Research on accuracy of high age estimates – update

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Correctly estimating the high age population is important for many ONS outputs including population projections, life expectancy and mortality rates and improvements all of which have significant policy implications, including health and social care planning, resource allocation and state and private pension provision.

Understanding the accuracy of high age population estimates is also important for feeding into plans for the 2021 Census and the development of any future population estimation methods.

ONS has 2 independent ways of estimating the size of the population aged 90 and over; –estimates derived from rolling forward the decennial census figures; and population estimates of those aged 90 and over reconstructed from deaths data.

The decennial census provides the basis for the Mid-Year Estimates (MYE) of the population for England and Wales. These are annual population estimates by sex and single year of age up to age 89 and for the 90 and over age group. They are produced by rolling the census estimates forward allowing for ageing, births, deaths and migration (the cohort component method).

'Estimates of the very old, including centenarians', (EVOs) are produced from death registration data using a version of survivor–ratio methodology, the Kannisto-Thatcher (KT) method. These are annual estimates by sex and single year of age for people aged 90 to 104 and for the 105 and over age group for England and Wales as a whole. To provide users with a consistent set of estimates by single year of age up to age 105 and over, EVOs are constrained to the 90 and over totals in the MYE.

The official mid-year estimate of the 90 and over population and the 90 and over population estimate obtained from the KT methodology do not tally (prior to constraining the KT 90+ total to the MYE 90+ total). In a typical year the estimate of the population aged 90 and over obtained from KT methodology is lower than the official mid-year estimate.

The accuracy of the mid-year estimate of the 90 and over population is wholly dependent on the quality of the input data. If the census estimates, and the annual death and net migration figures were completely accurate then the mid-year estimate of the 90+ population would by default be accurate.

The accuracy of the KT estimate of the 90 and over population is dependent both on the quality of the input death data and the robustness of the KT methodology.

Research is therefore being conducted to firstly assess the quality of the input data for high age population estimates (census estimates, death registration data and migration data) and secondly to test the robustness of the KT methodology. This includes testing the assumptions inherent in the KT method (complete and accurate deaths data and no migration at the oldest ages), comparing KT estimates produced for countries with population registers to their register counts and applying the KT methodology to model populations. Official high age population counts are also being compared to counts in administrative sources.

Initial findings were presented at a user workshop in March 2016. A research paper will be published in Nov/Dec 2016.