather than a continuous comment). This means that in the last line the dash (-) at the beginning of the line is being treated as a command, and it doesn't recognize it.
Just add the slash (/) at the beginning of the first line of the comment and it should fix the problem.

Subject: Re: MMR & PRMRatio (pregnancy related mortality ratio)
Posted by placidplus on Thu, 05 Nov 2020 20:43:53 GMT

Thank you very much and I am sorry for putting you through the trouble. I am sincerely grateful.

Best Regards,
Placid.

Subject: Re: MMR & PRMRatio (pregnancy related mortality ratio)
Posted by placidplus on Thu, 05 Nov 2020 21:31:56 GMT

Hello Trevor,
    Please one last question on the MMR. I am trying to make sense of the estimates I just generated. The DHS reports MMR as 512 per 100,000 live births(Nigeria). I have just generated the attached results for Nigeria in Excel. If you look at the "Maternal Mortality Ratio" sheet tab (as

attached), you will find "0.002551416" under the MMR column. When you look at the "Mortality summary" summary sheet, you will find a column referred to as "unwtd_prdeaths" with an estimate of"511" which seems close to this estimate that was reported per 100,000 live births? "511" seems to me as pregnancy-related deaths. I actually need to report this as well as its 95% confidence intervals as done on page 374 of the DHS report. Thank you for your help.

Kind Regards,
Placid.

File Attachments
1) AM_tables.xlsx, downloaded 647 times

Subject: Re: MMR & PRMRatio (pregnancy related mortality ratio)
Posted by placidplus on Fri, 06 Nov 2020 04:07:52 GMT
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I figured out the estimates and the intervals. Thank you Trevor.

Subject: Re: MMR & PRMRatio (pregnancy related mortality ratio)
Posted by Trevor-DHS on Fri, 06 Nov 2020 18:54:15 GMT
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Hi Placid

There is an error in the calculation of the maternal mortality rates and ratios. This may be only an issue for Nigeria 2018, but might also affect other surveys. In AM_RATES.do, the following line should change from:
replace mdeaths_in_`li'=1 if deaths_in_`li'==1 & mm9>=2 & mm9<=5 & mm16==0
to:
replace mdeaths_in_`li'=1 if deaths_in_`li'==1 & mm9>=2 & mm9<=5 & mm16!=1 & mm16!=2
This is because the question on whether the death was due to accidents or violence are skipped in the Nigeria survey if the death was during delivery. The change above thus only excludes deaths due to accidents or violence, while the prior version was effectively excluding all deaths during delivery (as mm16 was missing, and thus not 0).

This will now give you the 512 estimate for maternal mortality which will match the results on page 374 of the report and in table 14.4 of page 377.

Subject: Re: MMR & PRMRatio (pregnancy related mortality ratio)
Posted by placidplus on Fri, 06 Nov 2020 22:05:23 GMT
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Oh, Great Thanks to you Trevor. The results are coming out accurately. I can now use the template for some other regions of the country. I am grateful for your interest and patience in this. I am happy this has fixed.

Kind Regards,
Placid.

Subject: Re: MMR & PRMRatio (pregnancy related mortality ratio)
Posted by placidplus on Sat, 07 Nov 2020 19:49:59 GMT

Hello Trevor,
    The whole process of generating the MMR produces a dataset referred to as the "micro.dta". Something I really appreciate on this dataset is that the mm9_**(sibling's death and pregnancy multiple variables) has now been reduced to one single unifying variable referred to as mm9. Same as "sex of child" in that event of pregnancy. Please how can I reduce the "micro.dta" dataset to an individual level dataset just like the IR data and maintain the single variables in "micro.dta"? This is so that I can use it to fit a regression model. I would then later generate a binary variable for maternal deaths from this dataset and fit a categorical model. I will appreciate your response.

Best Regards,
Placid.

Subject: Re: MMR & PRMRatio (pregnancy related mortality ratio)
Posted by Bridgette-DHS on Mon, 09 Nov 2020 12:41:48 GMT

Following is a response from DHS Research & Data Analysis Director, Tom Pullum:

The "micro.dta" file has one record for each sibling in the sibling histories. It's analogous to the BR file, which has one record for each child in the birth histories. It's built into the program mainly for data quality checking and simple tabulations. If you want to use it for data analysis, you need to take into account that there tends to be some rounding (and probably displacement) in ages of siblings, years since death, and age at death (for those who died). There may be some omission, especially for siblings who were much older than the respondent and died when young. And characteristics of the respondent, such as level of education and use of health services, cannot safely be attributed to the sibling. These are the reasons why DHS doesn't recommend estimating adult and maternal mortality for earlier time periods and subpopulations. Even so, you may find the file useful. You can add the respondent's IR variables onto micro.dta using v001 v002 v003 and a normal merge command.

Subject: Re: Maternal Mortality
Posted by Peter on Fri, 13 Aug 2021 14:37:17 GMT

Hi Trevor-DHS,
thanks for your contribution on this topic, it's really of great help to my study of maternal mortality.
But i still do understand somethings, from the spss syntax the part where it
   *Set up the period length and related variables.

is it the same has this?

   * Define the period to use, the upper limit (months preceding the interview), and the lower limit.
   define periodlen ().
   * To use 5 years durations.
   compute period = 5.
   compute kmax = 1.
   compute kmin = 12*period.
   compute totexp = kmin-kmax+1.
   !enddefine.

And secondly, my research is on some of the factors affecting maternal mortality in Nigeria 2013
and 2018. please how will merge the data?
thanks!


```
File Attachments
1) MatMort_DHS.sps, downloaded 657 times
```

Subject: Re: Maternal Mortality
Posted by Trevor-DHS on Mon, 16 Aug 2021 13:52:48 GMT

Yes, setting the code given is setting the period (5 years) and the minimum and maximum months
preceding the survey (kmax and kmin will be 1 and 60), and the total exposure in that period will
be 60 months.

On your second question this depends on what the variables are that you are interested in. If they
are variables that already exist in the individual recode (IR) file then you just need to carry them
through in your program, by including those variables on the /keep parameter of the varstocases
command. You shouldn't need to merge files if the variables of interest are already in the IR file.

Subject: Re: Maternal Mortality
Posted by rhopper1 on Wed, 31 Aug 2022 17:07:11 GMT

Dear DHS team

I am working on a project in Sierra Leone and I am trying to calculate adult mortality and maternal mortality rates.

Using the DHS 2019 data for sierra leone I have used the same formula listed by Trevor (and used by many others successfully). I have, unfortunately, not been able to generate the same results as are presented in the DHS 2019 report. The numbers for both mortality and exposure are very different to those in the DHS 2019 publication.

I have made changes to the weight as suggested (gen wt = (v005/1000000)*(awfactt/100)) but this has not made a difference.

Can someone please assist? I really would appreciate some help with this!

Thanks

Robbie

```
File Attachments
```
1)

Subject: Re: Maternal Mortality
Posted by Bridgette-DHS on Wed, 31 Aug 2022 19:14:47 GMT
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Following is a response from DHS Research & Data Analysis Director, Tom Pullum:

The programs to produce adult and pregnancy-related and maternal mortality rates are in chapter 16 of our GitHub site (https://github.com/DHSProgram).

The adjustment for awfactt is only needed for surveys limited to ever-married women. The Sierra Leone survey was not an EMW survey.

Let us know if you have difficulties If you use the GitHub programs, you should carefully read the introduction.

Subject: Re: Maternal Mortality
Posted by rhopper1 on Thu, 01 Sep 2022 09:14:59 GMT
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Dear Tom

Thanks so much for your reply. I used the GitHub site chapter 16 and the code runs fine until the end when I go to execute it, when it says...

//Execute the program
. main_adult_mm_mortality
C:\Users\robbi\OneDrive\Consultancy Work\WB HCR Sierra Leone\Data\DHS
file \`lfn_IR'.dta not found
r(601);

This code is returned even if I extract the DHS_IR dataset from the my desktop and begin the program with use "C:\Users\robbi\Desktop\DHS_2019_IR_ORDERED.dta"... then the output above is still returned exactly the same, despite me using a different folder.

. //Execute the program
. main_adult_mm_mortality
C:\Users\robbi\OneDrive\Consultancy Work\WB HCR Sierra Leone\Data\DHS
file \`lfn_IR'.dta not found
r(601);

Am I missing something obvious here?

Thanks

Robbie

Hello,

To execute any code from the DHS Program GitHub, please check the main file and change to your paths and the survey you are working with in the main file. This is indicate in the readme file for the repository and also there are notes in the main files.

After you change the paths to your own and the survey name in the main file, you should run the main file not the separate do files.

Thank you.

Best,
Shireen Assaf
The DHS Program

Dear DHS team

Thanks so much for your assistance so far. I have read the blanked-out text in the do files and the read me more thoroughly and with some persistence managed to generate the information I needed. Apologies for not realising all the information I needed was there in the first place.

One thing I have not been able to do, or understand, is toi work out if the probabilities of child/infant mortality generated by the do file on child mortality controls for any other variables. I understand logistic regressions are being run but I do not believe that any other variables are controlled for. I was wondering if this is possible, and/or it is possible to produce interaction terms using the do file so I can see the impact of say... a postnatal check within 2 months (m70) depending on who delivers the check (m72).

Apologies for the potential obvious nature of this questions. I hope to hear from you soon.

I look forward to hearing from you

Robbie

Following is a response from DHS staff member, Tom Pullum:

All of the demographic rates in DHS reports and on STATcompiler--fertility, under-5 mortality, adult and maternal mortality--are calculated for aggregates of women, or children, or siblings, and for exposure + events that occur in an interval of time, such as the last 3 years or the last 5 years or the last 7 years. There are some differences but basically they are based on a pooling of exposure or risk, and events, for an aggregate. The calculations can be repeated within aggregates or subpopulations such as the wealth quintiles, but cannot control for other potential covariates unless you go down to smaller and smaller subpopulations.

The GitHub programs to calculate the rates do include logit or poisson regressions with no covariates but basically as a shortcut to calculate proportions or means and to get standard errors.

If you want to do multivariate (multivariable?) analysis with controls, interactions, etc., you need to shift to a statistical framework that gives results in terms of coefficients rather than rates. You can do logit regressions that adjust for exposure, e.g. with hazard models, or poisson regressions, etc., depending on the outcome. Bridging demographic and statistical approaches is a methodological challenge.