Data and Methods Appendix

Data sources: All data comes from the Human Mortality Database (HMD). We use each examined country's 1x1, sex-specific life table, as well as 1x1 sex-specific population and death counts for the US.

Treatment of age: In Figure 1, we consider all single years of age below 100, while the final age category in Table 1, 85+, is calculated using single years of age until 110 and an open-ended age interval above that.

The "European standard": We consider the five largest European countries. We use the 1x1 life tables to take the simple mean of death rates across the five countries by sex, annual year, and single year of age.

Ratios of age-specific death rates: We use life table age-specific death rates for the US and the European standard. We first take the mean of male and female death rates in both the US and Europe and then calculate the US:Europe ratio.

Excess deaths: We use life table age-specific death rates for the European standard and US 1x1 death and population counts to estimate the number of annual deaths that would not have occurred if the US had the age-specific death rates of the European standard. The count of excess deaths at age *x* (last birthday) in calendar year *t*, or ED(x,t), is calculated as:

$ED(x,t) = D^U(x,t) - N^U(x,t) * M^E(x,t)$, where
$D^U(x,t)$ = Number of deaths recorded at age *x*, year *t* in the United States
$N^U(x,t)$ = Number of people alive in US at age *x* on July 1, year *t*
$M^E(x,t)$ = Death rate at age *x*, year *t*, in the European standard

We estimate excess deaths separately by sex before combining them in Panel B of Figure 1. In several instances, the number of excess deaths at a particular age is negative, indicating that US age-specific death rates are lower than the European standard at that age.

Excess deaths are also shown in Table 1, with the sum across larger age groups shown for brevity. We additionally present an annual total, ED(t). ED(t) is the annual sum of excess deaths across all ages, which includes some negative values at higher ages.

$$\mathrm{ED(t)} = \sum_{x} \mathrm{ED(x,t)}$$

Years of life lost: We calculate years of life lost to the US mortality disadvantage at age *x*, year *t*, or YLL(x,t), as:

$$YLL(x,t) = ED(x,t) * e(x,t),$$

where e(x,t) is the US mid-year life expectancy at age *x*, year *t* in the 1x1 period life table in the HMD. Since ED(x,t) is based on the mid-year population, we assume that individuals are, on average, age *x+0.5* years old. Our e(x,t) measure is therefore the mean of life expectancy at age *x*

and age *x+1*. As with the excess deaths measure above, we estimate YLL(x,t) separately by sex before combining the male and female counts.
In Table 1, we additionally present the total number of years of life lost at time *t* as the sum across all ages of YLL(x,y):

$$\mathrm{YLL(t)} = \sum_{x} \mathrm{ED(x,t)\ e(x,t)}$$

As with ED(t), negative values of YLL(x,t) are included in the total value of YLL(t).

Code: All analyses were performed using Stata 14 (StataCorp). All code for replicating this paper's analyses are available on Y. Vierboom's website, yanavierboom.weebly.com.

References

Human Mortality Database. University of California, Berkeley (USA), and Max Planck Institute for Demographic Research (Germany). Available at www.mortality.org or www.humanmortality.de (data downloaded on November 13, 2020).