Will the gender gap in mortality continue to narrow?

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After widening throughout most of the 19th and 20th centuries, the gap in life expectancy between the sexes is now narrowing in low-mortality countries. The reasons for this century-long expansion of the disparity in male and female life expectancy that accompanied health improvements in all industrialized countries have been discussed by numerous authors (Lopez and Ruzicka, 1983; Waldron, 1985; Vallin, 1989). The gap, only slightly in favour of women, or even to men's advantage in high-mortality demographic regimes, grew wider during the decades of declining mortality levels. This growing gender inequality was the result of various factors. First, for many years men behaved in ways that were more detrimental to their health: drinking and smoking more, driving more frequently and faster; and being employed in high-risk occupations. In the 1960s and 1970s, as differences between male and female behaviour lessened, a parallel decline in life expectancy differences between the sexes was anticipated. Not only did this fail to materialize, but the gap widened even further in most countries. For, although women adopted some traditionally male forms of behaviour, they did so in their own way, reducing the associated risks; more particularly, they counterbalanced these harmful new forms of behaviour by greater awareness of health issues. At a time when health was progressing essentially through the reduction of chronic disease, cardio-vascular diseases in particular, women understood earlier than men the importance of managing their health – consulting doctors more frequently, starting regular check-ups at a younger age, and ensuring proper follow up. Thus, men's more destructive lifestyles and women's more constructive health-related practices combined to widen the gap even further.

At the end of the 20th century, however, this century-long trend started to reverse, and in a large number of industrialized nations the gap is now narrowing (Trovato and Lalu, 1998; Meslé, 2004; Glei and Horiuchi, 2007). This new tendency results from a combination of two main factors: a slight slowing of progress for women whose behaviour, particularly with respect to smoking, has become as harmful as that of men, and an acceleration of progress for men whose middle-age mortality from cardiovascular diseases and tobacco-related diseases has decreased rapidly thanks to the adoption of new health-related practices.

In any case, the fact that life expectancy has improved more rapidly among men than women is not necessarily linked to a decline in male excess mortality at all ages. As women's mortality rates are much lower than men's, the same relative decrease yields a much greater increase in life expectancy among men than among women. In other words, for life expectancy to increase at the same pace for both sexes, female age-specific mortality rates need to decline more quickly. At equal rates of progress, the life expectancy gap between the sexes will automatically continue to narrow (Vallin and Meslé, 1989; Glei and Horiuchi, 2007). At young and middle ages, female mortality levels are now so low that male levels will inevitably continue to catch up. At old ages, trends are much less clear. However, mortality trends are now increasingly dependent on mortality gains or losses at these old ages.

The aim of this paper is to investigate recent developments in gender mortality differentials in low-mortality countries at age 65+, comparing specific countries through a detailed cause-of-death analysis.

Figure 1 shows these trends for life expectancy at different ages (0, 65, 80) for the US, France and Japan. For these three countries, the trends appear quite different. First, for life expectancy at birth, the trend reversal in the gender gap occurred at very different times: in

the 1970s for the United States, at the beginning of the 1990s for France, in the late 2000s for Japan. At age 65, the same time lag is visible but the trend reversal for Japan is still uncertain. The picture is different at age 80: a clear divergence appears between the three countries: the gap has been narrowing and then stagnating in the US, while it is still increasing slightly in France and steadily widening in Japan. At these old ages, it is not certain that future trends in gender differentials will be in the same direction for the three countries.

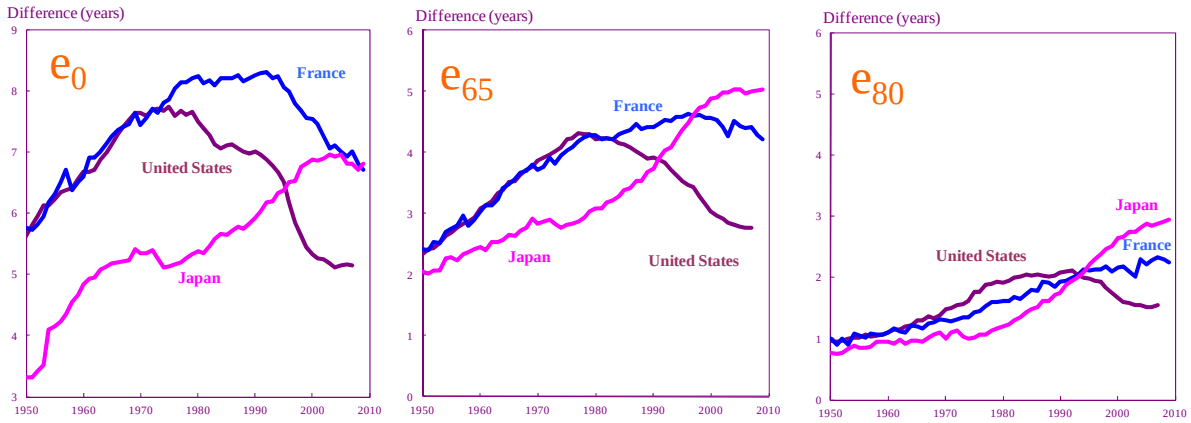

Figure 1. Trends in the gap between male and female life expectancy at ages 0, 65 and 80 for the US, France and Japan

Looking at the age decomposition of the gap at three different periods (Figure 2) confirms that while the gap widened in a similar manner between 1950 and 1980 in the three countries (increase in the differences around age 20 and between age 60 and 80), recent developments vary from one country to another. In the US, the difference has decreased at all ages, except over age 80 where it is stable. In France it has decreased below age 75 but substantially increased over that age. In Japan, the decrease is limited to young ages (below age 55) and the gap has considerably widened at older ages (between ages 70 and 90).

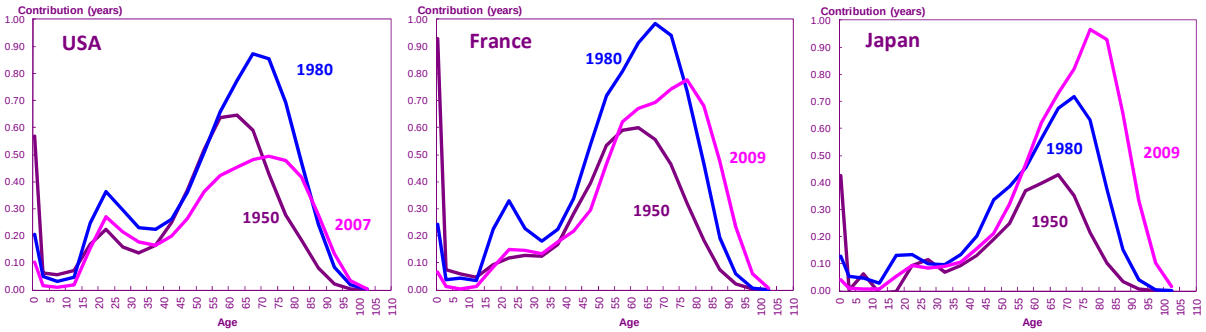

Figure 2. Age components of the gap between male and female life expectancy at three different periods for the US, France and Japan

What are the causes of death responsible for these contrasting trends at older ages? Figure 3 displays the age and cause contribution of large groups of causes of death to the gender gap in life expectancy at age 65. It highlights the unequal contribution of old ages to this gap, between the US where differences are rather low, especially over age 85 and Japan where these differences are much larger and remain non-negligible even over age 95. France occupies an intermediate position. Furthermore the causes involved also differ from one

country to another. In the US, the main contributor to the gap is the group of circulatory diseases while in France and Japan cancers play the major role. In the latter country, respiratory diseases are also contributing substantially to the gap, especially at the oldest ages.

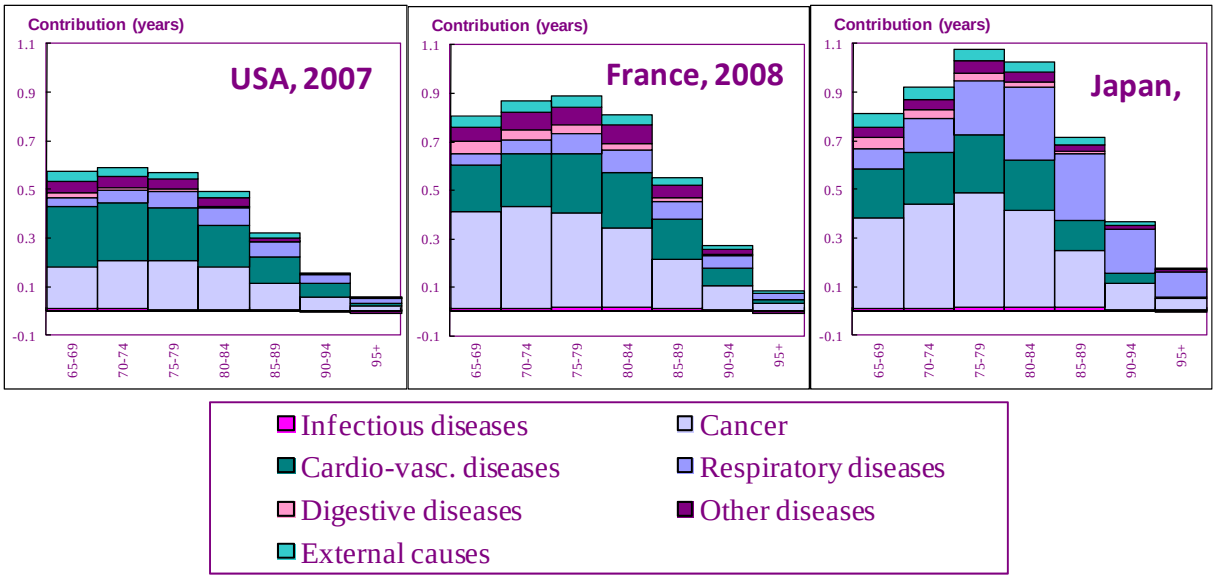

Figure 3. Age and cause components of the gap between male and female life expectancy at age 65 for the US, France and Japan, in the most recent period

When considering annual trends in age and cause components of the gender gap in life expectancy at age 65 in the three countries, it appears clearly that these different cause-of-death patterns emerged in the last two decades of the 20th century (Figure 4) . Until 1980, circulatory diseases were the main contributor to the sex differences in life expectancy at age 65 in the three countries. Since 1980, however, this contribution has been decreasing. In the US the decrease was much sharper than in the two other countries. The role of cancers, the second contributor in the 1950s-1970s, increased everywhere but much less in the US than in France and in Japan. In the latter two countries this cause of death plays a major role today, with the additional contribution of respiratory diseases in Japan.

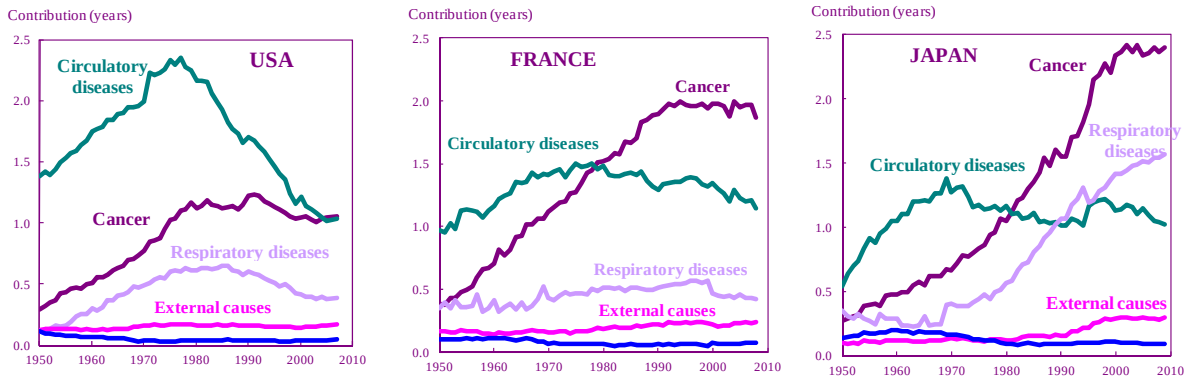

Figure 4. Annual trends in age and cause components of the gap between male and female life expectancy at age 65 for the US, France and Japan, since 1950

These preliminary observations deserve further investigation**.** What are the cancers responsible for the widening gap at older ages? Are they tobacco-related cancers? If this is the case, the growing female tobacco-related mortality should soon contribute to a narrowing of the gap at older ages. What respiratory diseases are contributing to the widening of the gap in Japan? Are they chronic obstructive respiratory diseases, also related to tobacco consumption, or acute respiratory diseases like pneumonia, more closely linked to ageing?
Finally, extending the analysis to other countries, we will see if it is possible to define a typology based on these three specific patterns.

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