



## **Australia's fertility: A HILDA based analyses**

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**9<sup>th</sup> Australian Institute of Family Studies Conference  
Melbourne 9-11 February 2005**

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## **Introduction**

Australia has experienced sustained fertility decline over the last four decades, with the total fertility rate (TFR) having fallen to below replacement fertility level<sup>1</sup> from 1976. However, from 1998 onwards fertility has stabilised, with a TFR of about 1.75 children per woman. The combined trends of low and declining fertility and mortality are increasing population ageing leading to public concerns and debate about the impact of the demographic changes on the society, economy and environment. Some commentators are concerned about the fiscal and labour force implications of an ageing population and see a need to stabilise or reverse the fertility trend. They propose policies and programs that support work and family life and encourage mothers' employment participation with the aim of increasing fertility and the size of the labour force (McDonald 2000, 2001a&b, Barnes 2001, Stanton 2002, De Vaus 2002, Castles 2002, Weston and Parker 2002, Kippen 2003, Neil et al. 2003, and Tesfaghiorghis 2004). Other commentators do not share their concerns as they argue that increasing population growth would adversely affect environmental sustainability (Foran 2004, Hamilton 2002), that falling fertility would not affect future living standards (Guest and McDonald 2002), and that growing old-age dependency ratios will have little negative impact on productivity growth (Day and Dowrick 2004).

Despite these counter arguments, the issues of fertility, family support, and balancing family and work responsibilities are important, as demonstrated by the May 2004 Budget. This Budget increased assistance to families to help them with the costs of raising children and balance work and family responsibilities. The assistance to families with dependent children included an increase of \$600 per child per year in Family Tax Benefit Part A, a universal Maternity Payment of \$3,000 paid to mothers following the birth or adoption of a child, an additional 40,000 outside school hours child care places and an extra 4,000 family day care places. The issue of raising fertility was given prominence by the Treasurer in his 2004 Budget Press Conference when he encouraged women to have three children (one for yourself, one for your husband/partner and one for your country).

Concerns about fertility are focused on period (cross-sectional) fertility, which is the fertility experience of different cohorts of women who gave birth in a particular year or a given period. Period/current fertility is measured by age-specific-fertility rates and/or the total fertility rate<sup>2</sup>. The paper, however, examines lifetime fertility, i.e. the number of children ever born to a woman, rather than her current fertility. The

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<sup>1</sup> Replacement fertility level is the number of births a woman would have during her reproductive life if she experiences at each age the age-specific-fertility and mortality rates prevailing in a particular year or period. For Australia, now it is 2.06 children per woman

<sup>2</sup> Age-specific fertility (birth) rate – Number of births occurring to women of a specified age in a given year divided by the mid-year population of women that age, usually expressed as number of births per 1000 women.

Total fertility rate- the average number of births a woman would have during her reproductive life if she experiences at each age the age-specific fertility rates prevailing in a particular year/period. It is calculated by summing the age-specific fertility rates.

completed cohort fertility rate, which is derived from the number of children ever born, is the average number of children that a cohort of women has had over their reproductive lifetime. The mean number of children ever born to women aged less than 40 years represents incomplete fertility, while that for women aged 40 years and over represents completed fertility. The mean number of children ever born for cohorts aged 40 years and over is known as the cohort total fertility rate/ completed fertility rate<sup>3</sup>. Other fertility measures used in this paper are the mean number of children ever born (MCEB) and parity progression ratios<sup>4</sup>.

This paper aims to establish, through analysis of completed cohort fertility trend, whether completed cohort fertility is falling to below replacement, as is current fertility. Other aims of the paper are to:

- Examine what is happening to completed cohort fertility and examine the extent of childlessness through analyses of completed fertility rates, proportion of childless women and parity progression ratios according to birth cohorts
- Compare the demographic and socio-economic characteristics of mothers and women without children, and
- Estimate expected completed fertility rate and the extent of childlessness for women who have yet to complete their reproduction by combining information on number of children ever born and number of additional children women intend to have by age of women

This study is based on primary analysis of the 2001 Household, Income and Labour Dynamics in Australia (HILDA) Survey Wave 1, Release 2.0, unit record dataset which collected information on number of children ever born. Given that the 1996 Census was the last to collect this information, the HILDA dataset, with its rich demographic and socio-economic data, provides a good opportunity to analyse cohort fertility and childlessness trends. The HILDA Survey also collected information on fertility intentions, which is used to estimate the expected, completed fertility rate. Fertility desires and expectations are considered by Fisher & Charnock (2003).

The HILDA Survey asked the question ‘How many children in total have you ever had? That is, ever (fathered/given birth to) or adopted?’ In comparison, the 1996 Census question asked females aged 15 years and over was ‘how many babies has she ever had?’ Although analysis of female fertility is conventionally based on biological children, it is not possible to do using the HILDA data, as the question did not distinguish between adopted and biological children. However, for the lack of any alternative, this analysis assumes all children ever born are biological children of women in that cohort. The proportion of births to adoptions was comparatively larger 30 years ago than it is today. The number of adopted children in Australia has declined from a peak of about 10,000 children in 1971-72 to 472 in 2002-03 and then rose to 502 in 2003-04 (AIHW 2004: 5).

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<sup>3</sup> The completed fertility rate, as measured here, is the average number of children that a cohort of women has had over their reproductive lifetime.

<sup>4</sup> The mean number of children ever born (MCEB) to women of a given age group is calculated by dividing the total number of children ever born to women in a given age group by the total number of women in that age group. Parity progression ratios is the proportion of women who have at least some specified number of births who go on to have one more birth

## Historical levels of cohort fertility

What does the Australian literature tell us on what is happening to completed cohort fertility? Jain and McDonald (1997: 35-6), using mean number of children ever born data from the 1976, 1981, 1986 censuses and the 1992 Family Survey, showed 'that recent generations have a lower number of children ever born by a given age than older generations'. This is also true for completed fertility. Kippen's (2003:2-3) analysis of completed fertility for cohorts born between 1924 and 1960 found that cohort fertility has declined from the high of 3.14 children for the 1932 cohort to 2.15 children for the 1960 cohort. This decline is due to cohort fertility falling at age 30 or younger and is associated with a delay in the first birth. Further Kippen's (2003:4) analysis of the 1950, 1960 and 1970 birth cohorts found that successive birth cohorts have lower fertility at age 30 years and younger and that the increasing fertility above 30 years of age does not compensate for the falls at younger ages.

What cohort fertility story does HILDA tell us? Figure 1 presents trends in completed cohort fertility for women aged 40 years and over in 2001. With respect to completed cohort fertility, there are a number of salient points.

- Looking at the historical trends, completed cohort fertility rose from slightly less than 3 children per woman for cohorts born in 1926 or earlier to a peak of about 3.2 children for cohorts born in 1927-31 and 1932-36. These were cohorts of women who entered reproductive ages in the 1942-46 and 1947-51 periods, respectively, when the family size norm was 3 children.
- It is clear that completed cohort fertility has been declining for successive birth cohorts since the late 1930s, from the peak of 3.2 children for those born in 1927-36 to 2.2 children for those born in 1957-61.

These results, though population weighted, are subject to sampling errors, as they are survey based. Nevertheless the findings of this paper are consistent with the Australian Bureau of Statistics' (ABS: 1998) estimates of completed fertility, based on birth registration data, for cohorts born in 1925 and after, but are higher for cohorts born before 1925. The ABS' birth registration based estimates of completed fertility for the oldest cohorts rose from 2.30 children for the 1905-10 birth cohort to 2.43 for the 1915 cohort, 2.65 for the 1920 cohort and 2.80 for the 1925 cohort (ABS 1998: Table 2.30). The HILDA estimates are also higher than Jain and McDonald (1997:Table 2) estimates' based on the 1982 Family Survey. Jain and McDonald (1997:Table 2) estimates were 2.12 children for the 1908-12 birth cohorts, 2.34 for the 1913-17 cohort, 2.50 for the 1918-22, and 2.57 for the 1923-27 cohort. The higher HILDA estimates for the oldest cohorts could be due to a higher survival of women with high cohort fertility and the omissions from the HILDA Survey of older women living in institutions who may have lower fertility than those living in private households. In addition, the estimates for the oldest cohorts born in 1916 or earlier were based on a small number of cases.

Australia's completed fertility has been declining for cohorts born since the late 1930s, though it has remained above replacement level. Additionally the estimated completed fertility rate of the 1962-66 Australian birth cohort, 2.20 children, (See Table 4) is higher than that of estimated completed fertility rates of comparable birth

cohorts in most countries of Northern and Western Europe, where it has fallen to below replacement fertility. While Australia's rate is lower than that of Iceland (2.38), Northern Ireland (2.30) and New Zealand (2.28) and comparable to that of Ireland (2.22), it is higher than that of Norway (2.05), France (2.04) and the United States (2.06) (Sardon 2004:294-5).

Table 1. Distribution of women by number of children ever born, total women and mean number of children ever born (MCEB) according to age group and birth cohort 2001 HILDA

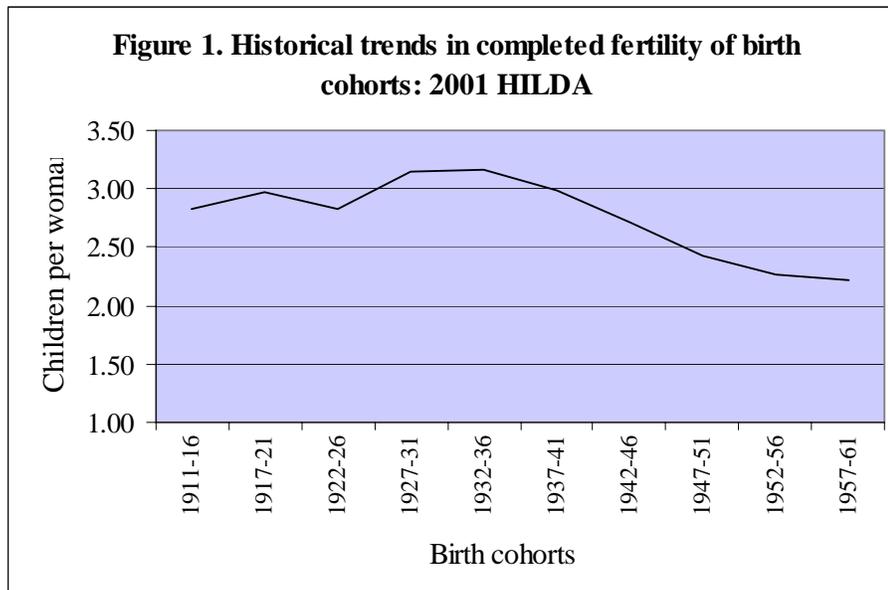
Age group	Birth cohort	Women by number of children ever born (%)					Total women <sup>1</sup>	MCEB <sup>2</sup>
		0	1	2	3	4+		
15-19	1982-86	97.6	2.2	0.1	0.1	0.0	681,683	0.03
20-24	1977-81	83.2	9.6	5.8	1.1	0.0	664,949	0.26
25-29	1972-76	58.1	18.8	13.6	5.3	0.3	702,557	0.81
30-34	1967-71	33.2	22.2	25.1	13.5	4.2	733,712	1.42
35-39	1962-66	15.9	13.4	36.1	22.0	6.0	723,660	2.10
40-44	1957-61	14.0	12.4	36.2	22.4	12.6	752,762	2.22
45-49	1952-56	10.7	14.2	36.3	25.2	15.0	685,847	2.26
50-54	1947-51	8.1	9.4	40.2	26.1	13.6	631,634	2.43
55-59	1942-46	6.6	6.7	37.2	27.5	16.2	477,363	2.71
60-64	1937-41	7.5	6.7	29.0	24.4	22.0	403,799	2.99
65-69	1932-36	5.4	8.4	20.9	27.7	37.6	342,991	3.17
70-74	1927-31	5.8	8.9	26.1	25.5	31.6	301,416	3.15
75-79	1922-26	8.4	10.4	30.0	20.3	30.9	301,624	2.82
80-84	1917-21	5.0	11.5	30.6	17.3	35.6	134,756	2.97
85-90 <sup>3</sup>	1911-16	11.0	7.6	28.5	27.0	25.9	90,845	2.82
15+		30.9	11.6	25.7	17.3	14.5	7,629,601	1.85
15-64		35.3	12.1	25.6	16.1	10.9	6,457,967	1.63
15-49		43.8	13.4	22.3	13.0	7.5	4,945,171	1.32

Source: Primary analysis of 2001 HILDA Wave 1 dataset, Release 2.0.

Note: 1= Weighted sample

2= Mean number of children ever born to women in a given age group, and

3= Based on a sample of 84 women (unweighted)



*Comparison of mean number of children ever born:*

A comparison of the mean number of children ever born for different cohorts of women at comparable ages is useful for detecting changes in fertility over time and assessing data quality. Comparisons of census or survey data on the mean number of children ever born are fraught with problems of 'parity not stated', i.e. women did not state or report the number of children they had ever borne. Previous Australian censuses (ABS 2000: 27-8) suffered from a significant proportion of women not stating their parity. However, the proportion of women with 'parity not stated' in the childbearing ring ages was comparatively low in the 1996 Census (3.8-4.4 %) than in previous censuses (ABS 2001: 27 and McDonald 1998: 7). The reporting of children ever born data in HILDA is complete, because HILDA used face-to-face interviewers to obtain the information rather than the self-completion questionnaires used in censuses. Thus the mean number of children data from both the 1996 Census and the 2001 HILDA data are comparable, as they do not suffer from 'parity not stated'. However, care needs to be made in interpreting trends using the earlier censuses, as the practice of excluding of women with 'parity not stated' from the denominator, followed by the ABS (2000: 27-8), overestimates fertility, as women of zero parity may be over represented among the excluded.

Although the mean number of children ever born for different cohorts at comparable ages fell consistently between the 1981, 1986 and 1996 Censuses (comparing cross-sectionally), they remained constant between the 1996 Census and the 2001 HILDA (See Table 2). The 2001 National Health Survey also collected the number of children ever born data, which are consistent with the 1996 Census and 2001 HILDA results (ABS 2001: Table 6.1).

McDonald (1998: 7-9) interpreted the decline in the mean number of children ever born for the 25-29 and 30-34 age groups between the 1986 and 1996 Censuses as partly reflecting fertility postponement and partly reflecting an overall decline in fertility with each successive age cohort. A salient result of the comparison is that replacement fertility is achieved when different cohorts attained 35-39 years of age, despite not reaching the end of their reproductive life.

**Table 2. Comparison of mean number of children ever born to women by age group: 1981-1996 Censuses and 2001 HILDA:**

Age group	1981 Census	1986 census	1996 Census	2001 HILDA
20-24	0.46	0.37	<b>0.28</b>	<b>0.26</b>
25-29	1.29	1.10	<b>0.79</b>	<b>0.81</b>
30-34	2.03	1.85	<b>1.54</b>	<b>1.42</b>
35-39	2.45	2.24	<b>2.02</b>	<b>2.10</b>
40-44	2.80	2.49	<b>2.20</b>	<b>2.22</b>
45-49		2.76	<b>2.30</b>	<b>2.26</b>

Source: Census figures (ABS 2001: Table 6.1) except for the age group 45-49, which are author's calculations from the 1986 and 1996 1- % Household Sample Census Files.

### Parity progression ratios:

The declining trend in cohort fertility for successive cohorts is also supported by analysis of Parity Progression Ratios (PPR). Table 3 presents Parity Progression Ratios, which is the probability of progressing from already having a given number of children say  $n$ , to at least having one more child,  $n+1$ . PPR is interpreted as follows. For example,  $PPR_1$  is the probability of women of a given age group progressing to have a first birth. For example, of the 733,712 women aged 30-34 years in 2001, 67 per cent of them had a first birth.  $PPR_4$  is the probability of progressing to have at least four children having already had three children. For example, 35 per cent of women aged 45-49 progressed to have at least four children, having already had three children.

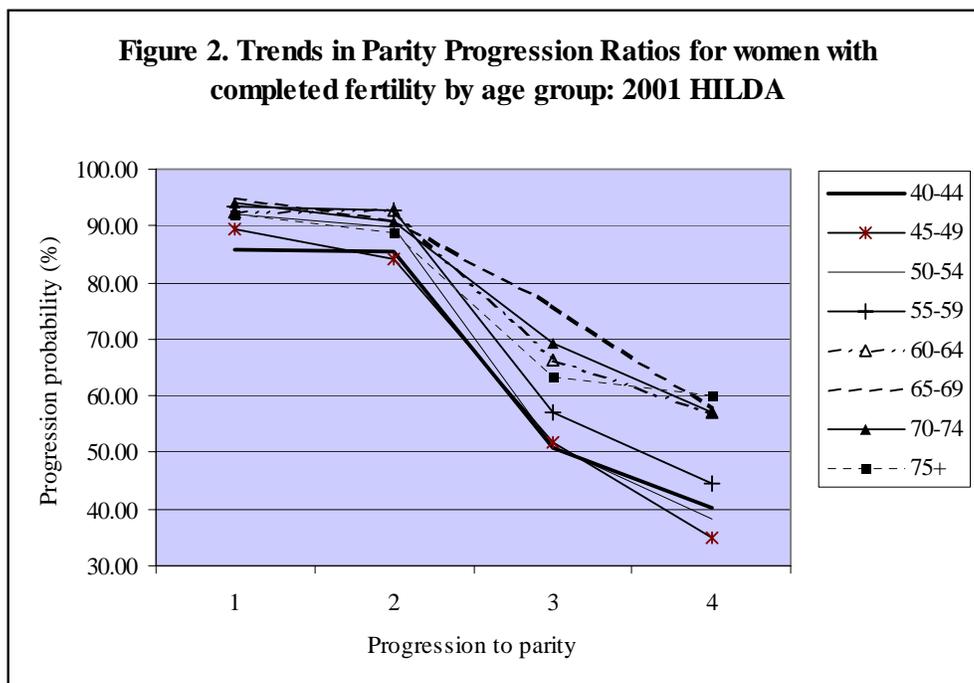
**Table 3. Parity Progression Ratios (%) by age group: 2001 HILDA**

Age group	Total Women	PPR <sub>1</sub>	PPR <sub>2</sub>	PPR <sub>3</sub>	PPR <sub>4</sub>
15-19	681,683	2.4	8.2	50.4	
20-24	664,949	16.8	42.8	19.7	20.2
25-29	702,557	41.9	55.2	41.3	44.1
30-34	733,712	66.8	66.8	43.8	30.9
35-39	723,660	84.1	84.1	48.9	36.5
40-44	752,762	86.0	85.6	50.9	40.3
45-49	685,847	89.3	84.1	51.6	35.0
50-54	631,634	91.9	89.8	51.2	38.3
55-59	477,363	93.4	92.9	57.1	44.4
60-64	403,799	92.6	92.8	66.2	57.1
65-69	342,991	95.0	91.1	75.8	57.6
70-74	301,416	94.2	90.6	69.4	56.9
75+	527,225	92.0	88.9	63.5	60.2
Total	7,629,601	69.1	83.2	55.4	45.6

Source: Primary analysis of 2001 HILDA Wave 1 dataset, Release 2.0.

Figure 2 shows trends in parity progression ratios for women who completed their fertility, that is those aged 40 years and over in 2001 HILDA. It is clear from Figure 2 that all Parity Progression Ratios have been declining over time. The results for specific parity progressions are as follows.

1. The probability of having at least one child has declined from a high level of 92-95 per cent for cohorts aged 50 years and over to 86 per cent for those aged 40-44 years.
2. The probability of having at least two children, having had one child, has declined from the peak of about 91-93 per cent for the 55-74 age groups to about 85 per cent for the younger cohorts. These results demonstrate that, despite a decline, a very high proportion of younger cohorts still had a first birth (86 %) and a similarly high proportion went on to have at least two children (85 %).
3. The high fertility observed for the 60-74 age groups (3.0–3.2 children) is due to their higher probability of progressing to higher parities. Two-thirds to three-quarters of women in these age groups went on to have at least three children, having had two, compared with about half of women in the younger cohorts. Of women aged 60-74 years 57 % went on to have at least four children compared with 35-40 % for women aged 40-49 years.
4. Further note (Figure 2) that while the magnitude of the fall in parity progressions between the older and younger cohorts is similar and relatively small at lower parities (1 and 2), it is much larger at higher parities.



*Trends in the extent of childlessness:*

Table 1 also provides data on the percentage of women with no children, that is, those with zero parity. The proportion with zero parity declined from almost all women aged 15-19 years to very low-levels at older ages. The proportion of women aged 45-

49 years that are childless usually measures the extent of childlessness in the population - in 2001 this was 10.7 %.

The data appear to suggest that childlessness has been increasing over time from around 5-6 % for cohorts born in the late 1920s to early 1930s to 11 % for those born in 1952-56 (Table 1). While the figures from the 2001 HILDA Survey for post 1926 are consistent with the ABS (1998: 42-52) and Merlo and Rowland (2000:23) estimates, those for 1926 or earlier are lower. The ABS, and Merlo and Rowland estimates suggest that the extent of childlessness for the oldest cohorts were higher declining from around 30 % for cohorts born in the year of the Federation to about 9-10 % for cohorts born in the early to the late 1930s before rising again. The inconsistent 2001 HILDA results for cohorts born in 1926 or earlier are presumably due to sampling errors, misreporting of children ever born and the Survey omission of women in non-private households.

However, despite the discrepancies for the oldest cohorts, both the 1996 Census (ABS 1998: 51-52) and the 2001 HILDA Survey estimate the extent of childlessness in the population in 1996/2001 as 11 %. This figure is much lower than the Merlo and Rowland synthetic estimate of 20 % and the ABS' (1998:433) synthetic estimate of 28 %, which are based on current rates. The paper will return to this issue subsequently when it considers estimates of the expected extent of childlessness for cohorts with incomplete fertility.

### **Characteristics of women without children:**

As already shown a majority of women aged less than 30 years (Table 1) are without children, indicating fertility postponement. To get a better understanding of why these women have no children their demographic and socio-economic characteristics are compared with those of mothers (Table 4). The analysis is restricted to women aged 20-49 years, as most women aged 15-19 years have not yet started family formation with 95 % never married and about 5% in a de facto relationship

Women without children are younger than those with children: 64 % of all women without children were aged 20-29 years, compared to 15 % of mothers. The mean age for women without children was 28.6 years versus 38 years for mothers. As is seen from Table 4, the social and economic profiles of women without children are markedly different from those of mothers<sup>5</sup>. Many of those without children have not yet formed relationships or stable relationships, as 80 % of the never married and 55 % of those in de facto relationships had no children, compared to only 13 % of the separated and 15 % of the legally married.

The majority of women living in group households, single-person and couple-only households had never had a child. A higher proportion of Australia-born women had never had a child than those born overseas except for those born in Asia (excluding Southern Asia) who constituted the highest proportion of women without children. With respect to education, a high proportion of women with diploma or higher

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<sup>5</sup> The differences are all statistically significant.

degrees and those with Year 12 education were without children, 42-51 %, compared to those with Year 11 or lower education, 16 %.

It is seen from Table 4 that a high proportion of women in fulltime employment, 56 %, did not have children compared to 27 % of those in part-time employment. A relatively high proportion of unemployed women also did not have children. Those not in the labour force had the lowest proportion of women without children; 18 % of those not marginally attached to the labour force and 10 % of those marginally attached to the labour force<sup>6</sup>. Of those women who were employed, the proportion without children varied by occupational status. A high proportion of women in professional occupations and women in elementary sales and related occupations were without children. In general, a high proportion of women in lower status occupations had children.

Women without children left school later, had a much shorter duration since completing fulltime education, and had spent less time in paid work. Consistent with their age and employment status, women without children, on average, earned higher salaries and wages, received lower pensions/ benefits and lived in higher-income households.

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<sup>6</sup> Persons not in the labour force are considered to be **marginally attached** to the labour force if they want to work and are actively looking for work but not available to start work in the reference week; or want to work and are not actively looking for work but are available to start work within four weeks.

Table 4: Distribution of women (%) by whether they have ever had a child or not according to selected characteristics: 20-49 years.

Characteristics	No child	At least one child	Characteristics	No child	At least one child
<b>Marital status</b>			<b>Labour force status</b>		
Legally married	14.9	85.1	Employed fulltime	56.1	43.9
De facto	54.7	45.3	Employed part-time	26.7	73.3
Separated	12.7	87.3	Unemployed	33.5	66.5
Divorced	18.4	81.6	NILF-marginally attached	9.8	90.2
Never married	79.8	20.2	NILF & not attached	18.2	81.8
<b>Household type</b>			<b>Main job's occupation</b>		
Couple only family	82.6	17.4	Managers & admin	35.2	64.8
Couple with others	84.4	15.6	Science & business profs	60.3	39.7
Couple with children	11.9	88.1	Health professionals	45.5	54.5
Lone parent	15.7	84.3	Education professionals	44.5	55.5
Lone person	84.0	16.0	Social/arts/professionals	53.4	46.6
Group household	96.3	3.7	Associate professionals	48.0	52.0
			Tradespersons & related	46.5	53.3
<b>Birth Country</b>			Adv. Clerical & Service		
Australia	36.3	63.7	Intermediate clerical	40.8	59.2
NZ/ UK/IR/USA/CAN	30.9	69.1	Intermediate Service	37.9	62.1
Europe	23.0	77.0	Int. production & transport	26.0	74.0
Asia excl. Southern Asia	45.2	54.8	Elementary sales & related	49.5	50.5
Other	24.7	75.3	Cleaners/factory/other	30.4	69.6
<b>Educational Level</b>			<b>Means (years)</b>		
Postgraduate degree	44.5	55.5	Age of leaving school	17.1	16.0
Bachelor degree	50.8	49.3	Time since FT education	11.2	21.5
Advanced dip/dip	42.0	58.0	Time in paid work	8.2	13.1
Certificates 1-4	33.5	66.5			
Year 12	49.7	50.3	<b>Mean income per year</b>		
Year 11/below	15.7	84.3	Salary & wages	\$30,598	\$14,114
			Pensions & benefits.	\$1,006	\$2,362
			Gross household income	\$50,989	\$40,534

Source: Primary analysis of 2001 HILDA Wave 1 dataset, Release 2.0.

Note: Row percentages add up to 100 %.

### Expected completed fertility and lifetime childlessness

This analysis is based on two sets of fertility responses - women's responses to questions on number of children ever born and questions on whether they intend to have more children, and if 'yes', how many additional children they intend to have. The analysis is restricted to women with incomplete fertility that is 39 years and younger. While 1.7 % of women aged 40-44 years intend to have more children, this cohort is omitted from the analysis, as they are generally regarded as having completed their fertility. There were no women aged 45-49 years who intended to have children, although we know that some in this age group do have children.

By combining information on number of children ever born and number of children women intend to have according to age group of women, this analysis attempts to answer three questions.

- First, if women have the additional children they said they intend to have, will women who were aged 20-39 years in 2001, achieve replacement fertility?
- Second, what proportion of those women in each age group who currently had no children intend to have children?
- Third what proportion of those currently childless by age group would end up being childless and what would be the extent of lifetime childlessness?

However, it should be recognised that fertility intentions may not be consistent with fertility behaviour. It is also possible that those women who said they intend not to have any children or any more children may decide to have a child or to have more children. McDonald (2001b: 19-21) cautions to be wary about the value of attitudinal questions. Van de Kaa (1998:28-31) found that young women in most European countries have high expectations about the number of children they will have but suggested that their beliefs and expectations about numbers of children may become more realistic with age, as the expectations of older women are tempered by experience and knowledge. He also found that in North America and Europe ideal family sizes exceed observed fertility levels substantially.

Australian evidence from the Australian National University's Negotiating the Life Course Survey showed that young women expect to have an average of more than two children but fall short of this expectation, and that the mismatch is higher among highly educated women (McDonald 1998: 5-6). McDonald (1998: 6) is of the view 'that achieved fertility will remain below early expected fertility as expectations are modified by the reality of institutional constraints. That is, if women are to achieve the number of children they would prefer to have, there must be changes in social institutions; it will not happen of its own accord'.

Given these caveats, however, it is still worthwhile to consider what level of completed fertility would result for young women from combining their achieved fertility with intended fertility as a possible fertility outcome. Table 5 sets out the number of women who intend to have any children or more children, the mean number of intended children, the percentage of total women that intend to have any children or any more children, the expected mean number of children, and the expected cohort fertility classified according to women's age group and number of children ever had. The expected extent of childlessness for each age group is also given (last column). These figures are estimated on the assumption that those women who intend to have more children would achieve their intended number of children in their remaining reproductive life.

Completed fertility is a weighted average of the mean numbers of children for those women who do not intend to have any children or any more children and for those who intend to have a child or more children. The extent of childlessness among women of a given age group is the ratio of the numbers of women currently with no children and who do not intend to have children to the total number of women in the age group.

**Table 5. Number of women who intend to have more children by mean number of intended children, estimated completed fertility and percentage childless classified according to age group of women and number of children ever born**

Age group / Number of children ever born	Mean number of additional children	Women intending to have more children		Expected	
		Number	% of total women	Completed fertility	Childlessness (%)
<b>20-24 (1977-81)</b>					
None	2.61	432,543	78.2	2.04	
One child	1.88	41,165	64.3	2.21	
Two or more children	1.29	19,532	40.7	2.76	
<b>Total</b>	<b>2.49</b>	<b>493,240</b>	<b>74.2</b>	<b>2.11</b>	<b>18.1</b>
<b>25-29 (1972-76)</b>					
None	2.35	295,897	72.5	1.17	
One child	1.48	87,287	66.1	1.74	
Two children	1.35	36,692	22.6	2.20	
Three or more children	1.33	9,362	14.0	3.85	
<b>Total</b>	<b>2.08</b>	<b>419,877</b>	<b>59.8</b>	<b>2.05</b>	<b>16.0</b>
<b>30-34 (1967-71)</b>					
None	2.13	133,396	54.8	1.17	
One child	1.36	88,393	54.4	1.74	
Two children	1.20	30,782	16.7	2.20	
Three or more children	1.40	19,868	13.8	3.74	
<b>Total</b>	<b>1.72</b>	<b>272,439</b>	<b>37.1</b>	<b>2.06</b>	<b>15.0</b>
<b>35-39 (1962-66)</b>					
None	1.76	24,143	21.0	0.37	
One child	1.24	31,504	32.6	1.40	
Two children	1.12	14,114	5.4	2.06	
Three or more children	1.14	16,579	6.6	3.49	
<b>Total</b>	<b>1.35</b>	<b>86,339</b>	<b>11.9</b>	<b>2.20</b>	<b>12.6</b>

It is suggested from Table 5 that all cohorts with incomplete fertility could, on average, achieve replacement fertility. The estimated completed fertility of the 1962-66, 1967-71, 1972-76 and 1977-81 birth cohorts would be 2.20, 2.06, 2.05 and 2.11 children per woman, respectively. When these estimates are compared with the ABS projections<sup>7</sup> this paper's findings for older cohorts are comparable while those for the youngest cohorts are higher than the ABS (2003: Table 6.5 & 2004: Table 4.8). The corresponding estimates based on ABS figures (referring to the midpoint of the above intervals) are 2.07, 2.00, 1.93 and 1.85 children, respectively. Even these ABS projection based estimates for younger cohorts are only moderately lower than replacement fertility and are higher than the current total fertility rate of 1.75 children.

<sup>7</sup> The author averaged the ABS single birth cohort estimates to be comparable with these estimates.

Table 5 also suggests that a majority of the women who intend to have more children are concentrated among the young cohorts and are predominantly those with no children or one child at the moment. Other salient results from Table 5 include:

- The mean number of intended children is higher for women with no children or one child, and declines with age of women (column 2 of Table 5). For those without children, it declines from an average of 2.6 children for women aged 20-24 years to 2.4 for those aged 25-29 years, 2.1 for those aged 30-34 years and 1.8 for those aged 35-39 years. For those with one child, the mean number of intended children declines from 1.9 children for women aged 20-24 years to 1.2 for those aged 35-39 years.
- The extent of childlessness is expected to increase with successive younger cohorts. It increases from 13 per cent of those currently aged 35-39 years to 15 % of those aged 30-34 years, and 18 % of those aged 20-24 years. These estimates of expected lifetime childlessness, based on children ever born and intentions to have children, are much lower than the ABS' synthetic estimate of 28 %. However, this paper's estimate of 18 % lifetime childlessness for the 20-24 year olds, 1977-81 birth cohort, is closer to Merlo and Rowland (2000:27) estimate of 19.5 % for the 1981 birth cohort. These authors used the same data as the ABS but a different method.

It is possible that these estimates of completed fertility may materialise, as the achieved fertility levels of the 1952-56, 1958-62 and 1962-66 birth cohorts in 2001 (see Table 1) are higher than Jain and McDonald (1997:36) predicted. Jain and McDonald (1997:36) concluded on the basis of the fertility achieved by the 1952-56 and 1958-62 birth cohorts in 1992 that these and later birth cohorts would probably not achieve replacement level fertility of 2.1 children in their lifetime. Jain and McDonald (1997:45) argued that for Australian cohort fertility to rise or even to remain constant 'incentives and infrastructure support to parents will have to be provided such that they could combine childbearing and rearing with their already modified life style and working arrangements'.

However, there has been a quite marked positive change in this area between 1991 and 2001. For instance, there were large increases in Commonwealth supported childcare provisions in the 1990s. The number of Commonwealth supported childcare services increased from 3,972 in 1991 to 10,050 in 2001, while the number of Commonwealth supported childcare places increased from 168, 276 to 500,034 over the same period (AIHW 2003:235-6). Long day care places more than doubled over the period from 118,762 to 264,649 (AIHW 2003:Table A6.7).

It is also possible that these estimates of completed fertility will be achieved if the Netherlands experience were any guide. In the Netherlands a number of birth cohorts were asked on three occasions (1982, 1988 and 1993 Surveys) the number of children respondents ultimately expected to have and the number of children ever born. Women born in 1950-54 for instance were rather stable in their expectations, although as time went on their expectations were slightly reduced, from 2.02 children in 1982 to 1.97 in 1993. However their actual average number of children reported in 1993, 1.89 children, was moderately lower than their expectation in 1982 and 1993 (van de Kaa 1998:28-29).

Another argument for the possibility of achieving these estimates of completed fertility is that countries that now have higher fertility, for example France and the Netherlands, have shown postponement of cohort fertility at younger ages, usually ages 20-24 and 25-29 years, followed by a strong recuperation at later ages (Lesthaeghe 2004). The countries that have experienced strong recuperation of cohort fertility at later ages are those that experienced early what Lesthaeghe and van de Kaa called the 'second demographic transition' (SDT) (Lesthaeghe 2004). The features of the SDT include a marked degree of fertility postponement, efficient contraception, later marriage, rising cohabitation and extra-marital fertility, higher childlessness, stronger gender equality, higher labour force participation and earlier weakening of the breadwinner model. Australia is among the countries that have experienced these trends since the 1960's. Although one needs to follow cohort fertility over time to prove it, it is likely that Australia is also experiencing fertility postponement followed by strong catch up at later ages.

Analysis of trends in cross-sectional fertility rates (number of births per 1000 women) between 1983 and 2003 lends support to fertility postponement at younger ages and recuperation at older ages. Fertility rates have consistently fallen for women aged less than 30 years and increased for women aged 30 years and over, with peak fertility shifting from 25-29 to 30-34 years (ABS 2004: 8, 15). Fertility rates over the period have fallen by 39 % for the 15-19 year olds (from 27 to 16 births per 1000 women), 47 % for the 20-24 year olds (from 103 to 55 births per 1000 women) and 29 % for the 25-29 year olds (from 146 to 103 births per 1000 women). By contrast fertility rates have increased by 38 % for the 30-34 year olds (from 82 to 113 births per 1000 women), 217 % for the 35-39 age group (from 25 to 54 births per 1000 women) and 233 % for the 40-44 year olds (from 4 to 10 births per 1000 women) (percentages calculated from ABS 2004: Table 2.8). The increase for the 45-49 is 250 %, though from a very low level. In 2002 women aged 30-34 and 35-39 years reattained the peak fertility rates attained by comparable age groups in 1964 and 1965 (ABS 2004: 8).

Some of those women over 30 years who cannot have children, they are adopting children. According to Adoption Statistics (AIHW 2004:x) '82 % of the adoptive mothers and 87 % of the adoptive fathers were aged 35 years and over and most were married. Additionally, where the family composition of the adoptive family was known, 59 % of children were adopted by people who had no other children in the family'.

### **Conclusion**

Though Australia's completed cohort fertility has declined for cohorts born since the late 1930s from its peak of 3.2 children for those born in 1927-36, completed cohort fertility of those born between 1952 and 1961 has stabilised at above replacement level. This compares with period fertility, which has fallen to below replacement level since 1976. It is worth noting that both the completed fertility rate and the period total fertility rate have recently stabilised. The estimated completed cohort fertility rate of the 1962-66 birth cohort is above replacement level and is higher than most countries of Western Europe, where estimated completed cohort fertility of this birth cohort has fallen to below replacement levels.

This paper's estimates of completed fertility rates for cohorts born since 1925 are consistent with that of the ABS' birth registration based estimates. There has not been any change in the mean number of children ever born across comparable age groups between the 1996 Census and the 2001 HILDA, despite consistent declines from 1981 to 1996.

The analysis of parity progression ratios for women who completed reproduction shows that the probability of progressing to having another child has been falling for all parities over time. However, the fall in parity progression ratios over time has been greater at higher parities, particularly the probability of progressing from having two children to at least three children and from three to at least four children.

The extent of childlessness in the population, measured by the proportion of women aged 45-49 years that are childless, has remained at 11 % both in the 1996 Census and the 2001 HILDA. The analysis has shown that the extent of childlessness is increasing with successive younger cohorts.

To obtain an insight into those women currently without children, the paper compared their characteristics with those of mothers for the, 20-49 age group. There were substantial differences between the demographic, social and economic characteristics of mothers and those without children. Compared to mothers those without children were young, largely unmarried, lived in couple only households or lone person households, left school later and had a higher educational level. They had higher employment rate, were more likely to work in professional occupations, earned higher salaries and wages, were less likely to receive pension and benefits and were likely to live in high-income households. It appears that these women without children have postponed their first birth, as they are mainly young women who recently completed fulltime education, are building their careers and have not yet formed families and stable relationships.

What are the prospects for completed cohort fertility and lifetime childlessness? The estimation for the young women, based on their fertility intentions and children ever born, indicate that they could all achieve replacement fertility level if they achieved their fertility intentions. This paper's estimates of the extent of lifetime childlessness for cohorts who have yet to complete their reproduction increases with successive younger cohorts from 13 % for those currently aged 35-39 years to 18 % for those aged 20-24 years. The lifetime childlessness estimate for women aged 20-24 years is close to Merlo and Rowland's (2000: 27) estimate of 19.5 %.

In conclusion, it is hard to tell whether these results will materialise or not as the international and Australian evidence suggests that fertility behaviour falls short of intentions. But given the recent stabilisation of current fertility and completed cohort fertility, the marked increase in Commonwealth supported childcare places, increasing financial assistance to families with dependent children and the Government's policy focus in supporting families to balance family and work responsibilities, it is likely that completed fertility rate of future cohorts will remain at or above replacement fertility and the extent of childlessness will not be as high as the ABS estimate of 28 %.

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