

## 2

# The Australian fertility decline

In this chapter, I examine the current state of knowledge about the historical fertility decline in Australia. Analyses of the fertility decline have mainly used population census data of the period, retrospective data from the 1911 and 1921 population censuses and vital registration data (Jones 1971; Ruzicka and Caldwell 1977; Quiggin 1988; Larson 1994; Anderson 1999). The colonial statistics offices did not publish data on births by age of the mother, although this information was available on birth certificates in some colonies (Larson 1994). Age-specific fertility rates and age-specific marital fertility rates are available only for New South Wales (NSW), as discussed below. No census forms are available for any period in Australia's history, so the 'own child' method cannot be used to estimate age-specific fertility rates and age-specific marital fertility rates (Cho et al. 1986).

Most analyses of the Australian historical fertility decline have relied on retrospective census data from the 1911 and 1921 Australian censuses to look at trends in the number of children ever born to various birth cohorts of married women (Jones 1971; Ruzicka and Caldwell 1977; Quiggin 1988). These data are available only in the form of published tables (for example, Commonwealth of Australia 1914c, 1921). There is also a number of small studies that have used vital registration data from specific colonies or regional areas (Grimshaw et al. 1985; Carmichael 1996; Mackinnon et al. 2007). The two largest are Anderson's study of the 19th-century fertility decline in South Australia, with a total of 836 families in three marriage cohorts (1842–46, 1875–79 and 1885–89), and Larson's study of the 19th-century fertility decline in Melbourne using a sample of 3,592 registered births for 1871, 1881, 1891 and 1900 (Larson 1994; Anderson 1999).

## Coale's fertility indices

Jones (1971) used data on the number of births in a year, the population of women in five-year age groups and the population of married women in each age group to calculate Coale's fertility indices for Australia from 1861 to 1921 and for Tasmania from 1881 to 1921 (Figure 2.1). These indices show fertility fell in the Australian colonies overall from around the 1880s. Coale's index of marital fertility ( $I_g$ ) ranged from 0.69 to 0.74 between 1861 and 1881, but then fell steadily from 1881, until it reached 0.45 in 1921. The level of marital fertility was slightly higher in Tasmania in 1881 than in the Australian colonies overall (0.76 compared with 0.74), but fell over the same period until it reached 0.50 in 1921 (Jones 1971). The index of overall fertility ( $I_f$ ) fell from 1861 for Australia as a whole and from 1891 for Tasmania but levelled off after 1901. As the trends in marital fertility for Tasmania are very similar to those for Australia, findings in this book in relation to Tasmania are likely to be indicative of the situation in Australia as a whole.

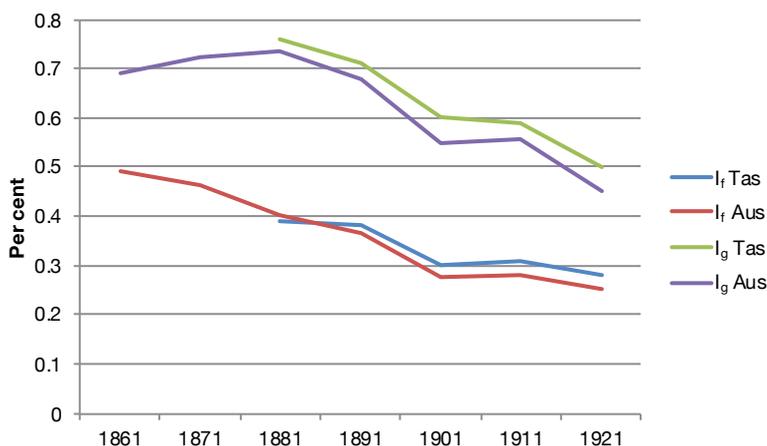


Figure 2.1 Coale's fertility indices ( $I_g$  and  $I_f$ ), Australia, 1861–1921, and Tasmania, 1881–1921

Source: Jones (1971: 326–7).

## Tasmania: Estimated total fertility rate

I have estimated the total fertility rate (TFR) for Tasmania (Figure 2.2) by indirect standardisation, using data for the estimated female population by five-year age group (Kippen 2002b) and the annual number of registered births (ABS 2008) adjusted for under-registration (Kippen 2002c). I applied the age-specific fertility rates for New South Wales for 1891 (NSW Bureau of Statistics and Economics 1912) to the five-year age groups to give an expected number of births for each year and divided the actual number of Tasmanian births by the expected number to obtain an index. I multiplied this index by the 1891 TFR for New South Wales to obtain estimated fertility rates for Tasmania and calculated a three-year moving average to smooth out the trend. These data show the estimated TFR for Tasmania fluctuated between 5.8 and 5.2 between 1860 and 1884, but began to fall steadily, from 5.77 in 1885 to 4.08 in 1898, and then remained fairly flat until about 1914, when it began to fall again, reaching 3.69 in 1921.

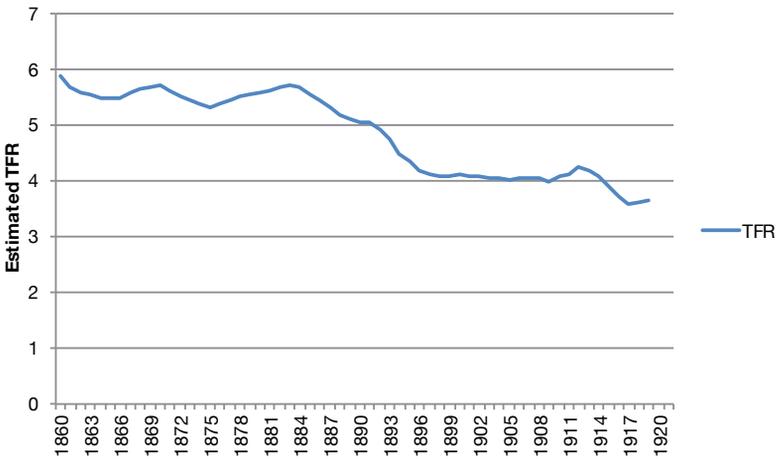


Figure 2.2 Estimated total fertility rate (TFR) for Tasmania, 1860–1921 (three-year moving average)

Source: Author's calculations.

## Age-specific marital fertility rates

As noted above, the only Australian age-specific marital fertility rates available for the fertility transition period are for New South Wales. Coghlan, who was the NSW statistician between 1886 and 1905, prepared and presented data on NSW age-specific marital fertility rates for 1871, 1881, 1891 and 1901 to the 1903 Royal Commission on the Decline of the Birth-Rate and on the Mortality of Infants in New South Wales (NSW 1904a, 1904b). In New South Wales, age-specific marital fertility rates declined from the 1880s, with the decline greater in the 1890s than in the previous decade (Table 2.1). The relative fall in fertility was larger at older ages, suggesting women may have been stopping their childbearing after several births (Jones 1971).

Table 2.1 Age-specific marital fertility rates, New South Wales, 1871, 1881, 1891 and 1901

	1871	1881	1891	1901
Age (years)	Birth rates per 1,000			
15–19	501.0	516.0	471.1	556.6
20–24	441.5	457.9	416.3	397.0
25–29	407.5	405.2	353.7	298.7
30–34	336.7	338.6	292.2	226.8
35–39	270.4	273.6	236.3	172.5
40–44	134.1	128.9	118.4	88.1

Source: NSW (1904a: 90).

Looking at the data by birth cohort of married women shows an alternative picture (Quiggin 1988). The cohort born in 1847–51, who were 30–34 years of age in 1881, had about the same fertility as the 1837–41 cohort in 1871, but by 1891, when they were aged 40–44 years, their marital fertility rates were 8 per cent lower than the 1837–41 cohort 10 years previously (Quiggin 1988: 30). Similarly, the 1852–56 cohort, who were aged 25–29 years in 1881, had similar fertility to the 1842–46 cohort in 1871, but by the time they were aged 35–39 years in 1891, their fertility was 14 per cent lower than the earlier cohort at that age. This again suggests successive birth cohorts of married women were stopping having children towards the end of their childbearing years.

## Children ever born

Data from the 1911 Australian census on children ever born show married women born in the 1830s and early 1840s had, on average, seven children during their childbearing years, but the mean number of children ever born fell to 6.75 for the 1847–51 birth cohort and then fell steadily to 5.25 for the cohort born in 1862–66 (Figure 2.3). The mean number of children ever born for married women in Tasmania was slightly higher for the earlier and later cohorts but fell over the same period.

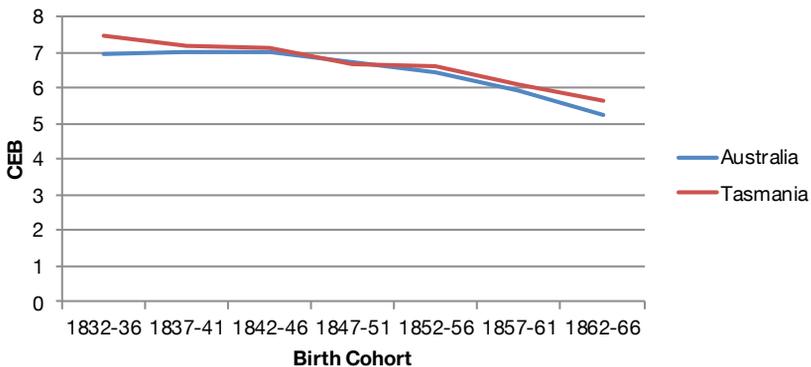


Figure 2.3 Mean children ever born to married women, Australia and Tasmania, 1911 census

Source: Appendix A: Table A.1 (this volume).

Equivalent data from the 1921 census show fertility continued to fall for the 1867–71 and 1872–76 birth cohorts, reaching a mean of 4.19 for the 1872–76 birth cohort in Australia as a whole and 4.56 for Tasmania (Figure 2.4). Once again, the trends for Tasmania are very similar to those for Australia.

It is important to note, however, that these data refer to women living in Tasmania in 1911 and 1921; some women who had children in Tasmania in the 19th century may have left the state before or after they completed childbearing. Similarly, Australia is a nation of immigrants and women living in Australia in the 1910s and 1920s may not have been living there during their childbearing years.

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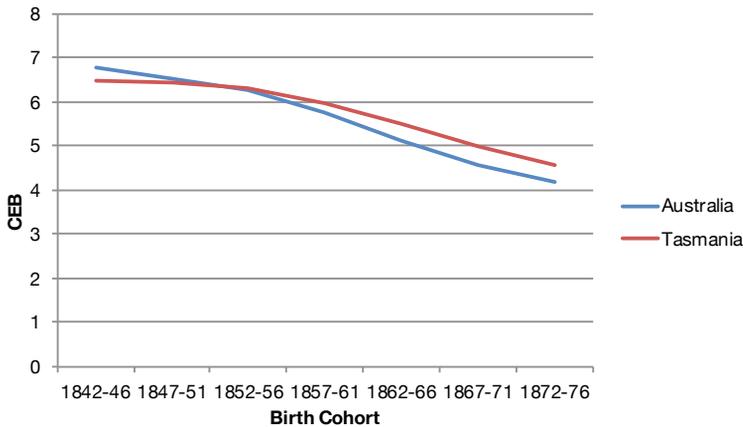


Figure 2.4 Mean children ever born to married women, Australia and Tasmania, 1921 census

Source: Appendix A: Table A.1 (this volume).

Examining the distribution of the number of children ever born to women who were married at the time of the 1921 census indicates that there were marked falls in the proportions of large families and a marked increase in the proportions of small families during the Australian fertility decline (Figure 2.5). The proportion of couples with seven or more children fell from 55 per cent for the 1842–46 cohort to 21.8 per cent for the 1872–76 cohort, while the proportion with one to three children increased from 12.4 per cent for the earliest cohort to 34.6 per cent for the latest cohort.

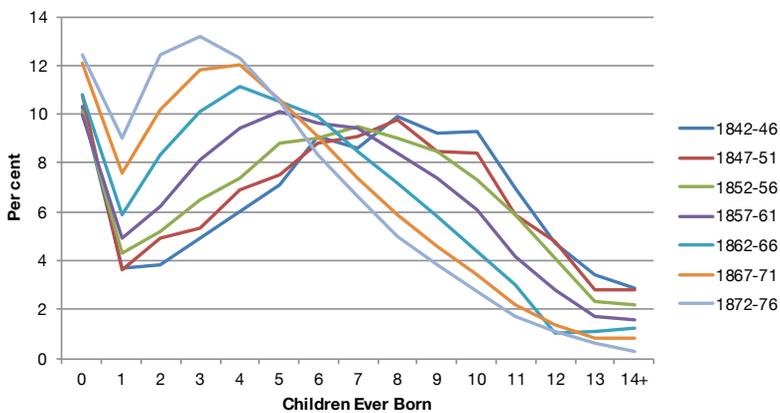


Figure 2.5 Children ever born to married women by birth cohort, Australia, 1921 census

Source: Appendix A: Table A.1 (this volume).

It is important to note that the census data for 1911 and 1921 do not include those who were widowed or divorced at the time of the census. However, the 1911 census data show the average number of children ever born to currently married women was very similar to that of all women who had ever married (Quiggin 1988).

Additionally, still-married women who were still alive at the time of the census may not be representative of the entire cohort who had completed their childbearing—that is, there may be a positive or negative relationship between fertility and longevity. A study of couples marrying in Utah in the second half of the 19th century, among whom both husband and wife survived the wife's childbearing years, found that women who had fewer children lived longer after completing childbearing than other women with children (Smith et al. 2002).

The 1911 and 1921 Australian censuses indicate that these retrospective data on children ever born may underestimate completed marital fertility for the birth cohorts for this reason (Appendix A: Tables A.2, A.3). For each identical birth cohort, the average numbers of children ever born are lower in the 1921 census than the 1911 census and the proportions of married women without any children are higher. This suggests a negative relationship between fertility and longevity, with husbands and/or wives with no children or with fewer children more likely to survive than those with more children. Thus, the apparent increase in childlessness across the birth cohorts may be at least partly due to differential longevity.

Anderson's (1999) study of families in three marriage cohorts in 19th-century South Australia, reconstituted from vital registration data, shows similar trends to the retrospective census data (Table 2.2). The mean number of births of women from all marriages dropped between the 1842–46 and the 1875–79 cohorts, from 8 to 6.9, and then fell more sharply, to 5.2, for the 1885–89 cohort. The proportion of women without children fluctuated between 4 per cent and 6.9 per cent for the three cohorts, but the proportion with one to three children increased markedly, from 5.3 per cent to 24.3 per cent, while the proportion with 10 or more children fell sharply, from 34.6 per cent to 8 per cent.

**Table 2.2** Number of children ever born to women marrying in South Australia, 1842–46, 1875–79 and 1885–89

	1842–46	1875–79	1885–89
<b>No. of births</b>	<b>Percentage</b>		
None	5.9	4.0	6.9
1–3	5.3	13.8	24.3
4–5	15.0	17.5	25.8
6–9	39.3	38.2	35.0
10+	34.6	26.5	8.0
Total (%)	100.0	100.0	100.0
Total (no.)	153	325	349
<b>Mean/median</b>	<b>No. of births</b>		
Mean	8.0	6.9	5.2
Median	8	7	5

Note: Includes a small number of illegitimate births.

Source: Anderson (1999: 252).

## Fertility and family characteristics

There have been several analyses of the relationship between 19th-century Australian fertility and different family characteristics—particularly husband’s occupation, geographic location, religion and mother’s birthplace (Jones 1971; Ruzicka and Caldwell 1977; Quiggin 1988; Larson 1994; Anderson 1999). These studies are mainly descriptive, however, and do not place their findings in a theoretical context.

Such studies have used retrospective census data or vital registration data. Regarding the retrospective census data, it is important to note that husband’s occupation, religion and geographic location were measured at the time of the census and these were not necessarily the same as at the birth of the children. Caution must be taken in drawing conclusions from census data for the oldest cohorts because of the relatively small numbers in some of the cells.

### Husband’s occupation

Australian data on children ever born and husband’s occupation suggest an inverse relationship between socioeconomic status and fertility.

Jones (1971) and Ruzicka and Caldwell (1977) used retrospective data from the 1911 and 1921 censuses to look at the relationship between the average number of children ever born and husband's occupation. Jones (1971), using data from the 1911 census, found that for every cohort of married men: primary producers had the highest fertility; professional, domestic and commercial workers had the lowest fertility; and transport, communication and industrial workers fell between the two. Ruzicka and Caldwell (1977) compared data from the 1911 and 1921 censuses to examine the relationship between 'occupational status' and fertility decline, finding that in most occupational groupings during the late 19th and early 20th centuries, 'employers' and 'husbands working on own account, but not employing labour' had larger reductions in family size than 'wage-earners'.

Anderson (1999) and Larson (1994) looked at the relationship between the fertility decline and occupational status using colonial vital registration data. Anderson found that fertility fell for the three marriage cohorts in all occupational categories across the cohorts (Table 2.3). She suggests families of gentlemen and professionals may have started adopting fertility control as early as the 1850s or 1860s and they were followed by the families of white-collar workers in the 1870s, with families in the remaining occupational groups progressively adopting these practices. She found marked differences in family size by occupational status for the 1885–89 marriage cohort. In this cohort, groups that Anderson describes as 'middle-class'—gentlemen, professionals, merchants, white-collar workers, small businessmen and skilled tradesmen—were more likely to have smaller families (that is, fewer than seven children) than farmers and unskilled labourers.

Table 2.3 Average number of children by husband's occupation group in South Australia, 1842–46, 1875–79 and 1885–89 marriage cohorts

	1842–46	1875–79	1885–89
Occupation group	Mean number of children ever born		
Gentlemen, professionals	4.9	5.4	3.8
Small businessmen	6.6	6.7	4.6
White-collar	7.9	5.2	5.0
Skilled trades	8.0	6.9	5.2
Other labourers	8.0	7.3	5.5
Farmers	7.9	7.0	5.8

Source: Anderson (1999: 254).

Larson (1994), using Melbourne birth registration data, found there was an increase in birth spacing between 1871 and 1900, with the percentage of births for which the previous sibling was three or more years old increasing from 17 per cent to 35 per cent over the period. Professionals, businessmen and skilled manual workers were significantly more likely to space their births, particularly during the 1890s. White-collar workers also tended to have longer birth intervals over the years, but the differences were not statistically significant. In contrast, the proportions of semi-skilled workers and labourers with long birth intervals, while fluctuating, did not increase between 1871 and 1900.

### Geographic location

Analyses of the relationship between fertility and geographic location suggest there was a strong relationship between fertility and urban/rural residence, with families in urban areas having fewer children than those in rural areas.

There were marked differences in the overall level of fertility and the timing of the fertility decline between women living in rural (ex-metropolitan) areas and those in urban (metropolitan) areas, according to the 1911 census (Table 2.4). The average number of children ever born was greater for women living in rural areas for every birth cohort. Fertility started to fall earlier for women in urban areas than for those in rural areas, falling for the 1842–46 birth cohort in urban areas and for the 1852–56 cohort in rural areas (Larson 1994).

Table 2.4 Average number of children ever born by birth cohort of married women by metropolitan/non-metropolitan location, Australia, 1911

Birth cohort	1832–36	1837–41	1842–46	1847–51	1852–56	1857–61	1862–66
Place of residence	Mean number of children ever born						
Metropolitan	6.58	6.59	6.36	6.04	5.71	5.16	4.57
Non-metropolitan	7.21	7.30	7.48	7.27	6.99	6.49	7.21

Source: Commonwealth of Australia (1914c: 1143).

Jones (1971) used statistical information for the period (including the censuses) to calculate Coale's fertility indices separately for urban and rural areas of a selection of the colonies in the late 19th and early 20th centuries. This shows a slightly different picture from the 1911 census

data (Table 2.5). While marital fertility was already lower in urban areas than in rural areas in 1871, it began to fall in both areas in the 1880s. However, it fell more sharply in urban areas than in rural areas, plateauing in the rural areas in the first decade of the 20th century.

Table 2.5 Index of marital fertility ( $I_g$ ) for urban and rural areas, selected colonies of Australia, 1871, 1881, 1891, 1901 and 1911

Year	1871	1881	1891	1901	1911
Place of residence	$I_g$				
Urban	0.63	0.66	0.59	0.46	0.51
Rural	0.76	0.77	0.72	0.59	0.59

Notes: Data for 1871 include only New South Wales and Victoria. For 1881, 1891 and 1901, data include New South Wales, Victoria, Queensland and South Australia. Data for 1911 include New South Wales, Victoria, Queensland, South Australia and Western Australia.

Source: Jones (1971: 328).

In South Australia, there were no significant differences in fertility by geographic location at the time of marriage for the 1842–47 marriage cohort (Anderson 1999). However, rural couples had significantly larger families than urban families in both the 1875–79 and the 1885–89 cohorts, although fertility declined for both urban and rural couples between the two cohorts.

## Religion

The relationship between fertility and religion in 19th-century Australia is difficult to interpret. The 1911 census data on children ever born to married women by religion show no clear trends for the first three cohorts, possibly due to small numbers in some of the cells (Table 2.6). However, fertility fell steadily for most religious groups from the 1842–46 birth cohort onwards. In the 1842–46 cohort, Methodists and Lutherans had the highest fertility; Catholics (undefined) and Congregationalists had the lowest. By the time the 1862–66 cohort had completed their childbearing, the Lutherans still had the highest fertility, but the fertility of Methodists had fallen markedly. Congregationalists still had the lowest fertility—only very slightly lower than that of Jewish people. In South Australia, where the Lutherans had a strong presence, they maintained large families from the 1842–46 to the 1885–89 marriage cohorts (Anderson 1999).

**Table 2.6 Average number of children ever born to married women by religion, selected groups, Australia, 1911**

Birth cohort	1832–36	1837–41	1842–46	1847–51	1852–56	1857–61	1862–66
Religion	Mean children ever born						
Church of England	6.92	7.05	7.00	6.72	6.37	5.84	5.15
Roman Catholic	6.75	6.76	6.96	6.86	6.76	6.29	5.57
Methodist	7.92	7.40	7.39	7.11	6.75	6.17	5.42
Presbyterian	6.82	7.12	7.04	6.59	6.17	5.54	4.95
Baptist	6.69	6.68	7.10	6.61	6.05	5.71	5.10
Protestant (undefined)	5.92	7.14	6.90	6.35	6.06	5.61	4.99
Congregational	6.48	6.27	6.68	6.13	5.79	5.20	4.50
Catholic (undefined)	5.98	7.83	6.56	6.64	6.70	6.30	5.67
Lutheran	6.78	6.69	7.17	7.00	7.40	6.97	6.31
Jewish	7.33	6.16	6.72	6.09	5.83	4.99	4.51

Sources: Commonwealth of Australia (1914c: 1144); Jones (1971: 317).

Data from the 1901 NSW census, compiled by Coghlan (1903), show a somewhat different pattern. Lutherans are not included as a separate group in this tabulation because the proportion of Lutherans in New South Wales was very small. These data show that, among all women who had completed their childbearing in 1901 (all cohorts born before 1856), Roman Catholic women had the highest numbers of children at most ages at marriage, Anglican women the lowest of the Protestant groups and Jewish women the lowest of all (Table 2.7). Coghlan (1903: 42) argues that since most of these women had their children before fertility control was generally practised, these differences are ‘due to social habits rather than to differences in inherent fertility’.

**Table 2.7 Average number of children of married women who completed childbearing by 1901, by age at marriage and religious denomination, NSW 1901 census**

Religion	Church of England	Roman Catholic	Methodist	Presbyterian	Jewish	Other
Age at marriage	Mean number of children ever born					
< 20 years	9.54	9.66	9.62	9.43	8.38	9.18
20–24 years	7.69	8.11	7.83	7.80	7.50	7.19

Religion	Church of England	Roman Catholic	Methodist	Presbyterian	Jewish	Other
Age at marriage	Mean number of children ever born					
25–29 years	5.56	5.99	5.83	5.79	4.71	5.46
30–34 years	3.60	3.77	4.10	3.86	3.53	3.53
35–39 years	1.84	1.91	1.96	1.73	1.09	1.61
40–45 years	0.57	0.62	0.49	0.49	0.50	0.51

Source: Coghlan (1903: 42).

## Mother's birthplace

Data on fertility by mother's birthplace are only available from the population censuses. According to the 1911 Australian census, there were distinct variations in completed family size by mother's birthplace (Table 2.8). The fertility of married women born in Australia was higher than that of married women born in the United Kingdom for every birth cohort and higher than that of women born in the rest of Europe in all birth cohorts prior to the 1852–56 cohort. Among women born in the United Kingdom, English women had higher fertility than Irish women in the older birth cohorts, but the fertility of English-born women fell so steeply from the 1847–51 cohort onwards that their fertility fell below that of Irish women in the two youngest cohorts.

Table 2.8 Average number of children ever born to married women by birth cohort and birthplace, Australia, 1911

Birth cohort	1832–36	1837–41	1842–46	1847–51	1852–56	1857–61	1862–66
Birthplace	Mean number of children ever born						
Australia	7.72	7.88	7.75	7.28	6.78	6.10	5.33
United Kingdom	6.96	6.90	6.70	6.40	6.01	5.48	4.97
England	7.08	6.98	6.73	6.40	6.01	5.35	4.82
Wales	6.78	7.15	7.33	6.66	6.09	5.89	5.09
Scotland	6.87	7.03	6.87	6.63	6.01	5.49	5.01
Ireland	6.83	6.72	6.55	6.26	5.99	5.72	5.21
Other Europe	6.38	6.68	6.94	6.70	6.97	6.41	5.97

Source: Commonwealth of Australia (1914c: 1160–1).

## Summary

As outlined above, the Australian historical fertility decline has been examined previously using data from the population censuses or in small studies that have used vital registration data from specific colonies or regional areas. All the data analyses have been bivariate; there have been no multivariate analyses of Australian historical data.

As far as can be determined, fertility began to fall in Australia in the early 1880s, although the decline may have occurred slightly later in Tasmania and from a higher level. There were marked variations in the fertility decline by husband's occupation, urban/rural location and mother's birthplace. The decline probably started earlier in urban areas, for the upper and middle classes and for women born in the United Kingdom. There were some variations in the fertility decline by religion and mother's birthplace. The differences in fertility across religious groups and birthplace groups were relatively small compared with the urban/rural differences and the differences by husband's occupation. These trends are very similar to findings from research on the fertility decline in Western European and other English-speaking countries discussed in the previous chapter.

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