

ABOUT MORTALITY DATA FOR JAPAN

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GENERAL

There are two governmental organizations in Japan responsible for producing population and vital statistics. The Statistics Bureau, Management and Coordination Agency (www.stat.go.jp/english/index.htm) is in charge of conducting Japanese censuses and producing intercensal and postcensal population estimates. The Ministry of Health, Labour and Welfare (www.mhlw.go.jp/english) produces vital statistics for Japan, which include deaths, births, and life tables.

Vital statistics for Japan pertain to persons of **Japanese nationality only**, while population estimates are available in two series: one for the total population and another for the population of Japanese nationality. The population estimates in the Human Mortality Database (HMD) are those pertaining to the population of Japanese nationality.

Source of Data

The data on population originate from population censuses conducted every five years by the Statistics Bureau, Management and Coordination Agency (1947–2022). In addition, the Statistics Bureau produces annual postcensal and intercensal population estimates since 1996, which are published in *Annual Reports on Current Population Estimates*. Since population estimates by age and sex are not revised by the Statistics Bureau after a new census is conducted, HMD uses the methods described in the Methods Protocol to produce intercensal estimates.

Data on deaths and births have been published by the Ministry of Health and Welfare, Division of Health and Welfare Statistics (1899–2022) in annual vital statistics publications since 1899, with the exception of the war years 1944–1945. Death counts for 1946 are available but not used because they are incomplete and inconsistently classified.

TERRITORIAL AND POPULATION COVERAGE

Okinawa prefecture was returned from US jurisdiction in May 1972. The population and vital statistics of Okinawa are included in the Japanese statistics from 1973 onwards. In 1972 the total population of Japan was about 106,362,000 people, of which the population of Okinawa comprised about 970,000 or 0.9%. Territorial adjustment factors have been applied to account for this change (for details see the Methods Protocol).

The current number of Japan's prefectures (47) has been established in 1888 for local administration under the central government. Though the number of prefectures has remained stable for over a century, some additions and concessions have occurred following the partition and partial return of the former imperial territories in the aftermath of the post-WW2 allied occupation. The Japanese government monitors the annual flows of residents to and from each prefecture by nationality. Net migration of residents of Japanese nationality has been generally low (net under $\pm 100,000$ per year, reached only in the late 1950s, 2007-2010 and 2015-2017) since the beginning of the HMD data series in 1947. At the same time, foreign immigration has been orders of magnitude greater than the number of returning Japanese nationals for much of the duration of the series. In 2022, however, net migration of foreign nationals reached unprecedented levels, increasing 2.5-fold relative to its baseline levels of 2018-2019 and amounted to over 550,000 net persons. This is greater than the 400,000 foreign nationals that left the country during the 2020-2021 COVID-19 pandemic when a record number of Japanese nationals returned home (509,000 in 2021). The vast majority of foreign nationals are of Southeast Asian descent, comprised of predominantly Filipino, Vietnamese, Cambodian, Chinese and Indonesian origin. Data on foreign nationals are nevertheless excluded from the computation of the HMD life tables, for consistency with the population covered by the vital statistics system, which excludes events pertaining to foreign nationals (residents or not).

DEATH COUNT DATA

Coverage and Completeness

Death counts for Japan cover the population of Japanese nationality only. Because vital statistics have been compiled since 1872 and vital registration has been required by law since 1898, data on deaths for the period covered by the database are considered to be complete and of good quality. All death count inputs are cross-tabulated by single ages with no open age group, year of occurrence and birth cohort.

Some deaths are registered in years after the year of occurrence. These deaths are incorporated into the series when their records become available from the National Statistics Office. Late registrations account for less than 0.3% of deaths in all years of the present series, and less than 0.1% in the most recent two decades. Deaths beginning with 1947 onward have been supplemented with late registrations as public data permits (collapsed categories excluded). Future additions and adjustments may be necessary, if more detailed historical data by year of occurrence become available, though forthcoming changes are expected to have a trivial effect on mortality estimates.

POPULATION COUNT DATA

Coverage and Completeness

The Statistics Bureau produces two series of population estimates: *total* and *Japanese*. To be consistent with the birth and death data, which are available for the population of Japanese nationality only, the HMD uses the series of population estimates for the *Japanese* population rather than for the *total* population.

Population censuses have been conducted in Japan every five years since 1920. A full-scale census is conducted every 10 years and a short census is carried out in the middle of the intercensal period, or every five years. The last full-scale census was conducted in 2020. Census enumerations serve as the basis for annual population estimates. Population data are considered to be of good quality.

For intercensal periods, we use HMD estimation methods instead of the official estimates due to the fact that these are not revised after a census is published and generate a discontinuity with the census series. Data for years since the last official census are based on the official postcensal estimates.

BIRTH COUNT DATA

Coverage and Completeness

Japanese birth statistics refer to mothers of Japanese nationality only. Because vital statistics have been compiled since 1872 and registration has been required by law since 1898, data on births are considered to be complete and of good quality. Annual births are collected by the HMD from 1873 onward, but only births starting in 1947 are required for estimation in the present series.

As with death counts, a certain proportion of births are registered in years after the year in which they occurred. The proportion of late registered births has been consistently under 0.4% during the postwar period, and this share has fallen to under 0.1% since the 1970s. In the present revision, late registered births have been incorporated in the HMD birth series through occurrence-year 1975. Delayed births for years between 1975 and 2000 will be incorporated in a later revision of this data series when detailed data become available. Births beginning with 2001 onward have been adjusted for late registrations, to the extent that public data were available (e.g. collapsed categories were excluded). Regardless, late registrations have a trivial effect on mortality estimates.

REVISION NOTES

Changes with the February 2018 revision:

Population counts: Counts for years 1996-1999, 2001-2004 and 2011-2014 were previously based on official post-censal estimates, that is without

re-adjusting after each census. To maintain consistency with the other intercensal periods and with census data, population estimates for these years have been constructed for the HMD using standard intercensal estimates. This change has only a minuscule impact on mortality estimates.

Life tables: All life tables have been recalculated using a modified methods protocol. The revised protocol (Version 6) includes two changes: 1) a more precise way to calculate a_0 , the mean age at death for children dying during the first year of life and 2) the use of birth-by-month data (when available) to more accurately estimate population exposures. These changes have been implemented simultaneously for ALL HMD series/countries. For more details about these changes, see the revised Methods Protocol (at <http://www.mortality.org/Public/Docs/MethodsProtocol.pdf>), particularly section 7.1 on Period life tables and section 6 and Appendix E on death rates. The life tables calculated under the prior methods protocol (Version 5) remain available at v5.mortality.org but will not be updated in the future.

Changes with the August 2020 revision:

Deaths and births: deaths and births were revised and updated with late registrations (beginning from 2001), and additional vital events that were intentionally omitted in the initial prefecture reports (beginning from 2009). This did not change any of the estimates to a significant degree. However, this accounts for the minority of vital events that were excluded from the series up until now. In addition, whereas the late registrations were not included in the Input database but not used for LexisDB calculations for the previous updates since the early 2010s, the 2001-2017 late-registrations events were updated and organized to be included in the mix to produce the HMD estimates.

Changes with the December 2021 revision:

Deaths and births: Late registrations in deaths and births have been cross-verified with the published historical counts and are now included in the calculations of life tables. The most recent estimates, dating from 2013 onward were once again updated with new late registrations from the most recent publication. New additional vital events that were omitted in the initial prefecture reports (for publication years 2009-2019) were also added to the database under its own NoteCode. All the previous adjustments remain.

Population counts: 2015 population census has been revised retroactively by the NSO to impute additional people whose ages or nationalities were unknown at the time. 2016-2019 intercensal population estimates have been readjusted, to account for the new 2020 census figures.

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APPENDIX I: DESCRIPTION OF THE ORIGINAL DATA USED FOR HMD CALCULATIONS

DEATHS

Period	Type of Data	Age groups	Comments	RefCode(s)
1947-2022	Annual death counts for persons of Japanese nationality by age and year of birth (Lexis triangles)	0, 1,...maximum age attained	Adjusted for late registrations and prefecture omissions	2-6, 11-57, 71, 74, 76, 81-83, 92, 95, 97, 108-110, 133, 134, 138, 143, 149, 154

POPULATION

Period	Type of Data	Age groups	Comments	RefCode(s)
1947, 1950, 1955, 1960, 1965, 1970, 1975, 1980, 1985, 1990, 1995	Census counts (as of October 1st) for the population of Japanese nationality by age	0,1...100+		70, 61, 58, 63, 64, 65, 66, 67, 68, 69, 59
2000	Census (as of October 1st) for the population of Japanese nationality by age	0,1...100+		103
2005	Census (as of October 1st) for the population of Japanese nationality by age	0,1,...maximum age (112)		103
2010	Census (as of October 1st) for the population of Japanese nationality by age	0,1....., maximum age (113)		103
2015	Census (as of October 1st) for the population of Japanese nationality by age	0,1...110+		148
2020	Census (as of October 1st) for the population of Japanese nationality by age	0,1...110+		147
2021-2022	October 1 official post-censal population estimates (Japanese nationality) by age and sex	0,1... 90+		153, 158

BIRTHS BY SEX

Period	Type of Data	Comments	RefCode(s)
1873-1975	Annual live birth counts by sex to women of Japanese nationality	Adjusted to include late registrations	105
1976-2000	Annual live birth counts by sex to women of Japanese nationality	Not yet adjusted for late registrations	33-57, 87
2001-2022	Annual live birth counts by sex to women of Japanese nationality	Adjusted to include late registrations	135, 136, 139, 140, 144, 150, 155

BIRTHS BY MONTH

Period	Type of Data	Comments	RefCode(s)
1899-2008	Annual number of live births by month		101, 99, 100
2009-2022	Annual number of live births by month	Adjusted to include late registrations	137, 141, 146, 152, 157