Alternative estimates support new findings of Andreev and Kingkade (2015)

Dear Editor, August 26, 2015

I would like to congratulate Evgeny M. Andreev and W. Ward Kingkade (2015) on their paper published in *Demographic Research* on 26 August 2015.

Although the impact on life expectancy estimates are minor in most countries with low infant mortality, it is worth noting that actual values of ${}_1a_0$ could exceed values from the widely-used Coale-Demeny equation by almost 100 per cent. This magnitude is suggested in Table 2 of Andreev and Kingkade (2015, p. 372). Such a (relatively) large discrepancy between a newly suggested and a well established method evokes suspicion whether the novel approach missed anything important.

Albeit my own work is not an exact replication of Andreev and Kingkade (2015), which would be the gold standard to verify their findings, I obtained similar results for the United States with different data and a less refined method. I used the "Mortality Multiple Cause" public use files, compiled by the National Center for Health Statistics (2015). In contrast to the *cohort*-linked data of Andreev and Kingkade (2015), those data represent a pure *period* perspective. If a person died during their first year of life, the lifetime is recorded in months if survival time was larger than 27 days, in days if survival time was larger than 23 hours, in hours if survival time was larger than 59 minutes or in minutes. I made the rough approximation that the person died in the middle of the given time interval, i.e. if the data set states 5 months, I assumed 5.5 months. Please see Figure 1, which shows that my own estimates differ only marginally from the ones by Andreev and Kingkade (2015). Typically, they are between the "actual" values and the ones obtained from their equation for Lexis triangles. The corresponding estimates of ${}_1a_0$, assuming 365.25 days per year, are given in Table 1.

Since my own estimates—based on different data and methods—yield strikingly similar results to Andreev and Kingkade (2015), I would like to support their recommendations to estimate ${}_1a_0$ in the future either directly or via the equations provided in the cited article.

Roland Rau

References

Andreev, E. M. and W. W. Kingkade (2015). Average age at death in infancy and infant mortality level: Reconsidering the Coale-Demeny formulas at current levels of low mortality. *Demographic Research 33*(13), 363–390.

National Center for Health Statistics (2015). Multiple Cause of Death Data. Available online at `http://www.cdc.gov/nchs/data_access/Vitalstatsonline.htm` and at `http://www.nber.org/data/multicause.html`. Years used: 1959–2013.

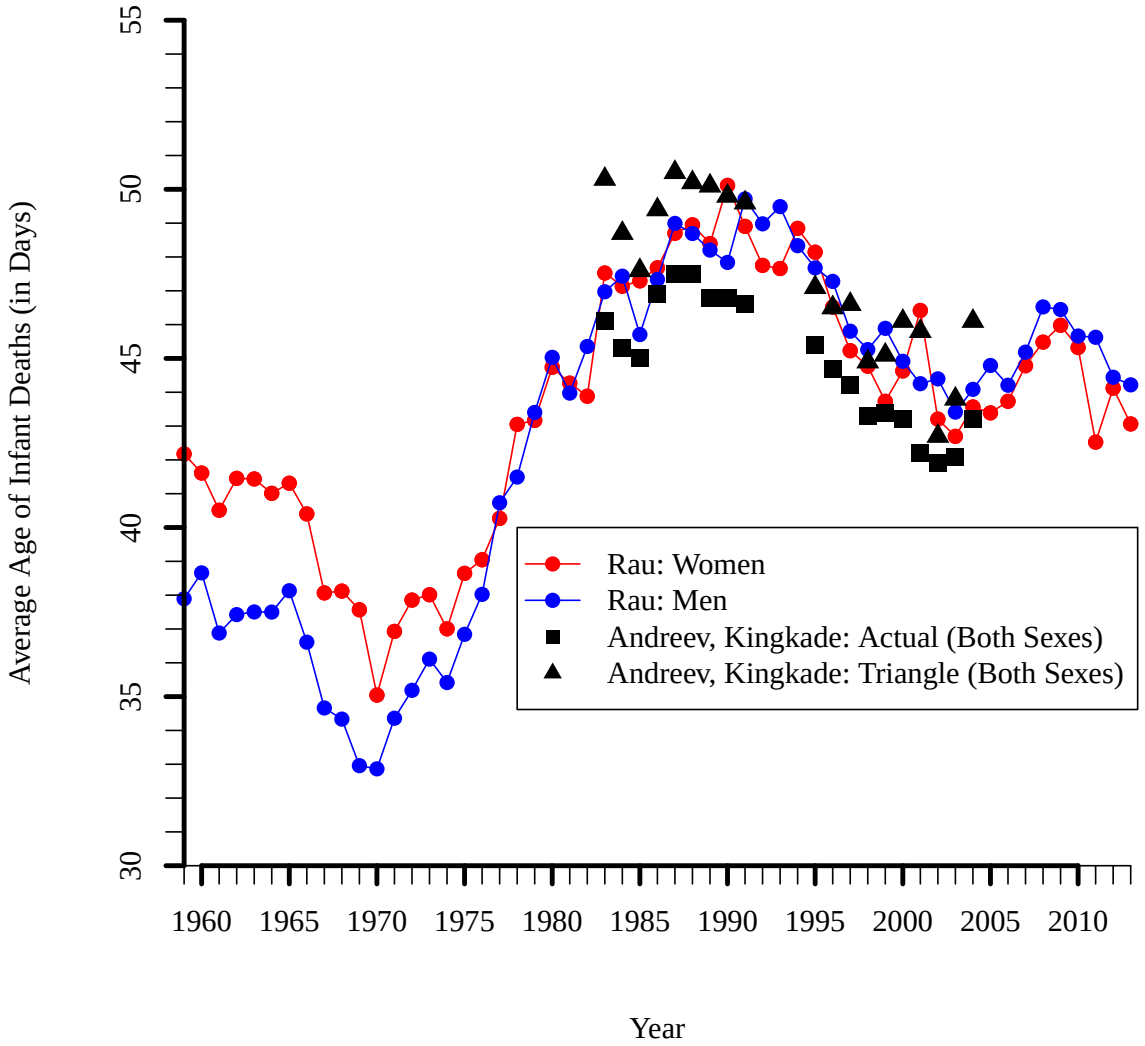

Figure 1: Comparing results for the United States for the average age of infant deaths (in days) of Andreev and Kingkade (2015) with estimates of Roland Rau. Source: Own estimations based on data from the National Center for Health Statistics (2015) and Andreev and Kingkade (2015).

Table 1: Comparing results for the United States for ${}_1a_0$ of Andreev and Kingkade (2015) with estimates of Roland Rau.

Year	Roland Rau		Andreev & Kingkade		Year	Roland Rau		Andreev & Kingkade	
	Women	Men	"Actual"	"Triangle"		Women	Men	"Actual"	"Triangle"
1959	0.115	0.104			1987	0.133	0.134	0.130	0.138
1960	0.114	0.106			1988	0.134	0.133	0.130	0.137
1961	0.111	0.101			1989	0.132	0.132	0.128	0.137
1962	0.113	0.102			1990	0.137	0.131	0.128	0.136
1963	0.113	0.103			1991	0.134	0.136	0.128	0.136
1964	0.112	0.103			1992	0.131	0.134		
1965	0.113	0.104			1993	0.130	0.135		
1966	0.111	0.100			1994	0.134	0.132		
1967	0.104	0.095			1995	0.132	0.131	0.124	0.129
1968	0.104	0.094			1996	0.127	0.129	0.122	0.127
1969	0.103	0.090			1997	0.124	0.125	0.121	0.128
1970	0.096	0.090			1998	0.123	0.124	0.119	0.123
1971	0.101	0.094			1999	0.120	0.126	0.119	0.123
1972	0.104	0.096			2000	0.122	0.123	0.118	0.126
1973	0.104	0.099			2001	0.127	0.121	0.116	0.125
1974	0.101	0.097			2002	0.118	0.122	0.115	0.117
1975	0.106	0.101			2003	0.117	0.119	0.115	0.120
1976	0.107	0.104			2004	0.119	0.121	0.118	0.126
1977	0.110	0.112			2005	0.119	0.123		
1978	0.118	0.114			2006	0.120	0.121		
1979	0.118	0.119			2007	0.123	0.124		
1980	0.122	0.123			2008	0.125	0.127		
1981	0.121	0.120			2009	0.126	0.127		
1982	0.120	0.124			2010	0.124	0.125		
1983	0.130	0.129	0.126	0.138	2011	0.116	0.125		
1984	0.129	0.130	0.124	0.133	2012	0.121	0.122		
1985	0.129	0.125	0.123	0.130	2013	0.118	0.121		
1986	0.131	0.130	0.128	0.135					

Source: Source: Own estimations based on data from the National Center for Health Statistics (2015) and Andreev and Kingkade (2015).