

BOOM OR GLOOM? COHORT FERTILITY DATA FROM THE 2006 CENSUS

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Data from the 2006 census show a continued decline in cohort fertility. This is especially true of women aged 40 to 44 in 2006 and thus towards the end of their reproductive years. Declines in the number of children born to younger women are also clear. Cohort fertility is considered with regard to population composition data also available from the census. Urbanisation, lower rates of marriage, and immigration all militate against recovery in cohort fertility.

INTRODUCTION

From an all-time low of 1.73 babies per woman in 2001, Australia's total fertility rate (TFR) has recovered somewhat to 1.81 babies per woman in 2005.¹ In newspaper reporting, the increase has been described as a 'boom'.² With the exception of some more cautious journalism,³ this reporting has created the impression of a problem resolved: we have 'turned the corner on fertility';⁴ 'fertility slump ends'.⁵ Invariably, the credit goes to the Maternity Payment ('baby bonus') introduced by the current Government in July 2004.⁶

Claims made in academic forums, such as this journal, are more circumspect. Nevertheless, McDonald argues that the TFR has stopped falling and predicts it will remain steady at 1.8 babies per woman for the next decade.⁷ Jackson is more sceptical in her interpretation of recent births data.⁸ One of her 'points of caution' is that the completed fertility of women currently reproducing—that is, how many babies they end up having—may show no change.

The distinction between the TFR and cohort fertility is an important one. To read the newspapers one might imagine that families are growing in size, when in fact this is not necessarily implied by an increased TFR: a TFR increase, whether or not described as a 'boom', is a cross-

sectional phenomenon, and is not necessarily reflected in cohort completed fertility. One would not yet expect to see the current TFR increase reflected in completed fertility statistics, due to the necessary lag between current births and the collection of data on completed fertility. More importantly, the increase may never be evident in completed fertility data, because the TFR—the simplest and most widely used 'snapshot' measure of current fertility—is a synthetic measure, subject to distortions caused by delayed or accelerated childbearing. These caveats are presumably too technical for a general audience and are therefore absent in most media commentary.

Of course, the measure of most interest depends on the concern. The annual TFR is important, regardless of (indeed, because of) delayed or accelerated childbearing, because the number of babies born in any given year matters to the age structure of the population. However completed cohort fertility provides a better measure of generational replacement.

This article considers cohort fertility, both complete and incomplete, in the light of new data from the 2006 census. The census is the primary source of information on cohort fertility; however, the question on children ever born is asked

every alternate census only. Inevitably, this once-in-a-decade opportunity to study actual cohort fertility is eagerly awaited by Australian demographers. The first wave of 2006 census data was released in June 2007, including results on the number of children ever born to female respondents. When presented as part of a time series, the data allow an assessment of change in the average number of children born to successive cohorts of women over successive years.

This paper further considers cohort fertility with regard to certain aspects of population composition, examining the average number of children per woman by social marital status, by country of birth, and by capital city versus balance of state. For other key variables, such as educational attainment, we must wait for second wave data (with additional variables), due for release in October. Change across these

limited dimensions nevertheless provides contextual information in light of which the potential for recovery in completed cohort fertility (in addition to the increase in TFR) might be assessed.

COHORT FERTILITY ACROSS CENSUS YEARS

Despite recent increases in birth numbers, cohort fertility data from the 2006 census give little cause for excitement. The average number of children ever born per woman remains in long-term decline (Table 1). This decline is evident in each age group across the reproductive years. Because data on children ever born is collected in every alternate census only, it is difficult to assess the pace of decline—for example, we cannot tell whether, between 2001 and 2006, the decline slowed relative to the preceding five years. Nevertheless, women of all ages in 2006 had

Table 1: Females,^a 20 to 44 years,^b mean children ever born,^c 1981 to 2006

Age (years)	1981	1986	1996	2006
20 to 24	0.45	0.38	0.28	0.21
25 to 29	1.30	1.12	0.79	0.65
30 to 34	2.03	1.89	1.55	1.30
35 to 39	2.43	2.24	2.02	1.81
40 to 44	2.78	2.46	2.23	2.05

Source: ABS, customised data held by CPUR.

Notes: ^a Excludes women who did not state how many children they had (6.5 per cent of those aged 15 to 49 years in 2006; compared to 5.1 per cent in 1996, 9.6 per cent in 1986 and 13.0 per cent in 1981).

^b Data for women aged 45 to 49 years were not available for all years in this table but are shown for 1996 and 2006 in Table 3 and are used in the analysis of incomplete cohort fertility.

^c Records at the higher end of the distribution of data for 'children ever born' were grouped ('topcoded') differently in the datasets available for each of these years. This poses problems for the calculation of a mean because only the lower bound of the category and number of cases within the category are known; the distribution of cases within the top category is unknown. Therefore assumptions were made based on the ABS' Survey of Families in Australia, 1992 (from which non-topcoded data were available). Mean number of children ever born was calculated on the assumption that women with seven or more children had an average of 8.0 children in 1981; women with five or more children had an average of 5.7 children in 1986 and in 2006; and women with four or more children had an average of 4.6 children in 1996.

fewer children, on average, than did their counterparts in 1996.

Completed cohort fertility

Change in completed cohort fertility is easiest to assess. Women aged 40 to 44 years in 2006 had, on average, 2.05 children. Since women of this age are nearing the end of their reproductive lives, we may assume that this cohort (born 1962 to 66) will fall just short of ‘replacement level’ fertility (usually taken to be 2.1 babies per woman).⁹ By contrast, women aged 40 to 44 years in 1996 exceeded replacement level with an average 2.23 children each. In other words, completed fertility continued its long-term decline over the decade to 2006.¹⁰

Table 2 shows that the decline continues across the spectrum of family size, but is particularly marked in the growing proportion of women with no children (16 per cent in 2006) by age 40 to 44 years. Given the greater tendency for women without children to omit answering the census question on children ever born,¹¹ this figure may under-represent the true level of childlessness.¹²

Meanwhile, the proportion of women with three children by age 40 to 44 years continues to decrease, as does the proportion with four or more. McDonald argues these higher order parity progressions are particularly important to the sustainability of Australian fertility

levels.¹³ Two remains the most common number of children per woman, and the proportion of women with two children by age 40 to 44 years remains relatively stable at 38 per cent.

Incomplete cohort fertility

The primary disadvantage of using actual cohort fertility data is that, for younger women, childbearing is incomplete. Yet trends among younger women are arguably of most interest, given the claimed success of recent pronatalist initiatives, and in light of the fact that the recent TFR increase largely reflects the behaviour of those who have not yet reached the end of their reproductive careers.

An initial reading across the columns of Table 1 shows that decline is evident as successive cohorts reach each age group across the reproductive years. Women aged 20 to 24 in 2006 had on average 0.07 children fewer than women who were the same age ten years ago. The average number of children born to women aged 25 to 29 years fell by 0.14. The average number of children born to women aged 30 to 34 also continued to decline, by 0.25. For each of these age groups, some deceleration in decline is evident when compared to the preceding decade (1986 to 1996).

An enhanced understanding of the data in Table 1, however, requires the reader to follow specific cohorts of women as they

Table 2: Females, 40 to 44 years, children ever born, 1981 to 2006 (per cent)

	None	One	Two	Three	Four or more	Total
1981	9	7	30	27	27	100
1986	10	9	36	27	19	100
1996	13	11	38	25	13	100
2006	16	13	38	22	11	100

Source: ABS, customised data held by CPUR.

age across census years. Such a reading allows projections for cohorts currently having children, based on the childbearing behaviour of each preceding cohort. These projections, based on the following reasoning, are shown in Table 3.

Firstly, the cohort aged 35 to 39 years in 2006 is unlikely to attain the completed fertility rate of the cohort aged 40 to 44 years in 2006, since they will add little to their already-attained average of 1.81 children. This assumption is based on the behaviour of the cohort one decade older. Those aged 35 to 39 in 1996 had an average 2.02 children, and by age 45 to 49 years in 2006 had 2.14 children (an increase of 0.12 children). If those aged 35 to 39 years in 2006 were to add to their fertility by the same amount over the next ten years, they would achieve an average 1.93 births each by the end of their reproductive years.

Similarly, on their way to achieving 2.05 children, the cohort aged 40 to 44 years

in 2006 had on average 1.55 children by 1996, when they were aged 30 to 34 years. In other words, they added an average 0.49 children between these ages. By contrast the cohort aged 30 to 34 years in 2006 had an average of 1.30 children. If this cohort were to add to their fertility by the same amount over the next ten years, they would achieve an average 1.79 births each by age 40 to 44 years, slightly more by 45 to 49 years.

Of course, these calculations assume that other variables (mean age at childbearing, intervals between births, parity progression rates) remain constant—this may not prove to be so. Further, the calculations are less reliable than if the data were collected every five years. Nevertheless, on these assumptions, the decline in completed cohort fertility seems set to continue in the short- to medium-term.

COHORT FERTILITY BY RELATIONSHIP IN HOUSEHOLD

At this stage there is limited information available on the characteristics of women by which the cohort fertility data may be disaggregated. For certain key variables, such as education and labour force status, we must wait for second wave data, due for release in October. However, with the data released to date it is possible to examine patterns of childbearing by social marital status (derived from the ‘relationship in household’ question in the census). Given the significance of relational trends to reproductive trends, this variable is important.¹⁴

The number of children ever born was considerably higher among women who were wives in 2006 than among those who were cohabiting (Table 4).¹⁵ This gap is evident across all cohorts (although the table shows data for women aged 40 to 44 years only, whose childbearing may be considered complete) and increases with

Table 3: Females, 20 to 44 years, mean children ever born, actual and projected, 1996 to 2016

Age (years)	Actual ^a		Projected
	1996	2006	
20 to 24	0.28	0.21	—
25 to 29	0.79	0.65	—
30 to 34	1.55	1.30	1.23
35 to 39	2.02	1.81	1.68
40 to 44	2.23	2.05	1.79
45 to 49	2.31	2.14	1.93

Source: ABS customised data held by CPUR (1996 and 2006); author’s workings (2016).

Note: ^a Mean number of children ever born calculated on the assumption that women with five or more children had an average of 5.7 children in 2006; and that women with four or more children had an average of 4.6 children in 1996.

age. Although it is accepted wisdom that cohabitating women have fewer children than do married women,¹⁶ the size of the gap is striking. Married women aged 40 to 44 in 2006 had an average of 2.27 children, while cohabitating women of the same age had an average of 1.83 children—a difference of 0.44 children.

The distributions on which these averages are based show that de facto partners are considerably less likely to complete their childbearing with two or three children than wives, and considerably more likely to have one child, or none. Especially striking is the high rate of childlessness (23 per cent) among women who were partners in de facto relationships by age 40 to 44 years in 2006. This compares to only eight per cent childless among married women. Allowing that some women are unable to have children, the implication is that motherhood is a near-universal outcome for married women.

These data may be interpreted in several ways. Perhaps those who marry almost inevitably have children—or perhaps those who want children tend to marry; that is, marriage may be selective of women who aspire to become mothers. Either way, the fertility gap between wives and partners testifies to the ongoing importance of marriage to Australian fertility.

This echoes the argument of Birrell et al., who argue that the decline in married partnering is crucial to the explanation of low fertility in Australia.¹⁷ This argument was made on the basis of data from the 2001 census, which revealed ‘precipitous’ falls in the proportions of young people who were partnered (married and de facto) in the fifteen years to 2001. The proportion of women living in married partnerships, in particular, declined significantly. Birrell et al. argue that the increasing number of ex-nuptial births offset, but could not compensate for, the resulting decline in the number of nuptial births. They claim, therefore, that ‘most of the decline in the TFR is due to the partnering factor’ (my emphasis).¹⁸

TRENDS IN PARTNERING

What does the 2006 census tell us about these trends in partnering? Table 5 shows that the proportions of women who are partnered (both married and de facto) are showing signs of stabilisation, dropping by one percentage point or less in the five years to 2006. The proportions married, however, are still in decline, across all the reproductive age groups. At 30 to 34 years—the peak age group for childbearing in Australia—only 56 per cent are married.

Table 4: Females, 40 to 44 years, children ever born by relationship, 2006 (per cent)

	None	One	Two	Three	Four or more	Mean ^a
Wife	8	11	45	25	11	2.27
Partner	23	18	32	17	11	1.83
Total ^b	16	13	38	22	11	2.05

Source: ABS, customised data held by CPUR.

Notes: ^a Mean number of children ever born calculated on the assumption that women with five or more children had an average of 5.7 children.

^b Total includes women in all other relationship types (including lone parents and lone persons) and those who to whom the ‘relationship in household’ question was not applicable (for example, those not at home on census night)

Given the close link between marriage and fertility, the effect of these trends on fertility can only be negative. Not only is the proportion of women who are married decreasing, but married women are having fewer children over time (data not shown). Childbearing within de facto relationships does not compensate, despite the increasing proportion of women living in such relationships because, as shown in Table

4, the average number of children born to such women is lower, and is also declining.

If partnering, particularly married partnering, is as crucial to fertility as Birrell et al. would have us believe, these trends do not bode well for the longevity of Australia's recent so-called 'baby boom'. As long as the drift away from marriage continues, recovery will be difficult to sustain.¹⁹

Table 5: Females, 20 to 44 years, social marital status (per cent)

	Married	De facto ^a	Total partnered	Not partnered	Total
20 to 24 years					
1996	16	14	30	70	100
2001	12	16	28	72	100
2006	10	18	27	73	100
25 to 29 years					
1996	48	14	61	39	100
2001	41	18	58	42	100
2006	36	21	57	43	100
30 to 34 years					
1996	65	9	74	26	100
2001	59	12	71	29	100
2006	56	15	71	29	100
35 to 39 years					
1996	70	7	77	23	100
2001	66	9	75	25	100
2006	63	11	74	26	100
40 to 44 years					
1996	72	5	77	23	100
2001	68	7	75	25	100
2006	65	9	74	26	100
Total ^b					
1996	53	6	59	41	100
2001	51	7	58	42	100
2006	49	9	58	42	100

Source: ABS (2007) 2006 Census Tables, catalogue no. 2068.0.

Notes: ^a Includes same-sex couples.

^b Total includes all ages 15 years and over

COHORT FERTILITY BY COUNTRY OF BIRTH

Other variables available in the first release data lend further support to the view that changes in the composition of the Australian population militate against fertility increase. Country of birth is one such variable.

In recent years the TFRs of both Australia-born and overseas-born women have fluctuated, and have crossed paths several times. The difference is usually less than four per cent. Between 1992 and 1997 (inclusive), the TFR of overseas-born women was marginally higher; between 1998 and 2000 (inclusive), the TFR of Australia-born women was marginally higher.²⁰ Since then, the TFR of overseas-born women has once again been the higher.²¹

However, the cohort fertility data show that, in 2006, Australia-born women still ended their reproductive careers with more children, on average, than women born in other countries (Table 6). Australia-born women had a higher mean number of children ever born than immigrant women across all age groups although, again, the table shows data for women aged 40 to 44 years only. Immigrant women born in English-speaking countries had a higher

number of children, on average, than immigrant women from non-English-speaking countries.

These findings are interesting for several reasons. Firstly, they are contrary to the popular perception that immigrants, particularly from non-English speaking backgrounds, have lots of children. This perception is the basis of fear-mongering about the Australia-born population becoming a minority. In fact, the data suggest that if it were not for the depressing influence of the fertility of immigrant women on total cohort fertility, the cohort aged 40 to 44 years in 2006 would have achieved replacement fertility.

Secondly, these data are interesting because they differ from developments in other western nations, where the differences in fertility by country of birth are much greater. In the UK, according to the latest census (2001), immigrant women had a TFR of 2.2, compared with 1.6 for the UK-born (see Table 7) (cohort fertility data not available by country of birth).²² Similarly, in 2004, US-born women aged 40 to 44 years had on average 1.8 children each, while their foreign-born counterparts had 2.2 each.²³

This means that, in England and Wales, as in the US, continuing high levels of

Table 6: Females, 40 to 44 years, children ever born by country of birth, 2006 (per cent)

Country of birth	None	One	Two	Three	Four or more	Mean ^a
Australia	16	12	38	23	12	2.08
Main English-speaking countries ^b	17	13	39	20	10	1.99
Other countries	15	19	40	17	10	1.94
Total ^c	16	13	38	22	11	2.05

Source: ABS, customised data held by CPUR.

Notes: ^a Mean number of children ever born calculated on the assumption that women with five or more children had an average of 5.7 children.

^b Main English-speaking countries include UK, Ireland, NZ, S.Africa, US, Canada.

^c Total includes women whose country of birth was not stated, inadequately described, or at sea.

immigration are contributing to fertility—in these countries, as in Australia, TFRs have increased in recent years, following longer-term declines.²⁴ By contrast, in Australia, any increase in fertility is despite the lower cohort fertility of immigrants.

This is dependant on the composition of the migrant intake, since different immigrant groups display different fertility rates, and some do have larger families.²⁵ Indeed, the higher fertility of immigrants in England and Wales and the US, compared to those in Australia, is due to their different origins (see Table 7 with regard to England and Wales).

The number of Australians born

overseas is increasing by 1.5 per cent per year. Over the last decade this rate of increase has been higher than that of the Australia-born population (1.1 per cent) and of the total population (1.2 per cent), as the net overseas migration intake continues to rise.²⁶ The proportion of Australians born overseas had increased to 24 per cent by 2006, according to the census. It follows that increasing reliance on immigration, particularly from the non-English speaking countries from which Australia draws its migrants, will likely have a small but negative impact on cohort fertility rates. On the other hand, of course, immigrants contribute to the overall number of women having babies—and therefore the number of babies—in Australia.

Table 7: Total fertility rates by country of birth of mother, 1991 and 2001, England and Wales

Country of birth of mother	1991	2001
Total	1.8	1.6
United Kingdom ^a	1.8	1.6
Total outside UK	2.3	2.2
New Commonwealth	2.8	2.8
India	2.5	2.3
Pakistan	4.8	4.7
Bangladesh	5.3	3.9
East Africa	1.9	1.6
Rest of Africa ^a	2.7	2.0
Rest of New Commonwealth ^b	1.9	2.2
Rest of the World	1.9	1.8

Source: Office for National Statistics (UK), 2007.

Notes: ^a This table refers to births in England and Wales only. However, mothers born in the UK include those born in England, Wales, Scotland, Northern Island, Channel Islands, the Isle of Man and UK (not otherwise stated).

^b Includes countries listed under Southern Africa and Rest of Africa.

^c Includes countries listed under Far East, Caribbean and Rest of New Commonwealth.

COHORT FERTILITY BY CAPITAL CITY VERSUS BALANCE OF STATE

Finally, first release census data allow a comparison of fertility differentials for women in capital cities, compared to that of their counterparts outside the capitals. Again, Table 8 relates to women aged 40 to 44 years, showing data for New South Wales and Victoria only. In both states (as in all other states and territories, though the data is not shown), the fertility of women in the capitals is considerably lower than that of other women. Women in the capitals are considerably more likely to be childless, and less likely to have higher order births, than their counterparts outside these cities.

At this time, one can only speculate about the reasons for this stark difference. In all likelihood, other variables are at play. Women in capital cities may be more educated, more career-oriented and/or face greater living costs, all of which may have a depressing effect on fertility. Intersections with country of birth may also play a part, since migrants (who, as

demonstrated, have lower cohort fertility) are concentrated in the nation's capitals. More sophisticated analyses using both first and second-release variables will be necessary to separate these factors.

Nevertheless, these data point to another factor that militates against fertility increase in Australia. It is well established that we are a highly urbanised nation, with two thirds of the population living in the capitals. Growth in the capitals accounted for 63 per cent of Australia's total growth in the five years to 2006, and, at an average annual rate of 1.3 per cent, is occurring at a faster rate than growth across the country as a whole.²⁷ Continued urbanisation may place further downward pressure on fertility.

CONCLUSION

The 2006 census data presented in this paper suggest that the cohort fertility of Australian women is continuing its long-term decline. Figures for women nearing the end of their reproductive years in 2006 represent a continuation of long-term decline in completed fertility. A decline in

the fertility of successive cohorts of women reaching younger age groups is also evident, although the rate of this decline may be slowing.

It is clear that fertility trends must be considered in conjunction with data on the composition of the Australian population. The first release census data shed light on fertility differentials according to relationship status, country of birth and capital city versus balance of state. I have speculated as to the significance of these differentials to future fertility. While other (second release) census variables may tell a different story, the trends away from marriage, towards urbanisation, and towards an ever-higher immigration intake all have the potential to militate against any sustained recovery in fertility. These trends suggest grounds for caution in discussion of Australia's recent baby 'boom'.

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Table 8: Females, 40 to 44 years, children ever born by capital city statistical division (SD) versus balance of state, 2006

	None	One	Two	Three	Four or more	Mean ^a no.
Sydney SD	18	15	38	19	9	1.92
Balance of New South Wales	12	12	37	25	14	2.24
Melbourne SD	18	14	39	20	8	1.90
Balance of Victoria	12	10	37	26	14	2.27
Australia	16	13	38	22	11	2.05

Source: ABS, customised data held by CPUR.

Note: ^a Mean number of children ever born calculated on the assumption that women with five or more children had an average of 5.7 children.

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- ⁹ A replacement-level fertility rate indicates the number of babies a woman would need to have over her reproductive lifespan in order to replace herself and her partner, allowing for current mortality levels. The ABS (op. cit.) states that replacement level fertility is currently estimated at 2.1 babies per woman for Australia and most other developed countries; in fact (to two decimal places) it is probably lower, at around 2.06 babies per woman (established in communication with Peter McDonald of ANU and Dharmalingam Arunachalam of Monash University).
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