

Reconstruction of Death Structure of Japan in 1944 and 1945

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Background

Population statistics is a barometer of sanity of a society. In a peaceful time with good governance, a country can produce a good quality population data, such as census or vital statistics, but in a troubled time, those data are difficult to obtain. The vital statistics of Japan started in 1899 and continued up to present but the data during the WWII especially from 1944 to 1945 lacks consistency. The war attacks by bombardment caused fire which destroyed the registration materials, reduced jurisdiction especially in outer islands disabled compilation of registration, and regulation changes on vital event registration and statistics making confused the definition and coverage. Acknowledging these shortcomings, the numbers of total deaths recorded in vital statistics were 1,290,513 in 1944 and 2,115,162 in 1945. However, the sex and age desegregation is not available. On the other hand, there have been several estimates on the number of casualties by the War, which range from 1.9 million (Headquarters for Economic Stabilization 1949) to 3.1 million (The House of Representatives 2001), suggesting that the number of deaths registered in the vital statistics is dwarfed.

This paper tries to fill the gap and estimate the sex and age structure of death of 1944 and 1945 of Japan, by using the existing population statistics, namely the census of 1940 and 1955, and vital statistics in between.

Methods

The census of 1940 and 1955 are used as a starting point and an ending point of population. The population by sex and birth cohort by single year (hereafter referred as “birth cohort”) of 1940 was subtracted by the number of deaths by sex and birth cohort of 1941, 1942 and 1943 and the year-end population of 1943 by sex and birth cohort (a) was obtained. Similarly, the population of 1955 by sex and birth cohort was added with the number of deaths by sex and birth cohort of each year from 1954 to 1946 to obtain the year-end population of 1945 by sex and birth cohort (b). The estimated number of death of 1944 and 1945 by sex by birth cohort was calculated as the difference of (a) minus (b).

The 1940 census data were published belatedly in 1961, and single-year population counts are only available for Japanese living in Japanese territory of 1961, excluding Okinawa prefecture, where, only 5-year interval population is available. Also, just before the end of the war, approximately 3 million Japanese were residing in overseas territories and foreign countries (Hayashi 2021). These numbers are not covered in the 1940 census report published in 1961 but available in census reports of each territory (Taiwan, Korea, Kwantung Province, Sakhalin and Southern Islands) as well as the census of Manchukuo and the report of overseas Japanese made by Ministry of Foreign Affairs. These numbers were added as the 1940

population.

After the population census of 1940, population surveys were conducted in 1944, 1945, 1946, 1948 and a population census was conducted in 1950 and continued every 5 years thereafter. However here, the data of population census 1955 was used as it contains the table on the Japanese population by birth year.

The number of births by year is available in the vital statistics report, including those registered on time and late-registered, within mainland Japan and overseas. As for the number of deaths, those registered on time in mainland Japan are listed both by single age and birth year. However, for those late-registered deaths in mainland Japan, and the deaths occurred outside of mainland Japan are not shown with age or birth year information. Hence, only the deaths data occurred in mainland Japan registered on time was used for the calculation.

Several conversions are needed so that the date would be consistent. Since the 1940 census lists the population of 1 October, the single age data are converted to birth year using the proportion recorded in the census of 1955. Some of the population and death data are listed by 5-year age interval, to they are converted to single-year data. These data include population of Okinawa prefecture in 1940, overseas territories and foreign countries except for Kwantung Province, and deaths in 1946.

Results

The calculated number of deaths in 1944 and 1945 by sex and birth cohort is shown in Figure 1. The deaths were concentrated in young men who were born from 1920 to 1923, corresponding to age 22 to 25 in 1945.

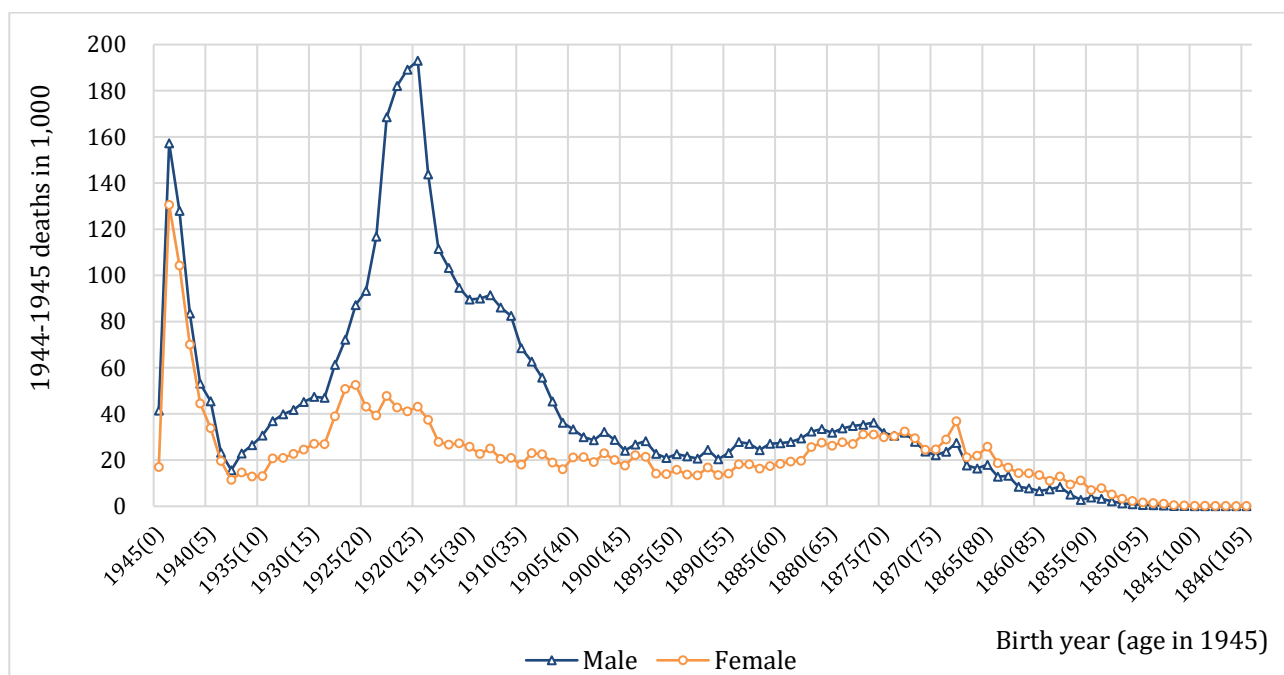


Figure 1 Estimated number of deaths in 1944-1945 by sex and birth cohort

Source: Calculated by author using Census (Statistics Bureau), Vital Statistics (Statistics Bureau and Ministry of Health (Labour) and Welfare)

In terms of proportion to the birth cohort (Figure 2), as much as 17.8% of 1920 birth cohort lost their lives only in two years of 1944-1945. The proportion is similar high level for 1921 and 1923 birth cohort, 17.7% and 17.1% respectively.

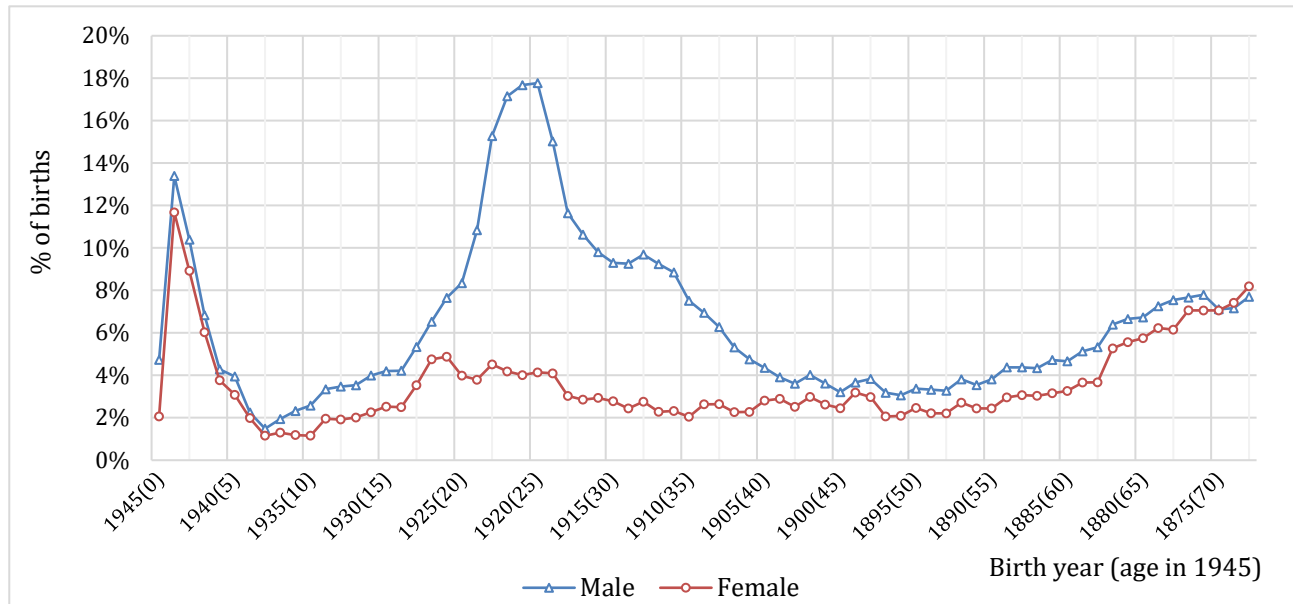


Figure 2 Proportion of deaths in 1944-1945 to births, by sex and birth cohort

note: The proportion is available only back to 1873 when the number of births became available due to the family register law.
Source: Calculated by author using Census (Statistics Bureau), Vital Statistics (Statistics Bureau and Ministry of Health (Labour) and Welfare

The total number of deaths in 1944-1945 thus estimated was 6,813,115, two times more than 3,405,675 deaths of the same period, published in the vital statistics report.

Discussion

Although the estimated number of deaths in 1944-1945 is much more than what was in the report, we have to discount the number by several items. Firstly, the number of deaths occurred outside mainland Japan for 1941 to 1943 and 1946 to 1955, is not included. The total number of deaths occurred outside mainland Japan from 1941 to 1943 is 124,772, but the data is not sex age disaggregated. The same number for 1946 to 1955 is not available. Secondly, the number of late-registered deaths, totaling 226,601 for the period from 1941 to 2022, was not included in the calculation as it is not disaggregated by year of occurrence nor by age for all the period. The years we are working here, before and after the WWII, are known to have a significant number of late-registration (Ishii 2018), but it would certainly be less than 226,601. Thirdly, the number of overseas Japanese in 1955 is not added to the population of Japanese living in Japan due to lack of sex and age disaggregated data. Table 1 shows the total number of these items. The numbers are not negligible, and partially reduce the estimated number of death in 1944-1945. The modeling of these items by sex and age would help refine the estimation.

Table 1 Total number of deaths 1944-1945 and items not included

	Male	Female	Total
Estimated 1944-1945 deaths (a)	4,403,322	2,409,793	6,813,115
Published 1944-1945 deaths (b)	N/A	N/A	3,405,675
Difference (a)-(b)			3,407,440
Items not included above			
Deaths outside mainland Japan 1941-1943	70,298	54,474	124,772
Deaths late-registered 1941-2022	131,059	95,542	226,601
Overseas Japanese population 1955			202,177

Source: Authors calculation, Vital Statistics (Statistics Bureau and Ministry of Health (, Labour) and Welfare), Survey on the Number, etc. of Japanese Abroad (Ministry of Foreign Affairs) in Japan Statistical Association (1988).

The data used is for Japanese nationals. The family register covers only Japanese, and hence there are reasons for Japanese to register the birth and deaths to prove the existence of the individual and the family. However, there could be under-registration, especially for the deaths. The magnitude of death under-registration during 1941 to 1943, 1946 to 1955 should be assessed, which is the source to reduce the estimated number of deaths in 1944 and 1945. Also, to make estimation more precise, we need the number of nationality acquisition and renunciation. So far, as the data is only available from 1949 and it remains small (Table 2) and not age disaggregated, these numbers were not incorporated in the calculation.

Table 2 Net nationality change 1949-1955

Year	1949	1950	1951	1952	1953	1954
Person	-8,838	-1,139	-1,989	N/A	4,465	-4,506

Source: Legal Yearbook (Ministry of Justice)

The number of deaths in 1944 and 1945 is combined. So far there is one data which shows the composition of war victims by two years. In Iwate prefecture, the number of war victims in 1944 and 1945 was 8,681 and 18,239, respectively. One-thirds of deaths occurred in 1944 and two-thirds in 1945. This is about war victims, not including ordinally deaths which would have occurred without WWII. A further analysis could be made to disaggregate the deaths by year.

Conclusion

The 1944-1945 deaths structure by age and sex, estimated from census of 1940 and 1955, and births and deaths added and subtracted in years between, exhibits a high concentration of young (20s) men. The huge death toll during the end of WWII affected unevenly by age and sex. The estimation could be further refined with additional data and modelling, but the overall structure would remain the same.

[References]

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