

Gender differences in the link between education and fertility in Australia

Extended abstract

In the last 50 years Australia has undergone a rapid education expansion and now boasts one of the most highly educated populations among OECD countries. In line with the pattern observed across many Western countries, a distinct feature of the recent education revolution has been its gendered nature. Females are now more likely to complete secondary schooling compared to males, and also more likely to go on to tertiary education. According to the recent 2016 Census, among people in the prime childbearing ages of 25-34 just over 40 per cent of women have a university degree, compared to 30 per cent of men (Australian Bureau of Statistics 2019).

Several decades of demographic research has identified education as being strongly associated with the tempo and quantum of fertility. For both men and women a higher level of educational attainment is associated with a later age at first birth (Anderson, *et al* 2009, Neels, *et al* 2017). However for other measures such as overall childlessness, completed family size, as well as the tempo and quantum of second or higher order parities, evidence on the effect of education is more mixed and shows heterogeneity across countries and differences between men and women. Compared to research on women's fertility, research on the fertility of men is scarce but almost uniformly suggest a positive association between men's educational attainment and their fertility outcomes (Nisén, *et al* 2016).

Much of the recent research on the link between education and fertility has been from European countries. In Australia, there has been far less work investigating the link between education and fertility beyond basic descriptive studies. Motivated by the paucity of research for Australia, this paper investigates the association between education attainment and having a first, second and third child, paying particular attention to gender differences.

We use data from the Household Income and Labour Dynamics in Australia (HILDA) survey, from 2001 to 2017. We select men and women aged 15-44 years and examine transitions to first, second and third births by sex as well as education levels. We start with descriptive survival curves and then use piecewise linear hazard analysis to model the 1st, 2nd and 3rd birth progression jointly with a common unobserved factor using aML (Lillard and Panis 2003). As highlighted by Kravdal (2001) joint modelling of first and higher order parity transitions is important to control for any unobserved heterogeneity which influence selectivity into parenthood. For repeated events such as births, there's likely to be some

unobserved characteristics that could influence all births to an individual rather than treating each birth as an independent event (Berghammer 2009). We control for age, partnership status, country of birth, activity status (student, working, not in labour force). For higher order births we additionally control for time since last birth.

The number of men and women in our sample is shown in Table 1.

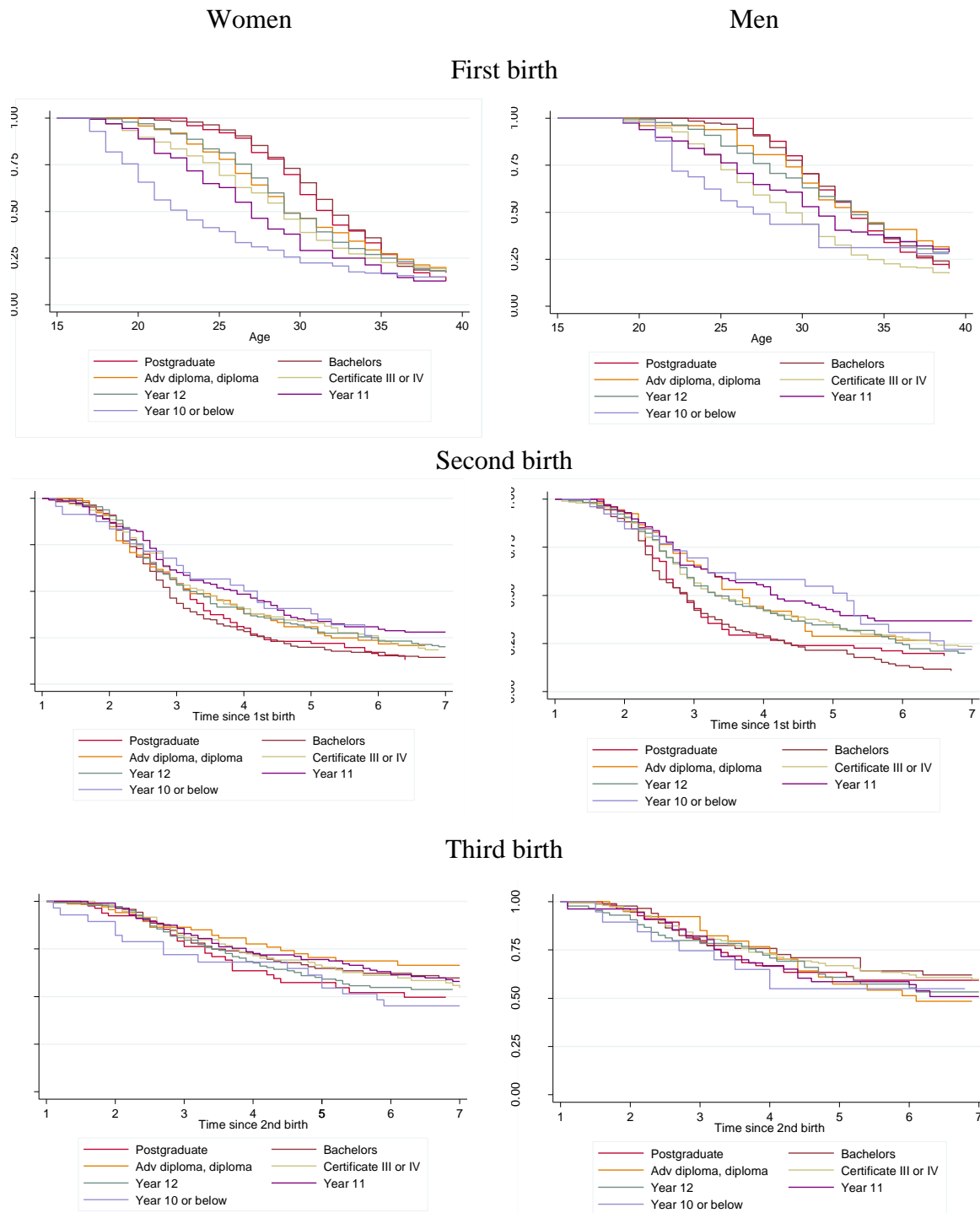
Table 1. Frequencies of respondents, person years and birth transitions

	Men	Women
First birth		
Number of respondents	4,441	4,131
Person years	19,203	17,576
Number of first births during observation period	888	1,039
Second birth		
Number of respondents	4,387	1,712
Person years	1,458	5,112
Number of second births during observation period	680	854
Third birth		
Number of respondents	1,289	1,600
Third birth person years	4,255	5,611
Number of third births during observation period	276	354

Figure 1 shows the Kaplan-Meier survival estimates, for having a first, second and third birth by highest education level for each sex. For first births we observe that women who only have an education level up to Year 10 or below have a much faster transition to a first birth compared to their peers with higher education levels. For second births, there is less distinction between the education levels but those with a university degree are more likely to transition to having a second child which could be an indication of their catching up due to the ‘time-squeeze’. For third births the pattern is more mixed, with Year 10 or below being the most likely to have a third child (the lowest education level)

For men, the pattern is similar. For first births, those with education only up to Year 10 or below a fast transition to a first birth is seen in the early ages and then it plateaus. For second births the men with university educated men have a higher transition to second births, and those with Year 10 or below education have the lowest. For third births, the survival rates are mostly similar across education categories.

Figure 1. Kaplan-Meier survival estimates – by sex



The results of the AML largely support the descriptive results presented above. For first births, we find as expected, that women with lower levels of education are more likely to have a first birth compared to those with an undergraduate degree who are the reference category, even after controlling for age. For second births, the pattern switches and women

with the lowest level of education at Year 11 and Year 10 or below are less likely to have a second child. For third births the pattern is again similar to second births with women with the lowest levels of education less likely to have a third child than those with an undergraduate degree, even after controlling for age at first birth.

For men, the pattern is quite similar. For first births, those with lower levels of education are more likely to have a first child. For second births, again those with lower levels of education including Diploma and Year 11 have lower levels of education than those with bachelor degrees. For third births education has no significant relationship to the propensity to have a third birth.

We find a surprising gender similarity in the relationship between education level and transitions to first, second and third births in Australia. We discuss possible explanations and implications.

References

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