

## WHAT DO WE KNOW ABOUT MEN'S FERTILITY LEVELS IN AUSTRALIA?

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*There is less information available on men's fertility in Australia than there is on women's and some of it is either unreliable or incomplete. This paper analyses data that are available on men's fertility from the births registration system and the first wave of interviews from the Negotiating the Life Course study completed in 1997. Young men are embarking on parenthood at a later age than in the past. For example, it is estimated that 68 per cent of men aged 30-34 in 1997 had not had a first birth by age 30. This compares with 33 per cent of men aged 50-54 in 1997 who had not had a child at age 30. Another consequence is that the proportion of men who are childless (currently 20 per cent of men aged 45-49) will increase significantly for younger men.*

Although there has been dramatic increase in interest on the family formation of men, very little attention has been given to this topic in the Australian context. The demographic study of fertility has traditionally focused on women, for the seemingly obvious reason that more reliable information is gained from mothers rather than fathers, as it is women who physically bear children.<sup>1</sup> However, although the importance of understanding issues of male reproduction is now being widely highlighted, frustration is expressed at the lack of available data.<sup>2</sup>

Merlo and Rowland<sup>3</sup> have found evidence of increasing age at first birth for women, with decreases in the proportion of women aged 20-24 having a first birth, and increases of 24 per cent in the age group 30-34 having a first birth between the years 1991 and 1997. Like the demographic study of fertility, public debate has also centred on changes in fertility rates of women and the social settings that are associated with these changing fertility levels.

This paper reviews the availability of data on male fertility in Australia, assessing what is known about the fertility of Australian men. This overview highlights the potential of survey data to provide

information unavailable from official statistics.

### FERTILITY DATA SOURCES AND THEIR LIMITATIONS

In Australia it is compulsory to register live and still-births with the *Registrar of Births, Deaths and Marriages* in the state or territory of birth. The legislation is determined by the relevant state or territory. Registrars are required to provide birth statistics to the Australian Bureau of Statistics (ABS), which compiles the data on birth registration for Australia as a whole. The National Perinatal Statistics Unit of the Australian Institute of Health and Welfare (AIHW) also provides information on births based on the *National Perinatal Minimum data set*, which is a collection of data on live births. The National Perinatal Minimum data set is a collation of each State and Territory perinatal data collection. These data collections are based on birth notification forms completed by midwives and other hospital staff from information collected from mothers and hospital records.<sup>4</sup> There is some discrepancy between the figures collected by these two methods, and the ABS observes that birth registration suffers from undercoverage, but notes that this undercoverage is difficult

to measure.<sup>5</sup> However, although the Midwives' Collection does not provide information on fathers, birth registration does provide information on paternity.<sup>6</sup> This information includes acknowledgement of paternity, age of father, number of previous children from the current relationship between the mother and the father and employment status of the father. For this reason, when scholars do attempt an analysis of men's fertility they tend to use the birth registration data.

The ABS also compiles information on the number of children ever born to women. This information is based on a question asked at every second Census of Population and Housing, and was last asked in 1996. The results include information on all women resident in Australia on census night. Unfortunately, this census question is not asked of men.

Fertility information for men, such as the median age of known fathers, or a total paternity rate is calculated through birth registration data, the only official data source that can be used for population-based assessment of paternity. However, if a birth does not have paternity registered, the information is missing from the calculation of men's fertility. In 2000, 245,700 women registered 249,600 births; in 8,500 of these births<sup>7</sup> (3.5 per cent) paternity was not acknowledged.

Although birth registration information on men's fertility can only be reported for births where paternity is acknowledged, birth registration data provide information on the median age of known fathers and the number of previous children from the current union. However, these data cannot be used to calculate the proportion of men who are childless, or the age at entering parenthood. Birth registration can provide the median age of fathers, but not the median age at entering parenthood because birth registration data only provide

information on whether it is the first birth of the current union, not from any previous relationships.

However, there are alternative sources of information that provide information on the fertility histories of men. One such source of information is the collection of men's fertility reports from nationally-representative samples. The *Negotiating the Lifecourse* (NLC) survey, used in this paper, is one possible source of this information.<sup>8</sup>

The NLC survey is a longitudinal panel study with first wave interviews conducted in 1997 and Wave 2 conducted in 2000. This paper uses Wave 1 data, so it must be treated as a cross-sectional survey. Although retrospective fertility histories (as collected in the first round of NLC in 1997) are a useful addition to the data available on men's fertility, findings from other countries suggest reservation in using such data.<sup>9</sup> Rendall et al. suggest that there are two main issues in men's fertility reporting which may affect data accuracy. These are underrepresentation and underreporting of fertility from previous marriages, and non-reporting of non-marital fertility.

Obtaining data from a longitudinal panel study can help to address both of these problems. In the case of NLC, both male and female respondents are asked equivalent questions about their reproductive history, allowing the opportunity to provide information on not only their current relationship, but also from past relationships. Further, a panel survey, where regular fertility information is collected, can help to provide information on cohabitation fertility. Future analysis of the second and forthcoming third wave of the NLC study will provide an opportunity to measure the occurrence of underreporting of fertility from previous unions.

Given this context of available data, the following analysis provides information on male reproduction from birth registration and survey data.

**MEASURING MEN'S FERTILITY**

So, what do we know from the estimates of men's fertility? Birth registration data provide evidence that the median age of fathers is increasing. In 1980 the median age of acknowledged fathers was 29.4 years. By 2000 this had increased to 32.3. Increases are also evident for women's age at childbirth. The median age at childbirth for women was 25.4 years in 1971 (this was the lowest recorded in the 20th century); by 1980 it had increased to 26.6 and by 2000 it had reached 29.8 years (the highest recorded median age at birth).<sup>10</sup>

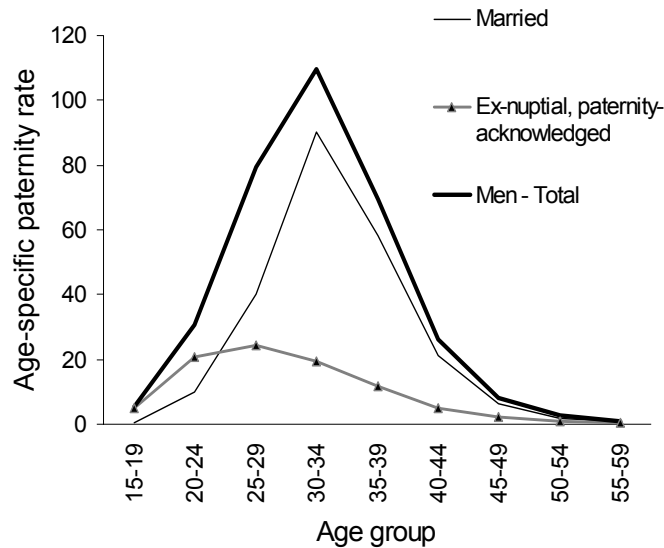
Figure 1 shows the peak age at birth for men in 2000 from birth registration data. For unmarried fathers (paternity-acknowledged) the peak is in the 25-29

year age group, while for married fathers it is 30-34 years. Overall, men are most likely to have a child in the 30-34 year age group (109.8 registered births per 1,000 men in 2000). In 2000 this was also true for women, with the age-specific fertility rate being highest in the 30-34 year age group (110.5 births per 1,000 women).<sup>11</sup> (This figure is for all women, not just married women.)

In 2000, the total fertility rate for women was 1.75, and the equivalent fertility rate for men (based on registered births) was 1.67.<sup>12</sup> The main reason that the fertility rate is lower for men than for women is that there are more males in the reproductive ages than females. However lack of paternity acknowledgement in the case of some births also contributes to the lower total fertility rate estimate for men.

Although these published data provide some information on men's fertility patterns, a number of questions remain

**Figure 1: Age-specific paternity rates (men), Australia, 2000**



Source: *Births Australia 2000*, Australian Bureau of Statistics, Cat. no. 3301.0

unanswered from this overview. These questions include (but are certainly not limited to):

1. Has the fertility of men changed over time? How do older cohorts compare to younger cohorts on number of children ever born?
2. At what age do men enter parenthood, and is this age different for men and women? How does the age of entering parenthood differ by cohort?
3. How many men remain childless?

Survey data can be used to provide some answers to these questions. Although the NLC is not a population-level analysis of men's fertility, it is a nationally representative sample. The use of these data provides the opportunity to understand men's completed fertility experience, to estimate men's age at entering parenthood, and to examine cohort differences in the timing of parenthood for men in Australia.

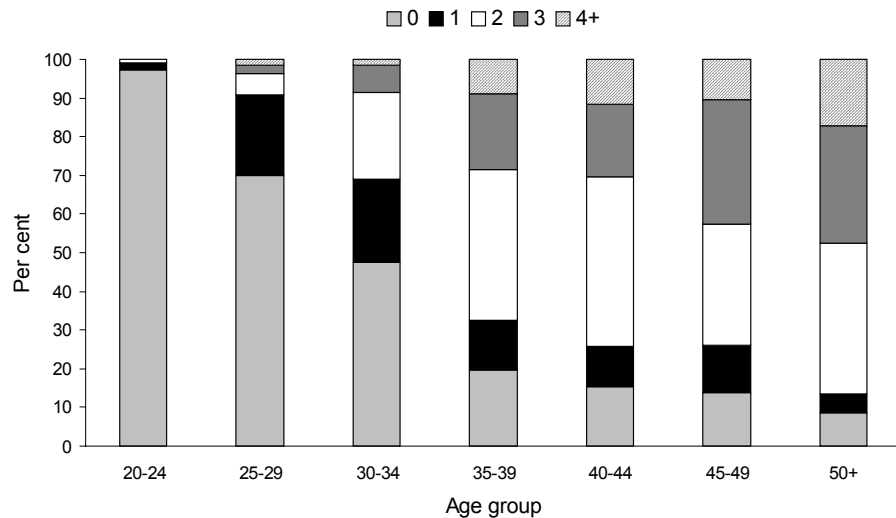
### USING SURVEY DATA TO ANALYSE MEN'S FERTILITY

This section examines the fertility experiences of men who are represented in the NLC survey. The first wave of the NLC sample consists of 2,231 respondents, 1,247 of whom were women and 984 of whom were men. At the time of interview (1997) respondents were aged 18 to 54 years. Although women are slightly over-represented in the survey, the NLC is broadly representative of the Australian population. We would not expect the paternity experience of males in the NLC to be different from the general population.<sup>13</sup> For the purpose of these analyses, men's experience will be compared with women's experience in order to highlight how men's fertility differs, if at all, from that of women.

#### The number of children ever born

Survey data can be used to estimate the number of children ever born for each

**Figure 2: Children ever born (CEB), by age cohort (men), Australian NLC sample, 1997**



Source: Analysis by E. Gray of P. McDonald et al., *Negotiating the Life course 1997*, [computer file], Social Science Data Archives, The Australian National University, Canberra, 1999

cohort of men. For the total sample of men, the mean number of children ever born is 1.4. Of course at the younger ages reported fertility is indicative only, as these cohorts are yet to complete their reproductive years.

At each age, men are less likely to have a child than women. Figure 2 shows that in 1997, of those men aged 25-29, 70 per cent have not had a child, 21 per cent have one child and most of the remainder have two children. This compares with around 52 per cent of women in that age group having no children, while 22 per cent have one child, and 18 per cent have two children.

This gap between the number of children men have and the number of children women have does narrow at later ages but, at age 40-44, men are still less likely to have a child, and more likely to have fewer children than women of the same age. In the 40-44 age group, 15 per cent of men have no children, 11 per cent have one, 44 per cent have two, and the remaining 31 per cent have three or more. This compares with 11 per cent of women who have no child, 13 per cent who have one child, 36 per cent who have two children, and the rest (41 per cent) who have three or more children.

In the 30-34 year age group nearly 50 per cent of men had not had a child, but the proportion with no child appears to drop substantially for the next cohort. This suggests that a large proportion of men are entering parenthood in their mid-thirties. Using survey data with fertility histories we can examine the timing of entering parenthood.

#### **The timing of first birth**

In order to assess the age of men and women at the birth of their first child, survival analysis was applied to the sample. A survival model is used in this instance to examine the time to age at first

birth (that is, age at entering parenthood), while accounting for people who had not had a child at the time of the survey (referred to as censored cases).<sup>14</sup>

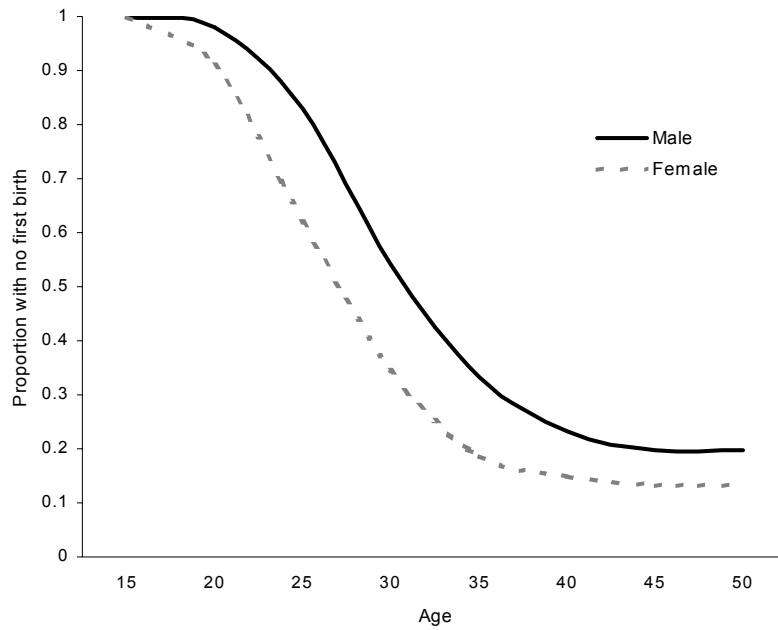
The survival curves to age at first birth for men and women are provided at Figure 3. These survival curves are significantly different<sup>15</sup> with men more likely to enter parenthood at a later age than women. In 1997, the median age at birth of first child for all men was 31 years. For women the median age at first birth was 27. Note that the median age at first birth cannot be calculated from birth registration data because birth history is for the current union.

Figure 3 shows that at age 50 almost 20 per cent of men are estimated to remain childless. This estimate for women is about 13 per cent. However, these survival curves are based on all men or women aged 18 to 54 in the sample. In order to understand how parenting patterns are changing it is necessary to examine the pattern of different age cohorts of men and women (as shown in Figures 4 and 5).

Again, survival analysis has been applied to the data. The survival curves are time to first birth, but are analysed by age cohort, and presented separately for men and women. The results show the probability of having a first birth at each age interval, and determine the proportion that remain childless at the end of each age interval, for each age cohort.

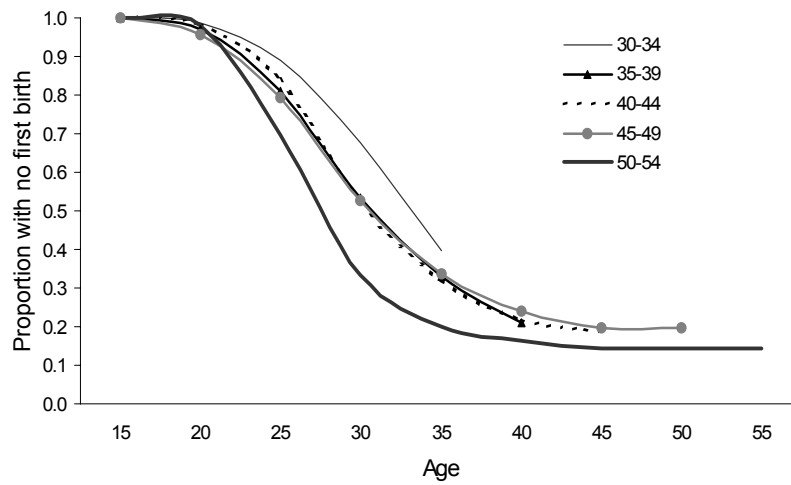
These curves show that each cohort of men is progressing to parenthood at a slower rate than previous cohorts (Figure 4). Men aged 50-54 years are the cohort closest to completing their fertility, given that the age-specific paternity rate<sup>16</sup> is very low for the age groups 55-59 (1.1) and 60+ (0.2). The median age at entering parenthood for this cohort is age 28. In comparison, men aged 40-44 years and 30-34 years have a median age at entering parenthood of 30.5 and 33 respectively.

**Figure 3: Estimated proportion of males and females at each age with no first born, Australian NLC, sample, 1997**



Source: See Figure 2

**Figure 4: Estimated proportion of males at each age with no first birth by age cohort, Australian NCL sample, 1997**



Source: See Figure 2

The striking distinction between cohorts in respect of the age at which men have a first child can be demonstrated by examining the proportions that have not had a child at age 30 (see Table 1). For example, of males aged 30-34 years in 1997, 68 per cent are estimated to have not entered parenthood at age 30. In contrast, for the cohort aged 40-44 years in 1997, 52 per cent had not become a father by age 30. This in turn is a much higher proportion than the oldest cohort examined (50-54), where only 33 per cent of men had not experienced the birth of a first child by age 30.

Not only is each cohort of men entering parenthood at a later age, but the proportion of childless men is also increasing for each cohort. It is estimated that for the youngest cohort examined (those aged 30-34 years in 1997), 40 per cent will be childless at the age of 35. For males aged 40-44 years, 19 per cent are estimated to be childless at age 45, while for those aged 50-54 years, around 14 per cent have no children.<sup>17</sup>

Discrepancies in levels of fatherhood among successive cohorts may simply be a function of delayed fertility; by the time younger cohorts reach older ages, similar proportions of childless men may be evident in each cohort. However, given

**Table 1:** Estimated proportion of males at each age with no first birth by age cohort, Australian NLC sample, 1997

Age	Age cohort in 1997				
	30-34	35-39	40-44	45-49	50-54
15	1.00	1.00	1.00	1.00	1.00
20	0.99	0.97	0.98	0.96	0.98
25	0.89	0.81	0.84	0.79	0.70
30	0.68	0.53	0.52	0.53	0.33
35	0.40	0.33	0.32	0.34	0.20
40		0.21	0.22	0.24	0.16
45			0.19	0.20	0.14
50				0.20	0.14
55					0.14

the pattern that is evident in the survival curves, there does not appear to be much progression to first birth between ages 40 and 44, let alone after age 45. This means that if either the youngest cohorts do not have a large proportion entering parenthood between the ages of 30 and 39, or if the pattern of entering parenthood in the forties does not increase, that there may be many men remaining childless and these proportions will be larger than for women in similar age cohorts.

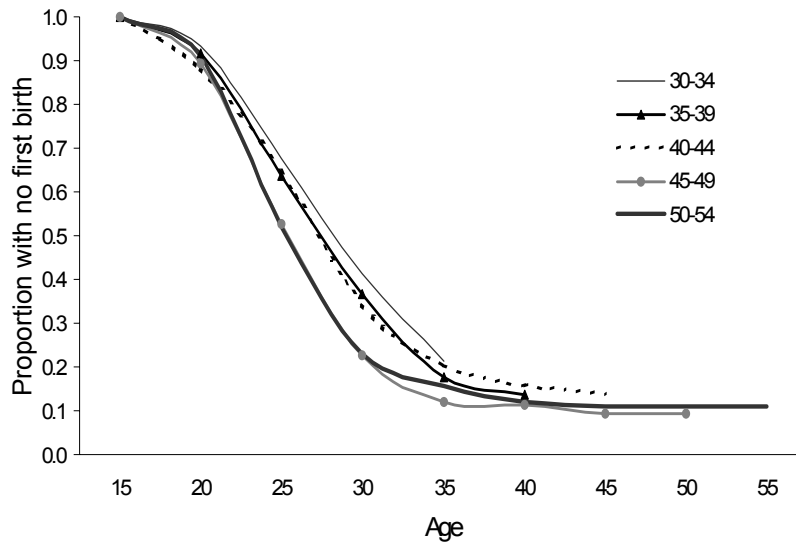
### Comparing male fertility experiences with the experiences of female cohorts

Like the pattern found for males, the survival curves (in Figure 5) show that each cohort of females is progressing to parenthood at a slower rate. Despite this, females enter parenthood at a more rapid rate than males. Women in the two oldest cohorts under investigation (aged 45-49 and 50-54 years) have very similar patterns of survival to first birth. Just under half of all women in both cohorts had experienced their first birth before their 25th birthday.

The median age at entering parenthood for the 50-54 year age cohort is 25. This figure is three years less than males in that age cohort. In comparison, females aged 40-44 years and 30-34 years have a median age at entering parenthood of 27 and 28 respectively. The difference in the median age at first birth for males and females is increasing in these cohorts, with females in the 40-44 year age group having a child approximately four years earlier than males in that age cohort, a figure that increases to a five-year difference between median age for men and women for the cohort aged 30-34 years.

Again, there is a distinction between cohorts of women in the proportion that had not had a child at age 30 (see Table 2), but the proportions are at a much

**Figure 5: Estimated proportion of females with no first birth at each age, by age cohort, Australian NCL sample, 1997**



Source: See Figure 2

lower level than those evident for men, again demonstrating the later entrance to parenthood for men. Approximately 41 per cent of females aged 30-34 years in 1997 are estimated to have not entered parenthood at age 30 (compared to 68 per cent of males). For the cohort aged 40-44 years in 1997, 34 per cent had had no birth by age 30. Again this figure is much lower than for males in that cohort (52 per cent). For the age cohort 50-54, 23 per cent of females had had no birth by age 30, around 10 per cent lower than males in that cohort.

The proportion of women who are estimated as remaining childless is much lower at each age than that estimated for men. For females, it is estimated that of those aged 30-34 years in 1997, 21 per cent will be childless at the age of 35, about half the proportion estimated as childless for males (40 per cent). For females aged 40-44 years, 14 per cent are estimated to be childless at age 45 (around five per cent lower than for males). Of those aged 50-54 years, around 11 per cent

have no children, which is only around three per cent lower than the estimated proportion of childless males. These trends support the finding of later entrance to parenthood of males.

#### CONCLUSION

By bringing up the next generation, parents perform an important role in society. Unfortunately, there has been little

**Table 2: Estimated proportion of females at each age with no first birth by age cohort, Australian NLC sample, 1997**

Age	Age cohort in 1997				
	30-34	35-39	40-44	45-49	50-54
15	1.00	1.00	1.00	1.00	1.00
20	0.93	0.92	0.88	0.89	0.91
25	0.68	0.64	0.65	0.53	0.52
30	0.41	0.37	0.34	0.23	0.23
35	0.21	0.18	0.20	0.12	0.16
40		0.14	0.16	0.11	0.12
45			0.14	0.09	0.11
50				0.09	0.11
55					0.11

Source: See Figure 2



attention to men's fertility in Australia. No doubt, this is partly because of the difficulty in assessing male reproduction due to few data sources. Further, men's reports may be inaccurate.

This paper has analysed data on men's fertility from both the birth registration system and the 1997 NLC survey. The results provided demonstrate patterns in male fertility, differences between cohorts, and the distinction between male and female patterns of fertility. The male pattern of fertility is a later entrance to parenthood than females with a greater proportion (an estimated 20 per cent for men aged 18-54 in the NLC study, compared to 13 per cent of women) never having a child. It is also evident that consecutive generations of men are entering parenthood at later and later ages. While this pattern is also evident for women, the rate of change is not as great for women. Estimates of childlessness show that, by age 35, around 40 per cent of men aged 30-34 will not have entered parenthood, although given the previous cohorts' experiences, it is likely that this proportion will reduce significantly because of the tendency for later parenting on the part of men.

Although these findings are a positive

step in understanding male fertility, calculations of children ever born to men should be regarded with some caution, as the reproductive life-span is longer for men than for women. We should also be aware that other researchers have found that men's responses to questions about fertility can be unreliable, with male fertility underrepresented, or under-reported.

As suggested by Rendall et al.,<sup>18</sup> longitudinal data will assist in measuring men's fertility. In Australia, no research has been conducted to assess the extent that men underreport fertility from previous relationships. The use of future waves of the NLC survey or other longitudinal surveys will help both to measure men's fertility and to assess the extent to which it may be underreported.

#### Note

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#### References

- <sup>1</sup> J. Hajnal, 'Some comments on Mr Karmel's paper', *Population Studies*, vol. 2, 1948, pp. 325-360; M. Greene and A. Biddlecom, 'Absent and problematic men: demographic accounts of male reproductive roles', *Population and Development Review*, vol. 26, no. 11, 2000, pp. 81-115
- <sup>2</sup> For example, writing for a workshop on *Improving Data on Male Fertility and Family Formation*, Driscoll et al. note: 'To date, we have no institutionalized mechanism for collecting data on male fertility and sexual behavior. Yet, having indicator data to describe patterns and monitor trends among males would be useful for both policy and research purposes'. A. Driscoll, K. Moore, W. Mosher, M. O'Connell, and S. Ventura, 'Appendix I: Indicators of male fertility, family formation and sexual behavior', Federal Interagency Forum on Child and Family Statistics, 1998, Available: <http://fatherhood.hhs.gov/cfsforum/apeni.htm> (retrieved 3 September 2002)
- <sup>3</sup> R. Merlo and D. Rowland, 'The prevalence of childlessness in Australia', *People and Place*, vol. 8, no. 2, 2000, pp. 21-32
- <sup>4</sup> The most recently released report is available from: N. Nassar and E.A. Sullivan, *Australia's mothers and babies 1999*, Australian Institute of Health and Welfare (AIHW) Cat. no. PER19, AIHW National Perinatal Statistics Unit, Sydney, 2001 (Perinatal Statistics Series no.11)
- <sup>5</sup> *Births Australia*, Cat. no. 3301.0, Australian Bureau of Statistics (ABS), Canberra, 1998
- <sup>6</sup> By ABS definition, paternity is referred to in two ways: the phrase *paternity-acknowledged* is used where the birth is nuptial or an ex-nuptial birth is registered with a father's name, and *paternity-not-acknowledged* is used where an ex-nuptial birth is registered without a father's name.

- <sup>7</sup> *Births Australia*, Cat. no. 3301.0, ABS, Canberra, 2000
- <sup>8</sup> Negotiating the Lifecourse (NLC) is a nationally representative longitudinal survey. Respondents were randomly selected, and were aged between 18 and 54 (N=2,231) at the time of the first wave (1997). Interviews were conducted by computer assisted telephone interviewing. The 1997 NLC computer file is available for research purposes from the Social Science Data Archives.
- <sup>9</sup> H. Juby and C. LeBourdais, 'Where have all the children gone? Comparing mothers' and fathers' declarations in retrospective surveys', *Canadian Studies in Population*, vol. 26, no. 1, 1999, pp. 1-20; M. Rendall, L. Clarke, H.E. Peters, N. Ranjit, and G. Verropoulou, 'Incomplete reporting of men's fertility in the United States and Britain: a research note', *Demography*, vol. 36, no.1, 1999, pp. 135-144
- <sup>10</sup> *Births*, ABS, 2000, op. cit.
- <sup>11</sup> *ibid.*
- <sup>12</sup> This figure is calculated in the same way as the TFR is calculated for women, and is based on age of parent information available in *Births*, ABS, 2000, op. cit.
- <sup>13</sup> Details of the NLC sample are available in P. McDonald, A. Evans, J. Baxter, and E. Gray, 'The Negotiating the Life Course survey experience', *Negotiating the Life Course Discussion Paper Series DP-001*, ACSPRI Centre for Social Research, Australian National University, 2000.
- <sup>14</sup> For further information on survival analysis see: D. Cox, and D. Oakes, *Analysis of Survival Data*, Chapman and Hall, London, 1984.
- <sup>15</sup> Statistical significance is determined using the Wilcoxon (Gehan)  $\hat{\epsilon}^2$  statistic. This indicates that men and women have a different timing of their first birth.
- <sup>16</sup> As calculated from tables in *Births*, ABS, 2000, op. cit.
- <sup>17</sup> This figure is slightly higher than the estimate of Merlo and Rowland, 2000, op. cit, for women aged 50 in 1996 (10.2), calculated from the Midwives' Collection and 1996 Census data.
- <sup>18</sup> Rendall et al., 1999, op. cit.