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US Mortality in an International Context: Age Variations

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Compared to other developed countries, the United States ranks poorly in terms of life expectancy at older ages. At age 50, for example, it trails the world leader, Japan, by 3.3 years. The other 29 countries ahead of the US have life expectancies at age 50 that are an average of 1.3 years longer. A majority of the difference in life expectancy at birth between the US and other developed countries is attributable to differences in life expectancy at age 50.

The US's poor performance is often blamed on its health care system. In a previous analysis, we reviewed a number of studies comparing the efficacy of the US health care system with that of several other developed countries. We found that, by the standards of other OECD countries, the US health care system typically functions well in the identification and treatment of cancer and heart disease, the two leading causes of death at older ages. We examined in greater depth death rates from prostate and breast cancer, diseases for which effective methods of identification and treatment have been developed and where behavioral factors do not play a dominant role. We found that the US experienced a significantly faster decline in prostate and breast cancer mortality than the comparison countries between 1994 and 2005. On the basis of this analysis we concluded that the health care system is not likely to be responsible for the US's low life expectancy at age 50.

Only one broad age range, 50+, was considered in that analysis. We now supplement that analysis by considering the relative ranking of the US at different ages among a comparison set of 17 OECD countries. What we find is a more complex age-pattern of mortality rankings in the United States. Between ages 40 and 75, US all-cause mortality rates are among the poorest in the set of comparison countries. However, the US position improves dramatically after age 75 for both men and women.

The study considers four principal explanations of the unusual age pattern. Two of the explanations – health care access and smoking patterns – do not appear promising. The sharp upward slope in US age-specific mortality rankings was already present in 1960, suggesting that the advent of Medicare and its associated health care entitlements is not a decisive factor in the pattern. The age-pattern was also present in 1965, 1975, 1985, and 1995. The poorest rankings at older ages in the US for both men and women at all ages above 70 are observed in 2005. While the removal of smoking-attributable deaths has an important effect on the relative level of mortality, especially for women at younger ages, the removal of smoking-attributable deaths does not erase the upward slope of US rankings and in fact produces the largest improvements in rankings at the oldest ages.

We cannot dismiss the possibility that selection mechanisms have contributed to the pattern observed. Such an outcome could be produced by a greater degree of heterogeneity in the US population than in comparison countries. One direct test indicates that racial heterogeneity is not a major factor in the

pattern, which is apparent among both whites and blacks. And Japan, which is likely to have an unusually low degree of heterogeneity, does not show a pattern that is inverse to that of the US, as might be expected if selection were a dominant factor.

High mortality from violence contributes to poor US rankings in the age interval 40-49 but is not a factor thereafter. The very high prevalence of obesity in the US is probably contributing to the pattern but uncertainty about the size of associated risks prevents a firm conclusion about its importance.

The hypothesis that is most strongly supported by our analysis is that the US health care system is performing especially well for older patients. Earlier, we documented US advantages in identification and treatment of cancer and in the treatment of heart disease. Here we have supplemented that analysis by examining age patterns of identification and treatment of diseases within the older population. Such evidence is necessarily more limited. The clearest pattern emerges for cancer screening, where the ratio of US screening rates to those of other OECD countries increases with age for four major cancers. US one-year survival rates following a heart attack are also better than average among seven countries and the US advantage grows with age. Survival rates following a stroke are exceptions to this general pattern. US survival rates are superior at seven days but below average at one year, and the age patterns are not clear cut.

Future research on this topic would fruitfully explore international differences in the deployment of medical technology during earlier periods. If the health care system is currently responsible for the improved ranking of US death rates with age, and if persistent phenomena are believed to be responsible for the pattern of improvement that has been observed since 1960, then it would be useful to demonstrate that life-saving medical technologies (e.g., antibiotics for pneumonia) were also deployed more frequently in the US than elsewhere in earlier years. It would also be useful to investigate whether the age patterns of mortality that we have documented reflect enduring features of American society that may be manifest in attitudes and behavior towards the very old.

The full working paper is available on our website, www.nber.org/programs/ag/rrc/books&papers.html as paper NB10-01A.

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