





Fertility Estimates of Indonesia for Provinces Adjusting Under-Recording of Women in 2002-3 and 2007 IDHS



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BPS Contract (088/CP7/VIII/2009) with UNFPA November 2009

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Contract: For consultancy services on the validation and analysis of estimates of TFR and ASFR, by province, using the IDHS 2002-3 and 2007.

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November 2009

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ACRONYMS & ABBREVIATIONS

ASFR	
BPS	
CPS	
IDHS	
МК	
RISKESDAS	
SAKERNAS	
SDKI	
SUPAS	
SUSENAS	
TFR	
UNFPA	

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FOREWORD

Indonesian policy makers rely on good quality population data for programme planning, implementation and monitoring. Ensuring data accuracy is thus a central concern, not only among policy makers, but also for both academic researchers who analyse socioeconomic trends, and all the citizens who benefit from government development programs.

Indonesia, like many other countries has adopted the methodologies of the Demographic and Health Surveys (DHS) to provide comprehensive information for nationally representative samples of women of childbearing ages and their children. The DHS suite of surveys has produced information as diverse as the rates of infant and child mortality, the coverage of maternity care services, and the knowledge and practice of risky behaviour associated with HIV and AIDS. Since end of 1980s, these surveys have enriched Indonesia and the world with reliable demographic and health parameters.

Fertility, one of the most important demographic parameters, is a key measure produced by the DHS. The DHS fertility rates are based on the direct estimates calculated from women's records of their pregnancy histories. These figures do not always fully accord with indirect calculations that are derived from the analysis of decennial population censuses, the inter-censal population surveys (SUPAS), or annual social and economic surveys (SUSENAS). In recent years Indonesian fertility rates based on the census type surveys have been lower than those from the DHS and the gap between the estimates has been growing.

During the 2008 assessment of potential for revitalization of the family planning program, commissioned by the Government of Indonesia and UNFPA, Prof. Terence Hull, demographer from the Australian National University and Prof. Henry Mosley, public health specialist of Johns Hopkins University, flagged concern that the Demographic Health Surveys appear to systematically undercount single women. While the DHS collects information from ever married women of reproductive ages, it also requires a full count of all adult women in the sample households to facilitate the calculation of age specific and total fertility rates. When single women are missing from the household listings, fertility is systematically over estimated.

Following up on this finding during the development of the 2010-2014 National Medium Term Development Plan (2010-2014 RPJMN) BAPPENAS invited population experts from BPS, Demographic Institute, Faculty of Economic-University of Indonesia (LD-FE-UI) and Australian National University (ANU) to provide advice on ways to ensure that fertility figures used in population projections for the plan would be as accurate as possible. According to their advice the fertility estimates in the DHS should be adjusted to reflect the numbers of single women who had been missed in the samples of surveys carried out in 2002-3 and 2007. BAPPENAS requested UNFPA to facilitate this exercise by supporting the experts to carry out the re-calculation of the fertility estimates for provinces and the nation as a whole. This report presents the results of those calculations. The revised fertility estimates is now internationally comparable because of similar methodologies used in this revision.

Jakarta, November 2009

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EXECUTIVE SUMMARY

In a study of the Revitalization of Family Planning in Indonesia for the BKKBN and UNFPA it was found that the Indonesian Demographic and Health Survey (SDKI) systematically under-recorded single women in the household listings. This meant that the fertility estimates which use all women as the denominator were artificially inflated. A method was proposed for the adjustment of the data to obtain a more valid and reliable fertility estimate. This produced an estimate for total fertility rate of 2.4 for SDKI 2002-3 and 2.3 for SDKI 2007 (Hull and Hartanto, 2009). Sparked from this insight, the current project has reviewed all the data for provinces and has further checked the methodology to obtain provincial level estimates for use in population projections for planning and monitoring. The results indicated that many of the interpretations of fertility change in the last ten years have been mistaken. It points to the need for greater investment in the maintenance of a proper sampling frame for the SDKI and other sample surveys in Indonesia.

BACKGROUND

Throughout the New Order period of President Suharto's rule, government developed a comprehensive national program for the promotion of contraceptive use and smaller family norms. The goal in recent years was to reach replacement levels of fertility by 2010, which is to have a total fertility rate of approximately 2.1 children per woman at the end of their childbearing. From the mid 1970s through the end of the 1990s fertility fell steadily, but after the results of the SDKI 2002-3 were published there was concern that fertility was levelling off at a level about half a child on average above the goal. The results of the 2007 SDKI turned concern into anxiety. It appeared that fertility if anything had risen slightly - so the graphs were showing the two most recent SDKI as having total fertility rates of 2.6. The newspapers and politicians began to talk of a baby boom that might cause a population explosion. While professional demographers were sure that such bombastic language was out of place, the apparent plateau did seem strange. Measures of contraceptive use were still high and rising slightly, there seemed to be no social measure to indicate a reversal of the new social norms for delayed marriage and few children in the family, and most importantly, the number of young children recorded in censuses and surveys were showing a continuing decline. The population pyramid had a large and growing indented base.

Method for adjusting fertility estimates

Statistics Indonesia (BPS) calculates fertility levels from census and large scale household surveys by comparing of the number of young children (aged from birth to 3 or 4 years old) listed in the households and the number of women of childbearing ages, including the mothers of the children. This is the "Own-Child Method" of fertility estimation. By taking into account the impact of infant mortality the total number of children born each year prior to the enumeration can be estimated and attributed to women according to five year age groups between 15 and 49 years of age. These calculations form the basis for an estimation of Total Fertility Rates (TFR), which can be roughly interpreted as the average family size. The trend line of TFR after 1970 was not strictly linear but fell continuously through the turn of the century, after which point the decline slowed as the rate neared the so-called replacement level of 2.1 children per woman.

Since the 1980s, an alternative set of fertility estimates has been developed to give more detailed insights into the social and biological processes behind fertility. These surveys took a different approach to fertility analysis, relying on the collection of personal marriage and childbirth histories of a sample of ever-married women. The resulting pregnancy history data base allowed analysts to reconstruct the marriage, fertility and mortality experienced by the women for some decades prior to the survey. It also allowed the calculation of the average duration of inter-birth intervals and a wide range of factors related to breastfeeding, amenorrhea, contraception and abortion, all of which contribute to the level and trend of fertility. Starting with the Contraceptive Prevalence Survey of 1987 through the Demographic and Health Surveys of 1991, 1994, 1997, 2002/3, 2007 (CPS and SDKI or SDKI in Indonesian) the pregnancy history estimates diverged from the census trend lines. In early years they were below the Own Child estimates. Since 1995 the SDKI rates have increasingly exceeded the levels found in the census-type national surveys. As mentioned above, from about the year 2000 the published SDKI estimates of current fertility (three years prior to the survey) have been stagnant at 2.6 children per woman, well above census estimates, and half a child higher than the replacement level.

The contradictions between the two systems of data collection pose a serious problem for statisticians and policy makers alike. If on the one hand the census estimates are correct, then Indonesia would appear to be progressing well to the achievement of the national target of replacement level fertility in the year 2010. However if the SDKI is more reliable, then the country is unlikely to achieve the target on time.

In the context of political debate such data contradictions led to strongly contrasting ideas about demographic future. This was important because the alternative scenarios of census or SDKI fertility imply different population projections with great consequences for governmental structures and planning decisions for education and health services. However, until recently, there has been no clear basis for preferring one interpretation over the other.

Often the discussions were reduced to matters of faith, with the SDKI being called the "gold standard" due to the detail of its data collection, and the Census being regarded as the "complete enumeration" because interviewers in 2000 were told to visit every household and record every citizen. While demographers might have academic discussions about the technical shortcomings of both types of estimate, politicians demanded to know which one was "correct".

Hints of problems with the SDKI

SDKI enumerators collected detailed data from ever-married women between the ages of 15 and 49, including complete histories of pregnancies and births. The total number of births in two discrete five year periods of time prior to the survey was obtained from these histories. However fertility rates are not based on ever-married women alone, but all women of reproductive age. This meant that the survey had to count both married and unmarried women in the sample households. This was done by making a full household listing of all members.

Age Group	SUPAS 1995	SDKI 1997	Census 2000	MK 2000	SUSENAS 2002	SDKI 2002-3	SUPAS 2005	SDKI 2007	
Percentage of women in the age group who are single									
15-19	85.7	82.1	89.3	88.6	89.7	85.1	90.8	86.7	
20-24	40.1	36.1	43.1	47.3	47.0	40.9	51.4	38.1	
25-29	15.2	14.1	16.7	18.4	16.3	13.5	19.7	15.4	
30-34	5.5	5.3	6.9	7.2	6.5	5.8	8.1	7.0	
35-39	2.8	2.4	3.5	3.3	2.9	3.0	4.3	3.6	
40-44	2.1	2.9	2.4	2.2	2.1	2.0	2.6	2.6	
45-49	1.9	1.7	2.0	1.7	1.4	1.8	2.0	1.9	
All WRA	27.7	25.3	28.7	29.3	27.6	25.1	28.8	23.7	

Table 1. Marital status distributions for women of reproductive ages insuccessive national surveys in Indonesia

*Calculated from the Measure SDKI STATCompiler:

http://www.statcompiler.com/ and 2007 SDKI data provided by Statistics Indonesia.

Table 1 reveals that the SDKI household listings consistently show lower proportions of single women compared to Census, 2000 Population Module (MK), SUPAS or SUSENAS enumerations taken at around the same time, particularly for the ages from 20 through 34, the peak years of reproduction for Indonesian women

What explains the apparent lack of single women in the SDKI listings? In part there is a major difference in the type of household covered by SDKI and census type surveys. Essentially, the SDKI interviewers are on the lookout for ever married women and given the nature of the survey they are particularly attuned to households with families. They do not visit "institutional housing" such as prisons, dormitories, barrack facilities, or religious group housing like convents or schools. As a result the SDKI would not list the women and men living in such "Rumah Tangga Khusus" (Special Households) and they would be missing from resulting statistics relying on denominators meant to include all members of a reference group, like all women of childbearing ages.

Since the 1980s Indonesia has undergone a remarkable change in the roles young women perform in society. They are increasingly likely to pursue education to higher levels, to work in expanding industrial and service occupations, or join the over four million Indonesian workers who are employed overseas sending remittances home (though this group is not included in any census or survey enumeration). Single women in Indonesia often live in institutional settings. They also form what might be regarded as "non-standard" households even if they are not in institutional settings. Thus young people may be listed in a household in the BPS census listing, but they may live under very crowded or unusual circumstances and possess none of the characteristics regarded as "normal" family life. Anecdotal evidence from

interviewers indicates that these households are sometimes passed over in the SDKI canvassing because fieldworkers concentrate on units that are more likely to yield eligible respondents. In contrast the decennial census enumeration attempts to include all households, and the intercensal survey (SUPAS) makes special efforts to cover both family and non-family households, often with particular interest in workers and students.

The lack of attention to the conditions of single women was sometimes justified with the assumption that unmarried women do not have sexual relationships, and even if they do fall pregnant, this is likely to lead to marriage in a very short period of time. Sociological and Anthropological research, as well as simple observation of social trends, indicates that such an assumption has always been naïve, and recently has become totally misleading. With an estimated one million induced abortions annually, of which some 40 to 60 percent occur among the unmarried, it is vital for the SDKI to ensure that all eligible single women are included in the sample. Moreover, the rising age at marriage means that an increasing proportion of the women between the ages of 20 and 34 are single, and they are also moving out of their parental homes and shedding many of the strictures that apply to adolescents. These are women who need to be included in any analysis of reproductive and sexual health.

In short, it is evident that the SDKI has missed many young single women during the household listing with the result that the denominators used to calculate fertility are underestimated, and fertility is over stated. The problem of listing single women (and men) began in earnest in the 1990s as massive transformations of education, occupation and living arrangements took place, and this problem has grown steadily through the present day. It is evident from the comparison of census type surveys (2000 Population Module (MK), SUPAS, SUSENAS, SENSUS) and the SDKI, but that does not mean that the census is absolutely correct. In fact it is likely that Indonesia, in common with even Australia and America, has an undercount of young men and women because of the social and geographic mobility of the age group. Nonetheless, if we assume that the SDKI should at least include those young people who were counted in the census type surveys, then we have a chance of adjusting the rates to approach a more realistic level of fertility.

Returning the missing women to the SDKI sample population

The adjustment of SDKI fertility rates is a two step process. First, the data in Table 1 can be used to estimate the number of single women missing from the SDKI sample compared to the expected number if the SDKI had the same marriage status patterns as recent census type surveys. Second, once those single women are added to the total number of women in the SDKI households the fertility rates can be recalculated with new denominators. Both these calculations are described below, producing a pair of adjusted fertility rates for the two most recent SDKI.

Adjusting SDKI Fertility for the Missing Single Women.

When looking into the algebraic source for an adjustment it is possible to achieve the same result in two distinct ways. First we can solve for the missing single women, represented in Table A1 as **x**

Start with the basic entity that the proportion single in the SDKI (ds) in each age group can be represented as Ds/Dw (Single women in the SDKI divided by all women in the SDKI), for each age group. Then the proportion single in the SDKI population if all the single women were restored to both the numerator and the denominator to achieve the same proportion single as found in the recent census enumeration (cs) gives us:

$$cs = (Ds+x)/(Dw+x)$$

$$Ds+x = (cs * Dw) + (cs*x)$$

$$x-(cs*x) = cs*Dw - Ds$$

$$x(1 - cs) = cs*Dw - Ds$$

$$x = [(cs * Dw) - Ds]/(1-cs)$$

This calculation is shown for the two most recent SDKI in Table 2.

Table 2. Estimation of total number of women if reflecting recent population module based marriage patterns -- solving for missing single women: x = [(cs*Dw)-Ds]/(1-cs)

Age of mothers	SDKI numbers recorded by age group	SDKI single recorded by age group	SDKI Proportion single in age group	2000 Pop. Module (MK) Proportion single in age group	Estimate of missing women	Adjusted total SDKI women
	Dw	Ds	ds	CS	х	Dw'
15-19	6714	5714	0.8511	0.8862	2073	8787
20-24	6738	2757	0.4092	0.4726	811	7549
25-29	6302	850	0.1349	0.1838	378	6680
30-34	5844	339	0.0580	0.0721	88	5932
35-39	5350	158	0.0295	0.0331	20	5370
40-44	4703	94	0.0200	0.0218	9	4712
45-49	4169	77	0.0185	0.0168	-7	4162
All WRA	39820	9989	0.2509	0.2932	3372	43192

2002-03 SDKI Estimate

2007 SDKI Estimate

Age of mothers	2007 SDKI numbers recorded by age group	2007 SDKI single recorded by age group	2007 SDKI Proportion single in age group	2005 SUPAS Proportion single in age group	Estimate of missing women	Adjusted total 2007 SDKI women
	Dw	Ds	ds	CS	х	Dw'
15-19	6862	5949	0.8670	0.9080	3061	9923
20-24	7071	2693	0.3808	0.5142	1941	9012
25-29	7157	1099	0.1535	0.1974	391	7549
30-34	6729	468	0.0696	0.0810	84	6813
35-39	6466	235	0.0364	0.0431	45	6512
40-44	5713	148	0.0260	0.0255	-3	5711
45-49	5100	96	0.0189	0.0197	4	5104
All WRA	45098	10688	0.2370	0.2879	5523	50624

Adjusting the fertility rates for missing single women

The adjustment of SDKI fertility rates is a two step process. First, the data in Table 1 can be used to estimate the number of single women missing from the SDKI sample compared to the expected number if the SDKI had the same marriage status patterns as recent census type surveys. Second, once those single women are added to the total number

The population module (MK) based estimate of missing women allows the reconstruction of age specific and total fertility rates for the 2002-3 SDKI. In the Main Report the method used for calculating fertility rates indicates that:

Numerators of the ASFRs [age specific fertility rates] are calculated by summing the number of live births that occurred in the period 1 to 36 months preceding the survey (determined by the date of interview and the date of birth of the child) and classifying them by the age (in five-year groups) of the mother at the time of birth (determined by the mother's date of birth). The denominators of the rates are the number of woman-years lived in each of the specified five-year groups during the 1 to 36 months preceding the survey. Since only women who had ever married were interviewed in the SDKI, the numbers of women in the denominators of the rates were inflated by factors calculated from information in the Household Questionnaire on populations ever married in order to produce a count of all women. Never-married women are presumed not to have given birth. (SDKI Main Report, 2003:43)

In Table 3 the published age specific fertility rates and the calculated numbers of women recorded in the Household Questionnaire are used to estimate the annual number of births for all women in 2002, assuming no decline in fertility over the period 2000-2002. Then the annual fertility rates are recalculated using the adjusted numbers of women who should have been listed in the SDKI Household Questionnaire if the 2000 Population Module (MK) marriage patterns had prevailed for the 2002-03 SDKI.

Where the 2002-03 SDKI Main Report showed a TFR of 2.6, adjusting the fertility rate for missing single women produces a TFR of 2.4 for the three year period 2000-2002 (centred on 2001). This is slightly above the trend line for population module-type own-child calculations of fertility.

A similar adjustment applied to the 2007 SDKI using the marital status distribution from the 2005 SUPAS produces a TFR of 2.3 for the period from 2005-2007 centred on the point estimate for 2006.

Table 3. Adjustment of ASFR and Total Fertility Rate for the 2002-3SDKI and the 2007 SDKI

2002-03 SDKI Estimate

Adjustment of 2002-03 SDKI ASFR and Total Fertility Rates									
Age of mothers	Current Fertility rates of 2002-3 SDKI Final Report (2000- 2002)	Women recorded in 2002-3 SDKI	Annual births implied by fertility rates and number of women in 2002-03	Women adjusted for 2000 Pop. Module (MK) marital status	Adjusted 2002- 03 SDKI Fertility Rates using 2000 Population Module (MK) based estimate of women				
15-19	51	6714	342	8787	39				
20-24	131	6738	883	7549	117				
25-29	143	6302	901	6680	135				
30-34	99	5844	579	5932	98				
35-39	66	5350	353	5370	66				
40-44	19	4703	89	4712	19				
45-49	4	4169	17	4162	4				
Total		39820	3164	43192					
TFR	2.57				2.39				

2007 5	SDKI	Estimate
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Adjustment of 2007 SDKI ASFR and Total Fertility Rates								
Age of mothers	Fertility rates of 2007 SDKI Final Report (2005- 2007)	Women recorded in 2007 SDKI	Annual births implied by fertility rates and number of women in 2007	2007 SDKI Women adjusted for 2005 SUPAS marital status	Fertility Rates with 2005 SUPAS based estimate of women			
15-19	51	6862	350	9923	35			
20-24	135	7071	955	9012	106			
25-29	134	7157	959	7549	127			
30-34	108	6729	727	6813	107			
35-39	65	6466	420	6512	65			
40-44	19	5713	109	5711	19			
45-49	6	5100	31	5104	6			
Total		45098	3551	50624				
TFR	2.51				2.32			



Provincial fertility levels and trends

While the national adjustments provide strong evidence that fertility had continued to fall in the period from 2000 to 2007, and was on track to reach replacement level fertility by 2010, this generalization could not necessarily apply to each province or sub-provincial unit across the country. Indonesia has always been a nation of incredible diversity, and social variations are part of that form of heterogeneity. For this reason we applied the adjustment method to each of the 33 provinces found in the 2002-3 and 2007 SDKI data set. The results are summarized in Table 4.

There is an important difference between the national and the provincial adjustment process. At the provincial level, where small population size and high mobility can potentially have an important effect on the composition of households and seasonal changes in household composition, it is important to recognize that there can be real differences in the number of single women in the sample households for SDKI. In part this reflects secular trends in the rising proportion of women who are single, movements of women into or out of the region for employment or schooling, and variations in the training and supervision of interviewers for different surveys. We are trying to identify regions where there are substantial numbers of single women missing from the SDKI sample households. If instead we find that there are more single women in the survey than would have been expected from earlier census or survey results, we can accept that as a real change in composition that does not require adjustment. There are no missing women to be found, so the fertility is acceptable as measured by SDKI. For this reason the "adjusted" column in Table 4 includes provinces where missing women have been restored to the

fertility calculation, but does not exclude single women if more are recorded in the SDKL

Note also that the adjustments are not easily carried out due to the high number of changes in regional boundaries as districts and provinces split into smaller units. This means we have to go back to original census or survey data to calculate the marital status and population numbers in each new unit. Also there were a number of provinces excluded from the SDKI 2002-3: Nanggroe Aceh Darusalam, and Maluku (and Maluku Utara) for security reasons, Kepulauan Riau and Sulawesi Barat because they had not been formed and were still part of Riau and Sulawesi Selatan respectively, and the two provinces of Papua because of prohibitive interviewing costs and localized security concerns.

PROVINCE	Published TFR SDKI 2002- 2003	Adjusted TFR 2002- 2003 (Base MK2000)	Published TFR SDKI 2007	Adjusted TFR 2007 (Base SUPAS05)
11. Nanggroe Aceh Darussalam	-	-	3.1	2.8
12. Sumatera Utara	3.0	2.7	3.8	3.5
13. Sumatera Barat	3.2	3.2	3.4	3.0
14. Riau	3.2	2.9	2.7	2.6
15. Jambi	2.7	2.5	2.8	2.4
16. Sumatra Selatan	2.3	2.3	2.7	2.3
17. Bengkulu	3.0	2.8	2.4	2.3
18. Lampung	2.7	2.7	2.5	2.4
19. Bangka Belitung	2.4	2.4	2.5	2.4
21. Kepulauan Riau	-	-	3.1	2.6
31. DKI Jakarta	2.2	1.8	2.1	1.8
32. Jawa Barat	2.8	2.4	2.6	2.3
33. Jawa Tengah	2.1	2.0	2.3	2.1
34. DI Yogyakarta	1.9	1.6	1.8	1.5
35. Jawa Timur	2.1	2.0	2.1	1.9
36. Banten	2.6	2.5	2.6	2.5
51. Bali	2.1	1.9	2.1	2.1
52. Nusa Tenggara Barat	2.4	2.2	2.8	2.7
53. Nusa Tenggara Timur	4.1	3.9	4.2	3.7
61. Kalimantan Barat	2.9	2.8	2.8	2.3
62. Kalimantan Tengah	3.2	2.8	3.0	2.5
63. Kalimantan Selatan	3.0	2.8	2.6	2.5
64. Kalimantan Timur	2.8	2.8	2.7	2.3
71. Sulawasi Utara	2.6	2.2	2.8	2.3
72. Sulawesi Tengah	3.2	3.1	3.3	3.3

Table 4.Summary Comparison of Published and AdjustedTotal Fertility Rates for SDKI 2002-3 and 2007

PROVINCE	Published TFR SDKI 2002- 2003	Adjusted TFR 2002- 2003 (Base MK2000)	Published TFR SDKI 2007	Adjusted TFR 2007 (Base SUPAS05)
73. Sulawesi Selatan	2.6	2.6	2.8	2.3
74. Sulawesi Tenggara	3.6	3.1	3.3	3.0
75. Gorontalo	2.8	2.6	2.6	2.3
76. Sulawesi Barat	-	-	3.5	3.1
81. Maluku	-	-	3.9	3.7
82. Maluku Utara	-	-	3.2	2.9
91. Papua Barat	-	-	3.4	3.2
94. Papua	-	-	2.9	2.9
INDONESIA	2.6	2.4	2.6	2.3







CONCLUSION

The adjustments for missing single women impact on provinces in a variety of ways. In some cases, like Sumatera Barat, Jambi, NTT and Sulawesi Selatan an apparent fertility increase in the published data is turned into a decline in the adjusted data. In many a picture of higher than expected fertility is seen to be hiding a fertility decline once the adjustments are taken into account. Just as the national figures show a modest continuing decline, some big provinces like Jawa Barat and Jawa Timur show lower and declining fertility. By contrast the picture in Jawa Tengah shows lower fertility, but a recent slight increase. This is not a cause for concern because the province was below replacement fertility for both surveys.

The differences in fertility across the country are substantial and persistent, even with the adjustments that have been made. Relatively high fertility with 3.7 births per woman on average is found in the broad arc of scattered isolated communities in Maluku and Nusa Tenggara Timur (NTT). This is the real challenge for the central government's family planning program, both because of the religious and cultural diversity of the region that makes centralized programming difficult, but also because the same factors driving up the costs of service delivery affect health levels as well as efforts to monitor program impact through surveys and censuses. This might be regarded as Indonesia's weakest link in the chain of islands. North Sumatra poses a real puzzle with the clearest evidence of a strong change against the national trend of declining fertility. If the data are to be believed, either the family planning program is failing or the women of the province have reversed their desires for smaller families. It is a conundrum crying out for deeper analysis across a range of data sets including the SUSENAS, RISKESDAS and local surveys.

Jawa remains the site of the lowest fertility in Indonesia, with Yogyakarta having a TFR or 1.5 – well below the replacement level of 2.1. This is probably a result of the unique population profile of Yogyakarta, where a concentration of universities, academies and service industries is a magnet for young unmarried females from across the nation. This mixed population is probably not accurately reflected in the de jure style population census and the sampling strategy of surveys that leaves out so called "special" census blocks and some special households of institutional housing. As a result the adjustment procedures in both recent SDKI have identified and restored to the population a substantial number of young single women. Similarly Jakarta and Jawa Timur have fertility under two children on average, and large groups of single women missed by the SDKI interviewers.

The experience of calculating these provincial estimates drives home a couple of very important lessons. First, the adjustments are very sensitive to the selection of appropriate marital status data from the nearest census or censuslike survey. We know that the SDKI series has increasingly missed single women in their samples, and we know that similar samples were used for SUSENAS, SAKERNAS and other major sample surveys. What is surprising is the way a relatively small adjustment for missing single women produces a relatively large increase in estimated fertility rates. The lesson is that the adjustment may correct for the missing women, but it cannot substitute for a better sample coverage. That is something BPS and its collaborators will need to fix in the next SDKI.

Second, Indonesian fertility is not in crisis. Fertility is on track to meet the replacement level goal in 2010, and there is no indication that the national fertility rates will rebound in the near future. The provinces with recent fertility increases are either at relatively low levels of fertility that are subject to tempo and other cohort effects, or they are poor and isolated regions in Eastern Indonesia where logistic and personnel problems have not been met by good policies. Those fertility rates are not an indication that the family planning program is being ignored by the populous, but they do indicate that there is a very specific need for investment in logistics and direct service provision in some provinces.

Table A.1. Fertility rates from the SDKI 2002-2003 adjusted for missing single women based on the marital status patterns from the Modular Census of 2000

Province	Age Group	Published ASFR SDKI 2002-2003	Adjusted ASFR using 2000 Population Module based estimate of women	Published TFR	Adjusted TFR
(1)	(2)	(3)	(4)	(5)	(6)
INDONESIA	15-19 20-24 25-29 30-34 35-39 40-44 45-49	51 131 143 99 66 19 4	39 117 135 98 66 19 4		
	Total	513	478	2.57	2.39
SUMATERA UTARA	15-19 20-24 25-29 30-34 35-39 40-44 45-49	26 167 179 147 62 23 4	19 127 170 141 61 22 4		
	Total	608	544	3.04	2.72
SUMATERA BARAT	15-19 20-24 25-29 30-34 35-39 40-44 45-49	37 133 202 167 82 24	28 135 199 163 81 24		
	Total	645	630	3.23	3.15
RIAU	15-19 20-24 25-29 30-34 35-39 40-44 45-49	53 160 187 134 81 16 10	34 134 168 131 80 16 10		
	Total	641	573	3.21	2.86

Province	Age Group	Published ASFR SDKI 2002-2003	Adjusted ASFR using 2000 Population Module based estimate of women	Published TFR	Adjusted TFR
(1)	(2)	(3)	(4)	(5)	(6)
JAMBI	15-19 20-24 25-29 30-34 35-39 40-44 45-49	62 112 149 113 94 17 -	37 97 144 111 94 17 -		
	Total	547	500	2.74	2.50
SUMATERA SELATAN	15-19 20-24 25-29 30-34 35-39 40-44 45-49	39 120 126 102 57 15 1	38 123 122 100 56 15 1		
	Total	460	455	2.30	2.27
BENGKULU	15-19 20-24 25-29 30-34 35-39 40-44 45-49	61 158 146 125 84 12 7	53 122 147 125 85 12 7		
Province (1) JAMBI SUMATERA SELATAN BENGKULU LAMPUNG	Total	593	551	2.97	2.76
LAMPUNG	15-19 20-24 25-29 30-34 35-39 40-44 45-49	47 141 136 108 78 16 8	52 140 134 111 78 16 8		
	Total	534	539	2.67	2.70

Province	Age Group	Published ASFR SDKI 2002-2003	Adjusted ASFR using 2000 Population Module based estimate of women	Published TFR	Adjusted TFR
(1)	(2)	(3)	(4)	(5)	(6)
BANGKA BELITUNG	15-19 20-24 25-29 30-34 35-39 40-44 45-49	36 120 140 97 64 27 -	36 120 140 97 64 27 -		
	Total	484	484	2.42	2.42
dki jakarta	15-19 20-24 25-29 30-34 35-39 40-44 45-49	37 90 152 97 53 14 -	17 68 129 88 52 14 -		
	Total	443	368	2.22	1.84
JAWA BARAT	15-19 20-24 25-29 30-34 35-39 40-44 45-49	66 136 135 97 83 35 6	41 109 122 94 82 35 6		
(1) BANGKA BELITUNG DKI JAKARTA JAWA BARAT	Total	558	489	2.79	2.45
JAWA TENGAH	15-19 20-24 25-29 30-34 35-39 40-44 45-49	45 117 127 76 52 12	35 102 123 75 52 12 -		
	Total	429	399	2.15	1.99

Province	Age Group	Published ASFR SDKI 2002-2003	Adjusted ASFR using 2000 Population Module based estimate of women	Published TFR	Adjusted TFR
(1)	(2)	(3)	(4)	(5)	(6)
di yogyakarta	15-19 20-24 25-29 30-34 35-39 40-44 45-49	19 83 132 79 48 12 7	9 54 125 73 48 11 7		
	Total	380	327	1.90	1.64
JAWA TIMUR	15-19 20-24 25-29 30-34 35-39 40-44 45-49	45 119 126 66 43 14 5	39 117 117 68 43 14 5		
	Total	418	403	2.09	2.01
BANTEN	15-19 20-24 25-29 30-34 35-39 40-44 45-49	51 132 141 90 91 17 -	45 118 137 90 92 17 -		
JAWA TIMUR BANTEN	Total	522	499	2.61	2.50
BALI	15-19 20-24 25-29 30-34 35-39 40-44 45-49	35 118 131 88 41 8 -	36 98 118 88 40 8 -	_	
	Total	421	388	2.11	1.94

Province	Age Group	Published ASFR SDKI 2002-2003	Adjusted ASFR using 2000 Population Module based estimate of women	Published TFR	Adjusted TFR
(1)	(2)	(3)	(4)	(5)	(6)
NUSA TENGGARA BARAT	15-19 20-24 25-29 30-34 35-39 40-44 45-49	66 147 112 98 40 13 9	46 121 108 95 39 13 9		
	Total	485	431	2.43	2.16
NUSA TENGGARA TIMUR	15-19 20-24 25-29 30-34 35-39 40-44 45-49	44 175 199 195 149 36 21	25 168 192 187 148 36 21		
	Total	819	777	4.10	3.88
Kalimantan Barat	15-19 20-24 25-29 30-34 35-39 40-44 45-49	47 143 150 134 83 17 3	41 137 150 131 88 17 3		
	Total	577	567	2.89	2.83
KALIMANTAN TENGAH	15-19 20-24 25-29 30-34 35-39 40-44 45-49	88 151 168 106 99 32 -	49 116 163 106 100 32 -		
	Total	644	566	3.22	2.83

Province	Age Group	Published ASFR SDKI 2002-2003	Adjusted ASFR using 2000 Population Module based estimate of women	Published TFR	Adjusted TFR
(1)	(2)	(3)	(4)	(5)	(6)
KALIMANTAN SELATAN	15-19 20-24 25-29 30-34 35-39 40-44 45-49	60 142 169 127 77 18 1	45 126 159 129 76 19 1		
	Total	594	555	2.97	2.77
KALIMANTAN TIMUR	15-19 20-24 25-29 30-34 35-39 40-44 45-49	46 128 182 117 69 8 14	33 130 179 119 72 8 14		
	Total	564	555	2.82	2.77
SULAWESI UTARA	15-19 20-24 25-29 30-34 35-39 40-44 45-49	46 159 147 110 46 4 6	26 124 138 107 44 4 6		
KALIMANTAN SELATAN KALIMANTAN TIMUR SULAWESI UTARA SULAWESI TENGAH	Total	518	449	2.59	2.25
SULAWESI TENGAH	15-19 20-24 25-29 30-34 35-39 40-44 45-49	62 165 166 122 93 17 8	62 162 159 121 93 18 8		
	Total	633	623	3.17	3.11

Province	Age Group	Published ASFR SDKI 2002-2003	Adjusted ASFR using 2000 Population Module based estimate of women	Published TFR	Adjusted TFR
(1)	(2)	(3)	(4)	(5)	(6)
SULAWESI SELATAN	15-19 20-24 25-29 30-34 35-39 40-44 45-49	66 113 136 111 86 14 4	53 131 137 109 84 15 4		
	Total	530	533	2.63	2.65
SULAWESI UTARA	15-19 20-24 25-29 30-34 35-39 40-44 45-49	98 191 182 145 94 9 5	65 150 163 135 92 9 5		
	Total	724	619	3.62	3.10
GORONTALO	15-19 20-24 25-29 30-34 35-39 40-44 45-49	62 146 141 112 64 27 6	37 159 126 113 63 26 6		
	Total	558	530	2.79	2.64

 Table A.2. Fertility rates from the SDKI 2007 adjusted for missing single women based on the marital status patterns from the SUPAS 2005

Province	Age Group	Published ASFR SDKI 2007	Adjusted ASFR using SUPAS 2005 based estimate of women	Published TFR	Adjusted TFR
(1)	(2)	(3)	(4)	(5)	(6)
INDONESIA	15-19 20-24 25-29 30-34 35-39 40-44 45-49	51 135 134 108 65 19 6	35 106 127 107 65 19 6		
	Total	518	465	2.59	2.32
NANGGROE ACEH DARUSSALAM	15-19 20-24 25-29 30-34 35-39 40-44 45-49	44 138 161 147 88 15 26	33 100 156 141 83 15 26		
	Total	619	554	3.10	2.77
SUMATERA UTARA	15-19 20-24 25-29 30-34 35-39 40-44 45-49	28 185 230 188 99 35 3	19 145 215 188 99 36 3		
	Total	768	705	3.84	3.52
RIAU	15-19 20-24 25-29 30-34 35-39 40-44 45-49	38 149 204 156 99 24 5	14 117 186 153 99 24 5		
	Total	675	598	3.38	2.99

Province	Age Group	Published ASFR SDKI 2007	Adjusted ASFR using SUPAS 2005 based estimate of women	Published TFR	Adjusted TFR
(1)	(2)	(3)	(4)	(5)	(6)
RIAU	15-19 20-24 25-29 30-34 35-39 40-44 45-49	39 102 177 136 54 29 -	25 104 161 135 55 28 -	2 69	2 55
JAMBI	15-19 20-24 25-29 30-34 35-39 40-44 45-49 Total	82 114 133 121 72 32 -	30 99 121 118 71 32 - 471	2.77	2.35
SUMATERA UTARA	15-19 20-24 25-29 30-34 35-39 40-44 45-49 Total	71 137 154 117 45 19 3 546	25 105 148 111 44 19 3 455	2.73	2.27
BENGKULU	15-19 20-24 25-29 30-34 35-39 40-44 45-49 Total	53 130 119 100 74 9 - 485	44 113 108 102 75 9 - 451	2.43	2.26

Province	Age Group	Published ASFR SDKI 2007	Adjusted ASFR using SUPAS 2005 based estimate of women	Published TFR	Adjusted TFR
(1)	(2)	(3)	(4)	(5)	(6)
LAMPUNG	15-19 20-24 25-29 30-34 35-39 40-44 45-49	46 133 105 117 41 36 15	39 114 112 116 41 36 15		
BANGKA BELITUNG	15-19 20-24 25-29 30-34 35-39 40-44 45-49	58 145 121 73 63 24 13	473 57 120 121 73 62 24 13	2.47	2.40
KEPULAUAN RIAU	15-19 20-24 25-29 30-34 35-39 40-44 45-49 Total	48 145 175 116 103 27 6 6	26 76 159 117 105 27 6 516	3.10	2.53
dki jakarta	15-19 20-24 25-29 30-34 35-39 40-44 45-49 Total	14 97 128 96 65 19 - 419	11 66 112 88 63 20 - 360	2.10	1.80

Province	Age Group	Published ASFR SDKI 2007	Adjusted ASFR using SUPAS 2005 based estimate of women	Published TFR	Adjusted TFR
(1)	(2)	(3)	(4)	(5)	(6)
JAWA BARAT	15-19 20-24 25-29 30-34 35-39 40-44 45-49	53 142 117 101 71 18 8	36 109 112 102 71 18 8	2 55	2 20
JAWA TENGAH	15-19 20-24 25-29 30-34 35-39 40-44 45-49 Total	42 124 126 100 53 12 2 459	+33 27 100 120 99 53 12 2 413	2.30	2.06
di yogyakarta	15-19 20-24 25-29 30-34 35-39 40-44 45-49 Total	24 74 109 105 42 9 - 363	7 46 91 102 42 9 - 297	1.82	1.49
JAWA TIMUR	15-19 20-24 25-29 30-34 35-39 40-44 45-49 Total	66 116 112 67 48 10 8 427	54 87 106 67 47 10 8 379	2.14	1.90

Province	Age Group	Published ASFR SDKI 2007	Adjusted ASFR using SUPAS 2005 based estimate of women	Published TFR	Adjusted TFR
(1)	(2)	(3)	(4)	(5)	(6)
BANTEN	15-19 20-24 25-29 30-34 35-39 40-44 45-49	32 137 122 116 98 22 1 528	23 119 123 115 98 22 1	2 64	2 50
BALI	15-19 20-24 25-29 30-34 35-39 40-44 45-49	18 125 105 89 55 17 2	43 120 101 87 55 17 2	2.06	2.12
NUSA TENGGARA BARAT	15-19 20-24 25-29 30-34 35-39 40-44 45-49 Total	59 147 149 105 82 21 - 563	60 123 141 106 82 21 -	2.82	2.66
NUSA TENGGARA TIMUR	15-19 20-24 25-29 30-34 35-39 40-44 45-49 Total	40 204 215 184 121 57 23 844	31 150 191 169 115 55 22 733	4.22	3.67

Province	Age Group	Published ASFR SDKI 2007	Adjusted ASFR using SUPAS 2005 based estimate of women	Published TFR	Adjusted TFR
(1)	(2)	(3)	(4)	(5)	(6)
KALIMANTAN BARAT	15-19 20-24 25-29 30-34 35-39 40-44 45-49	84 137 124 124 61 16 7	41 105 112 123 62 16 7	2.77	2.22
Kalimantan Timur	15-19 20-24 25-29 30-34 35-39 40-44 45-49	98 134 130 121 70 32 12	466 34 107 122 123 69 32 12	2.11	2.32
KALIMANTAN SELATAN	lotal 15-19 20-24 25-29 30-34 35-39 40-44 45-49 Total	597 65 147 136 96 64 21 - 529	499 54 130 132 95 63 21 - 495	2.99	2.49
KALIMANTAN TIMUR	15-19 20-24 25-29 30-34 35-39 40-44 45-49 Total	52 152 132 120 68 15 - 539	34 113 120 115 66 15 - 463	2.70	2.32

Province	Age Group	Published ASFR SDKI 2007	Adjusted ASFR using SUPAS 2005 based estimate of women	Published TFR	Adjusted TFR
(1)	(2)	(3)	(4)	(5)	(6)
SULAWESI UTARA	15-19 20-24 25-29 30-34 35-39 40-44 45-49	67 137 155 88 57 30 18	34 100 141 82 55 30 18	2.76	2.20
SULAWESI TENGAH	15-19 20-24 25-29 30-34 35-39 40-44 45-49	62 139 195 150 67 40 -	92 128 197 144 66 41 -	2.70	2.30
SULAWESI SELATAN	15-19 20-24 25-29 30-34 35-39 40-44 45-49 Total	64 161 123 128 67 18 8 8 569	34 117 106 117 65 17 8 464	2.85	2.32
SULAWESI UTARA	15-19 20-24 25-29 30-34 35-39 40-44 45-49 Total	72 182 149 122 93 30 8 656	48 144 148 124 92 31 8 595	3.28	2.97

Province	Age Group	Published ASFR SDKI 2007	Adjusted ASFR using SUPAS 2005 based estimate of women	Published TFR	Adjusted TFR
(1)	(2)	(3)	(4)	(5)	(6)
GORONTALO	15-19 20-24 25-29 30-34 35-39 40-44 45-49	86 155 120 87 44 29 1 522	61 130 114 87 43 29 1 465	2 61	2 32
SULAWESI BARAT	15-19 20-24 25-29 30-34 35-39 40-44 45-49	80 189 157 144 110 18 -	47 155 144 139 113 18 -	2.0.	
MALUKU	Total 15-19 20-24 25-29 30-34 35-39 40-44 45-49 Total	698 40 164 186 190 131 46 22 779	616 31 137 181 187 135 46 21 738	3.49	3.08
MALUKU UTARA	15-19 20-24 25-29 30-34 35-39 40-44 45-49 Total	76 189 167 103 68 26 6 6 635	82 136 160 105 67 26 6 582	3.18	2.91

Province	Age Group	Published ASFR SDKI 2007	Adjusted ASFR using SUPAS 2005 based estimate of women	Published TFR	Adjusted TFR
(1)	(2)	(3)	(4)	(5)	(6)
PAPUA BARAT	15-19 20-24 25-29 30-34 35-39 40-44 45-49 Total	81 184 163 141 67 54 -	51 172 153 143 68 53 - 640	3.45	3.20
PAPUA	15-19 20-24 25-29 30-34 35-39 40-44 45-49	55 152 118 136 52 36 31	40 164 117 137 52 37 31		
	Total	580	578	2.90	2.88