

Using birth registration completeness to adjust birth data

Data analysis and Report writing workshop for Civil registration and vital statistics data.



What is "good enough"?

- Generally, if at least 70-80% of births are captured, we can use the data to calculate fertility indicators by adjusting the completeness of our records upwards.
- CRVS data that is more than 90% complete can generally be used for analysis without adjustment (although the completeness should be reported for context).
 - However we must be careful, as this assumes that the under-reporting of events is general and not limited to particular sub-groups within the population.
- If our data is not adjusted for completeness, we may make assumptions about fertility and mortality rates that are not true

Test data birth registration completeness

Completeness of birth registration (%) =
$$\frac{\text{Number of registered births}}{\text{Actual number of births}} * 100$$

$$86\% = \frac{5000 \text{ registered births}}{5800 \text{ actual births}} * 100$$

- In our test data, our birth registration completeness is 86%
- We know there is a problem with registration in the East Province
- We want to adjust our data up for more reliable fertility indicators

Why do we need to assign mothers' ages to these new births?

Fertility indicators such as teenage fertility rates and total fertility rates require data by age of the mother.

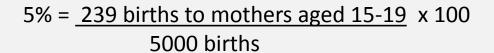
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Teenage fertility rate = \frac{\text{number of births to women aged 15-19 years}}{\text{total number of women aged 15-19 years}} * 1000
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- These rates will be artificially low if we use only the number of births with known mother's age
- How could this affect public policy?

Redistribute births by mother's age

 We will use the final census number of 5800 for our number of births

- We are going to assume births by mother's age does not vary by province and will use the percent distribution from all 5,000 births
- Similar to adjusting for unknown age of decedents, we will now redistribute these 'new' 800 births and assign their mothers an age



Calculate the percent distribution of births by mothers' age group using the original total as the denominator

Mother's age	Original count	Percent	New Distribution
<15	2	0%	_ 2
15-19	239	5%	277
20-24	1088	22%	1262
25-29	1596	32%	1851
30-34	1298	26%	1506
35-39	640	13%	742
40-44	124	2%	144
45-49	12	0%	14
50+	1	0%	1
Total births	5000	100%	
New Total births	5800		5800

Apply this percentage to the new count of 5,800 births

 $= 5 \times 277$

Note: New distribution total may not add up due to rounding

Adjusted vs unadjusted rates

Teenage fertility rate =
$$\frac{\text{number of births to women aged } 15-19 \text{ years}}{\text{total number of women aged } 15-19 \text{ years}} * 1000$$

Unadjusted Teenage fertility rate of
$$14.9 = \frac{239}{16070} * 1000$$

Adjusted Teenage fertility rate of
$$17.3 = \frac{277}{16070} * 1000$$

Policy makers may erroneously believe that teenage fertility had declined if the unadjusted rate was presented.

Report both adjusted and unadjusted rates

- It's important to report both the original counts of registered births by mothers age as well as adjusted numbers
- Be transparent about how numbers were adjusted
 - Did you use percent distribution from vital statistics? Another imputation method? Etc.

Exercise: Adjusting birth data

- Calculate the new counts of births by mothers' age using the percent distribution from your test vital statistics data
- Repeat this exercise with your country data