Subject: Calculating fertility rates
Posted by DHS user on Tue, 26 Feb 2013 14:55:08 GMT
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I'm working on estimating several indicators using the DHS including age-specific fertility rates; total fertility rates. I've been using the Guide to DHS Statistics which has been really helpful. However, I've been unable to match the indicators I'm generating with the indicators in the DHS reports. My numbers are very close but not the same.

Do you have any resources on how to calculate these indicators particularly in Stata? Or any advice on how to use the weights for this data?

Subject: Re: Calculating fertility rates
Posted by Reduced-For(u)m on Tue, 26 Mar 2013 20:22:50 GMT
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Not sure if these suggestions will help, but thought I'd mention a couple of tricky parts.

First, did you divide all the weights by 1000000? It shouldn't make much of a difference, but I think it could lead to mathematically slightly different answers if Stata is trying to deal with really big weight numbers. Also, how are you actually weighting these? (I don't really know exactly how you should, other than it might involve the all woman factor, but seems like you'd have to re-calculate the denominator and numerator by summing across woman-years times weight instead of just the woman-years).

Second, getting the timing so that women-years are properly balanced between age-groups is tricky. The DHS method seems to truncate age to age-in-round-years, so maybe you are rounding differently than they do.

Third, there is another approach to calculating TFRs (and age-specific rates) that is a "person period" approach. You can find a discussion here http://paa2012.princeton.edu/papers/122446 but I don't think the package is totally ready yet (once it is, that will be handy). This will almost certainly not return the DHS numbers, and the interpretation is probably slightly different, but it's not clear to me that the DHS numbers are in any sense "better" than what you'd get from this method.

In general, it seems to be pretty hard to get exactly the numbers that the DHS gets. If yours are not meaningfully different (economically/epidemilogically/etc) from the published ones, it might just be an alogrythm thing about how Stata computes things and uses weights.

If you post a .do file, I might be able to take a look. I've found the process difficult myself, and maybe I could learn something from how you are trying to do it. Hope something here was helpful.

Subject: Re: Calculating fertility rates
Posted by schoumaker on Thu, 30 May 2013 13:51:30 GMT
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Hello - I prepared a Stata module (called tfr2) to compute fertility rates in a variety of ways. It was developed to be used mainly with DHS data, so the default options allow computing fertility rates like in DHS very easily (and the results - if you choose the default options - will be the same as in the DHS reports).

The module and the paper presenting it can be downloaded from the Demographi Research journal's website (http://www.demographic-research.org/volumes/vol28/38/).

Best regards,

Bruno

Subject: Re: Calculating fertility rates
Posted by amaustin on Wed, 25 Feb 2015 17:16:04 GMT
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Is there a SAS Macro similar to the tfr2 STATA program that was developed by Bruno Schoumaker? I am trying to develop state-level TFR estimates for Nigeria in 2008 and 2013. Thank you!

Subject: Re: Calculating fertility rates
Posted by schoumaker on Fri, 27 Feb 2015 08:19:12 GMT
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SAS and SPSS syntaxes for fertility rates used to be available on the DHS website - but I cannot find them anymore.
Beso,
Bruno

Subject: Re: Calculating fertility rates
Posted by amaustin on Fri, 27 Feb 2015 16:28:28 GMT
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Thanks, Bruno!
I also remembered them being available- but no luck.
All the best,
Anne

Subject: Re: Calculating fertility rates
Posted by Trevor-DHS on Fri, 27 Feb 2015 18:52:25 GMT
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You can find the old programs linked to the questions about reproducing fertility under Dataset Indicators at the old DHS Program site here:
http://legacy.dhsprogram.com/accesssurveys/dataset_faqs.cfm
However, these programs are old and have limitations, so user beware. They should though give you enough information to reproduce the results in the reports.

Subject: Re: Calculating fertility rates
Posted by annfitz on Tue, 26 May 2015 16:25:41 GMT
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Hi i downloaded the program tfr2 , and ran againgst the kenya 2008 data file in stata, using stat12 , unfortunately i did not match the results in the report, can anyone advise whether they have been able to match the fertility rates as shown, thanks

Subject: Re: Calculating fertility rates
Posted by schoumaker on Tue, 26 May 2015 18:34:14 GMT
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Hi,

have you used the individual recode data file (KEIR52FL)?

This is the result I get when running tfr2 with that file - and they match perfectly the rates published in the Kenya report (p.47).

Best,

Bruno

. tfr2
weight variable is v005
Preparing table of events and exposure for 3 year(s) preceding the survey
Period covered: 12/2005 to 11/2008
Central date is 2007.4636
Number of cases (women): 8421
Number of person-years (weighted): 23658.801
Number of events (weighted): 3609.3125

ASFRs - TFR

events Coef. Std. Err. z P>z [95% Conf. Interval]

Rate_1519	.1029641	.0043925	23.44	0.000	.0943549	.1115733
Rate_2024	.2378978	.007007	33.95	0.000	.2241644	.2516313
Rate_2529	.2155345	.0071216	30.26	0.000	.2015764	.2294926
Rate_3034	.1751397	.0073817	23.73	0.000	.1606718	.1896076
Rate_3539	.1178257	.0068037	17.32	0.000	.1044907	.1311607
Rate_4044	.0504861	.004728	10.68	0.000	.0412194	.0597528
Rate_4549	.011841	.0031293	3.78	0.000	.0057076	.0179743
TFR	4.558445	.0793782	57.43	0.000	4.402866	4.714023

Subject: Re: Calculating fertility rates
Posted by mianrashid on Mon, 19 Sep 2016 08:38:56 GMT
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Dear Sir,
I want to calculate TFR of Pakistan DHS 2012-2013, as well as by place of residence, Region/Provincial background, level of education and by wealth status. Please let me know the command which if have to use to calculate this in TFR2 module package by bruno?
Thanks you.

Subject: Re: Calculating fertility rates
Posted by Liz-DHS on Mon, 19 Sep 2016 12:51:20 GMT
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Dear User,
Here is a link http:// userforum.dhsprogram.com/index.php?t=msg&th=63&goto= 499&#msg_499 from Dr. Schoumaker previously posted on the forum on this subject.
Thank you!

Subject: Re: Calculating fertility rates
Posted by schoumaker on Mon, 19 Sep 2016 13:00:59 GMT
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Hello,

tfr2 computes rates for the 3 preceding years by default.

Just typing tfr2 will thus compute the rates for the three years preceding the survey

Actually, it is a shortcut for:

tfr2 [pw=v005], dates(v008) bvar(b3*) wb(v011) len(3) ageg(5) awf(awfactt)

In Pakistan, you should be careful to use the correct all-women factors for sub-populations.

For instance, to compute rates for rural and urban areas, you can use the following command

by v025, sort: tfr2, awf(awfactu)

If you want to compute these rates for a 5- year period, it would become

by v025, sort: tfr2, len(5) awf(awfactu)

Best, Bruno

Subject: Re: Calculating fertility rates
Posted by Kirwana Venantius Bbaale on Mon, 24 Oct 2016 08:09:10 GMT
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I need to download Tfr2 command.cant find it.
what do I do?

Subject: Re: Calculating fertility rates
Posted by schoumaker on Mon, 24 Oct 2016 08:12:13 GMT
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Hello,

You can download it directly from Stata by typing

ssc install tfr2

Best regards,

Bruno

Subject: Re: Calculating fertility rates
Posted by Kirwana Venantius Bbaale on Mon, 24 Oct 2016 11:41:01 GMT
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Thanks Bruno, I managed to install it but I am getting a different TFR for Uganda DHS data 2011

Subject: Re: Calculating fertility rates
Posted by schoumaker on Mon, 24 Oct 2016 11:42:34 GMT
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Thank you,
Can you send the syntax and the output ?
Did you use the Individual Recode data file ?
Bruno

Subject: Re: Calculating fertility rates
Posted by Kirwana Venantius Bbaale on Mon, 24 Oct 2016 13:26:11 GMT
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Quote:
. tfr2
weight variable is v005
Preparing table of events and exposure for 3 year(s) preceding the survey
Period covered: 8/2008 to 7/2011
Central date is 2010.1332
Number of cases (women): 28609
Number of person-years (weighted): 85763.883
Number of events (weighted): 42221.082

ASFRs - TFR

events	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
Rate_1519	.2282156	.0083323	27.39	0.000	.2118846	.2445466
Rate_2024	.3761918	.0061126	61.54	0.000	.3642114	.3881722
Rate_2529	.4757862	.0054558	87.21	0.000	.465093	.4864794
Rate_3034	.4690061	.0053467	87.72	0.000	.4585268	.4794854
Rate_3539	.5036195	.0052258	96.37	0.000	.493377	.5138619
Rate_4044	.5500663	.0065024	84.59	0.000	.5373218	.5628108
Rate_4549	.6933619	.0089963	77.07	0.000	.6757293	.7109944
TFR	16.48124	.0888354	185.53	0.000	16.30712	16.65535

I used individual data sets

Subject: Re: Calculating fertility rates
Posted by schoumaker on Mon, 24 Oct 2016 13:34:58 GMT
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Hello,
What is the name of your data file ?
Best regards,
Bruno

Subject: Re: Calculating fertility rates
Posted by schoumaker on Mon, 24 Oct 2016 14:00:04 GMT
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You should use UGIR60FL.DTA as below.
Bruno

. use "C:\12.DATA\DHS\IR\UGIR60FL.DTA", clear

. tfr2
weight variable is v005
Preparing table of events and exposure for 3 year(s) preceding the survey
Period covered: 8/2008 to 7/2011
Central date is 2010.1378
Number of cases (women): 8634
Number of person-years (weighted): 23918.096
Number of events (weighted): 4916.5352

ASFRs - TFR

events	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
Rate_1519	.1344827	.0048509	27.72	0.000	.1249751	.1439904
Rate_2024	.3132275	.008087	38.73	0.000	.2973772	.3290778
Rate_2529	.2914675	.0082319	35.41	0.000	.2753333	.3076017
Rate_3034	.2323487	.0085758	27.09	0.000	.2155404	.249157
Rate_3539	.1716094	.0077221	22.22	0.000	.1564743	.1867444
Rate_4044	.0742423	.0063143	11.76	0.000	.0618665	.0866181
Rate_4549	.0230467	.0043584	5.29	0.000	.0145044	.031589
TFR	6.202124	.0933726	66.42	0.000	6.019117	6.385131

Subject: Re: Calculating fertility rates

Posted by Kirwana Venantius Bbaale on Mon, 24 Oct 2016 15:02:10 GMT
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Thank you Bruno

Subject: Re: Calculating fertility rates
Posted by Kirwana Venantius Bbaale on Mon, 24 Oct 2016 15:04:33 GMT
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Thank you Bruno

Subject: Re: Calculating fertility rates
Posted by Kirwana Venantius Bbaale on Tue, 25 Oct 2016 10:19:10 GMT
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Thanks Bruno.
Are there also variable for abortion in the DHS data sets

Subject: Re: Calculating fertility rates
Posted by schoumaker on Tue, 25 Oct 2016 10:54:24 GMT
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I think there are limited data on abortion in the Uganda 2011 DHS, but no pregnancy history.
Bruno

Subject: Re: Calculating fertility rates
Posted by rajaram on Mon, 09 Oct 2017 06:31:33 GMT
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Hi i downloaded the program tfr2 , and ran againgst the India 2005-06 (NFHS-3) data file (IABR50FL)in stata, using stat13 , unfortunately i did not match the results in the report, can anyone advise whether they have been able to match the fertility rates as shown, If possible please post syntax and result. thanks

Subject: Re: Calculating fertility rates
Posted by schoumaker on Mon, 09 Oct 2017 06:42:01 GMT
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Hello,

You should use the individual recode data file (IAIR52FL.dta), and not the BR file.
Below are the results you get - which are the same as the ones in Table 4.1 of the report.
Best regards,
Bruno

. use IAIR52FL.dta, clear

. tfr2
weight variable is v005
Preparing table of events and exposure for 3 year(s) preceding the survey
Period covered: 3/2003 to 2/2006
Central date is 2004.7274
Number of cases (women): 124148
Number of person-years (weighted): 350470.53
Number of events (weighted): 33513.922

ASFRs - TFR

events	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
Rate_1519	.0903105	.0011011	82.02	0.000	.0881523	.0924686
Rate_2024	.2093305	.0017732	118.05	0.000	.2058551	.2128059
Rate_2529	.1387952	.0015334	90.52	0.000	.1357899	.1418006
Rate_3034	.0623592	.0010966	56.87	0.000	.0602099	.0645085
Rate_3539	.0247464	.0007418	33.36	0.000	.0232925	.0262002
Rate_4044	.007229	.0004504	16.05	0.000	.0063462	.0081118
Rate_4549	.0029555	.0004062	7.28	0.000	.0021593	.0037517
TFR	2.678631	.0148564	180.30	0.000	2.649513	2.70775

Subject: Re: Calculating fertility rates
Posted by rajaram on Tue, 10 Oct 2017 09:17:19 GMT
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Thanks a lot sir. I was trying it for one week and was worry for not getting the accurate results.
Now i am very happy to get reply from you.

Subject: Re: Calculating fertility rates
Posted by Jayanta on Tue, 21 Aug 2018 14:32:37 GMT
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Dear Bruno,

I was looking at the report on "Quality and Consistency of DHS Fertility Estimates,1990 to 2012" done by you and want the understand how to work in Stata for reconstructed fertility estimate with pooled birth histories (birth histories corrected for birth displacement). Whether we have to work with women data files or birth history data files? I have seven years DHS survey data to see the trend of TFR.

Can you please share the stata code for the same?

Thanks in advance for your help.

Regards,
Jayanta

Subject: Re: Calculating fertility rates
Posted by adasgupta on Mon, 12 Aug 2019 09:10:58 GMT
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Dear Bruno

I need to calculate TFR at district level for India by 3 rounds (Round 1,2 and 4 have district identifiers for India). Can you let me know if:

(i) TFR2 command would give reliable estimates at district level
(ii) how do I collate the rates in a single dta/excel file.

Many thanks for your time.
A

Subject: Re: Calculating fertility rates
Posted by schoumaker on Mon, 12 Aug 2019 14:34:15 GMT
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Hello,

For the most recent DHS, you can use the following syntax to compute the TFR and the standard error of the TFR by district, and to save them to an excel file. In this example, I compute it for 5-year windows to reduce standard errors.

I cannot tell you if these district-level estimates are trustworthy; you should look at the confidence intervals, documentation on sampling, etc.

For the 1999 Indian DHS, you would need to use an all-women factor, and to my knowledge they are not available for at the district level in the data file. You could compute them yourself, but

there may be a good reason for not making them available in the data file.

Best regards,

Bruno

****

```
use "IAIR74FL.DTA", clear

putexcel set "tfr2_district.xls", replace
putexcel A1=("District") B1=("TFR") C1=("S.E.")

levelsof sdistri, local(levels)

local i=1
foreach d of local levels {
 tfr2 if sdistri==`d', len(5) norates
 local i=`i'+1
 putexcel A`i'="`d'" B`i'=_b[TFR] C`i'=_se[TFR]
}
```

Subject: Re: Calculating fertility rates
Posted by DikshaJha on Thu, 16 Feb 2023 13:45:02 GMT
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Hi,
I am using the NFHS-4 data to calculate the TFR at the state and district levels.
So, I used the following syntax to calculate it for the state level:

```
clear
use "C:\Users\DELL\Dropbox\NFHS-4\IAIR74FL.DTA"

putexcel set "C:\Users\DELL\Dropbox\NFHS-4\tfr2_state_new.xls", replace
putexcel A1=("State") B1=("TFR") C1=("S.E.")

levelsof v024, local(levels)

local i=1
foreach d of local levels {
tfr2 if v024==`d', len(5) norates
local i=`i'+1
putexcel A`i'="`d'" B`i'=_b[TFR] C`i'=_se[TFR]
}
```

My results for state-wise TFR are coming different than the NFHS-4 report.
How can I improve my results?
I used a similar syntax to calculate TFR at the district level, and I am not sure how reliable my results are. Is there a different way I can calculate the TFR at the district level?
Thank You.

Subject: Re: Calculating fertility rates
Posted by schoumaker on Thu, 16 Feb 2023 14:19:57 GMT
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Hello,

Fertility rates in DHS reports are usually computed for the 3 years preceding the survey.

you should use the option len(3) instead of len(5). I did a quick comparison for a few sates, and my results match the figures in the report in the states I checked.

tfr2 if v024==`d', len(3) norates

Best regards.

Bruno Schoumaker

Subject: Re: Calculating fertility rates
Posted by DikshaJha on Thu, 16 Feb 2023 14:49:39 GMT
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Hi Bruno,
Thanks a lot for your help. I checked it for all states, and the calculations match the NFHS-4 report.

Subject: Re: Calculating fertility rates
Posted by DikshaJha on Tue, 08 Aug 2023 09:33:53 GMT
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Hi,
I am trying to calculate TFR district-wise using India's Annual Health Survey(AHS) 2007-2012. But I am unable to proceed. The AHS does not give birth level data. I have information on total births by the women. How can I proceed in this case? The AHS releases the factsheet giving out TFR for all districts covered in the survey but it is not available for all districts in the public domain. How can I calculate it using the data? I am clueless. Please help.

Subject: Re: Calculating fertility rates
Posted by Janet-DHS on Tue, 15 Aug 2023 15:59:10 GMT
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Following is a response from DHS staff member, Tom Pullum:

We cannot provide support for data collected outside of The DHS Program. From your description, the AHS does not include the information needed to calculate the Total Fertility Rate for any level of aggregation. If so, the TFRs given in the factsheet must come from some other source(s) or from some approximations. We cannot help.

Subject: Re: Calculating fertility rates
Posted by Astride on Sun, 17 Mar 2024 15:50:43 GMT
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Hello,

Can i use the TFR2 for multicountries analysis of fertility estimation?

If some modifactions is necessary, please help me

I show you down my results of TFR2 in 21 countries simultanously

```
   events | Coefficient  Std. err.      z    P>|z|     [95% conf.
>  interval]
 -------------+---------------------------------------------- --------
> ----------
   Rate_1519 |    .46426   .0015544   298.67   0.000     .4612134
>   .4673066
   Rate_2024 |   .4494544    .001645   273.22   0.000     .4462302
>   .4526786
   Rate_2529 |   .4569331   .0017335   263.59   0.000     .4535354
>   .4603307
   Rate_3034 |    .465617   .0019319   241.02   0.000     .4618306
>   .4694034
   Rate_3539 |   .4774492   .0021166   225.58   0.000     .4733008
>   .4815976
   Rate_4044 |   .4778577   .0024505   195.01   0.000     .4730549
>   .4826605
   Rate_4549 |   .6123665   .0036269   168.84   0.000      .605258
>    .619475
        TFR |   17.01969   .0297902   571.32   0.000      16.9613
>   17.07808
```

Subject: Re: Calculating fertility rates
Posted by schoumaker on Mon, 18 Mar 2024 09:20:28 GMT
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Hello,
Which files did you use ? Did you use individual recode data files ? Did you just append them, and ran tfr ? Or did you do something else ?

In general, I would not recommand using tfr2 on a multicountry file. If you send me more information, I can look at it.

In any case, you would have to be careful about

- the use of the correct files (IR)
- the dates of the surveys which will differ - and would need to be taken care of.
- the weights, especially if you want to account for different population sizes.
- possibly the use of all-women factors, which may be necessary in some surveys and not in others.

Best regards,

Bruno Schoumaker

Subject: Re: Calculating fertility rates
Posted by Astride on Mon, 18 Mar 2024 12:58:20 GMT
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Hello,

I used IR files and i combined it for 21 countries which are Afrique du Sud Burkina Faso Gabon Gambie Ghana Sénégal Cameroun Mali Nigéria Tanzanie Ouganda Rwanda Sierra Leone Bénin Zambie Zimbabwe Ethiopie Madagascar Burundi Angola
Then i ran TFR2.

i use the last DHS data of each country

Thanks for help

Subject: Re: Calculating fertility rates
Posted by schoumaker on Mon, 18 Mar 2024 17:38:02 GMT
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Thank you for your reply. I think you should avoid doing this with tfr2, which was not conceived for

this type of analyses.

Given that the survey dates differ may widely (even with the most recent surveys), your fertility rates will refer to different periods. Moreover, the Ethiopia survey uses another calendar, that needs to be takes into account. In addition, if you want to obtain fertility rates for the entire set of countries, youd would need to compute and use weights that reflect the size of the women's population in these countries.

Maybe a more careful approach would be to use tabexp to compute the number of births and exposure by age groups, for each survey separately, and combine them afterwards (with weights, and having in mind that they refer to different time periods). tabexp (and tfr2) also allow defining the end year of the estmation period. For instance, if you want compute rates for the 3 years up to 2019 (included), you can use tfr2, length(3) endy(2019), or tabexp, length(3) endy(2019). This makes it possible to compute rates for the same time periods in various surveys, but you would lose some cases at higher ages in some surveys.

Best regards,

Bruno