

ing. Adjusted population estimates for mid 2007 include 2832 centenarians<sup>6</sup> — considerably lower than the 2006 count of 3154 quoted by Richmond.<sup>1</sup> Errors in centenarian numbers mean that census tabulations of centenarians' characteristics (marital status, living arrangements) and derived demographic measures (sex ratios, growth rates) are unreliable. Mortality estimates are also affected. Alternative data, collected through administrative sources or special studies that verify birth and death dates, are needed to reliably estimate mortality in the oldest old and the probability of survival to 100 years and beyond.

Richmond's discussion of the "fastest growing age segment" does not make a clear distinction between growth in the *proportion* of the population who are centenarians and growth in the *number* of centenarians. Growth of centenarians as a proportion of total population depends on population structure. Relatively recent fertility declines will have had a similar effect on the proportion of the population aged 60–99 years as on centenarians. Reductions in infant, child and maternal mortality serve to increase the proportion of people who are in younger age groups and thus *reduce* the proportion who are centenarians. The recent rapid increase in the centenarian proportion is actually the combined effect of larger cohorts reaching old age and increased survival at older ages.<sup>7</sup>

In Australia, past migration is a major determinant of the relative size of different cohorts. Comparing the cohort aged 100–104 years in 2001 with the cohort of the same age in 2006 (the younger), births data show there were 11300 more people at birth in the younger cohort.<sup>8</sup> Large fluctuations in the difference between the sizes of these cohorts in the age range 25–84 years (from 20100 to 43300), calculated from successive population age distributions,<sup>9</sup> demonstrate the influence of migration on relative cohort size. Whatever the effects of recent changes in fertility and mortality, historical determinants of population structure significantly influence the number of centenarians from one census date to the next. Two further factors apply to growth in *numbers*: first, it is easy to achieve a high growth rate for a small group, and second, the 100+ age interval is expanding (whereas younger age groups are of fixed width).

**Heather Booth**, Associate Professor  
Australian Demographic and Social Research  
Institute, Australian National University, Canberra,  
ACT.

heather.booth@anu.edu.au

1 Richmond RL. The changing face of the Australian population: growth in centenarians. *Med J Aust* 2008; 188: 720-723.

## The changing face of the Australian population: growth in centenarians

Heather Booth

**TO THE EDITOR:** There can be little disagreement with Richmond's assessment that Australia needs more research on the oldest old.<sup>1</sup> Certainly, data on centenarians are sparse and unreliable, and there is a need for more thorough and more informed evaluation.

The 2006 census was the first recent census to record centenarians' ages. The 2001 census recorded ages to "100+",<sup>2</sup> while previous censuses had recorded ages to "99+."<sup>3</sup> Pre-2006 centenarian percentage age distributions are non-validated "guestimates".<sup>4</sup> Further, the number of centenarians enumerated is questionable<sup>5</sup> because of its dependence on age reporting, which suffers inaccuracies from proxy reporting, age exaggeration and round-

## LETTERS

- 2 Australian Bureau of Statistics. Census dictionary, 2001. Canberra: ABS, 2001. (ABS Cat. No. 2901.0.)
- 3 Australian Bureau of Statistics. Census dictionary, 1996. Canberra: ABS, 1996. (ABS Cat. No. 2901.0.)
- 4 McCormack J. "Making the most of it": living to age 100 years or more in Australia. In: Carmel S, Morse CA, Torres-Gil FM, editors. Lessons on ageing from three nations. Vol. 1: The art of ageing well. Amityville, NY: Baywood, 2007: 55-58.
- 5 Australian Bureau of Statistics. Census dictionary, 2006. Canberra: ABS, 2006. (ABS Cat. No. 2901.0.)
- 6 Australian Bureau of Statistics. Population by age and sex, Australian states and territories, Jun 2002 to Jun 2007. Data cube Table 6: Estimated resident population, by age and sex — at 30 June 2007. Canberra: ABS, 2007. (ABS Cat. No. 3201.0.)
- 7 Booth H, Tickle L. Beyond three score years and ten: prospects for longevity in Australia. *People Place* 2004; 12: 15-27.
- 8 Australian Bureau of Statistics. Australian historical population statistics. Table 5.1: Births. Canberra: ABS, 2008. (ABS Cat. No. 3105.0.65.001.)
- 9 Australian Bureau of Statistics. Australian historical population statistics. Table 19: Population, age and sex, Australia, 1901 onwards. Canberra: ABS, 2008. (ABS Cat. No. 3105.0.65.001.) □