

Figure 2-35 Mortality trends in Sweden and various nonindustrialized countries
Source: U.N. 1953.

In modeling the historical development of health technology, we have included a simple shift from the postulated 1900 table function to the 1966 one, the shift occurring at model time 1940. This shift (expressed by a CLIP function) is an approximation to an increase in technology that actually took place more gradually, but there probably was an unusually large advance, especially in decreasing costs, during the period 1930–1950. The changeover from one table to the other takes place at an effective health services per capita level of about 15 dollars in 1940. Thus the effect of health services on life expectancy can be represented by a composite table as shown by the heavy line in Figure 2-37. The CLIP function also introduces a hysteresis in our assumption of medical technological development. A decrease in expenditures for health services after 1940 would result in a movement back along the curve of present technology, not a retreat to past technology.

At high food levels, the curve shown in Figure 2-37 generates a maximum life expectancy of 78.4 years. We reserved the assumption of even higher life expectancies in the future for each model operator to include at his own discretion, and we assumed eventual diminishing returns to health expenditures. Indeed, the record of longevity in the developed countries over the past twenty years indicates that rising health services (at present technology) in these areas no longer result in any increase in life expectancy. Per capita health expenditures in the United States have risen from 60 to 220 dollars (at constant prices) since 1949, yet the life expectancy for white males over that period has risen by only about two years (Forbes 1967):

The main determinants of longevity are cultural, rather than medical, factors in the countries in which infectious diseases are no longer among the predominant causes

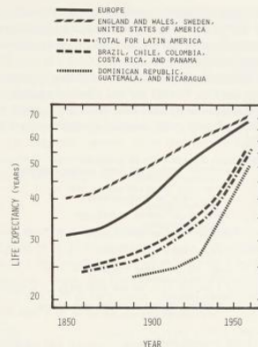


Figure 2-36 Mortality trends in Latin America
Source: Arriaga and Davis 1969.

of death. . . . It is probable that we could either halve or double the money now being spent on health without significantly affecting our longevity. [Forbes 1967]

What of possible future technological developments that would be equivalent in efficiency to the series of health advances that took place in the 1930s and 1940s? It is certainly not possible to predict the timing or extent of any future advances. It is possible, however, to test the impact of developments by postulating

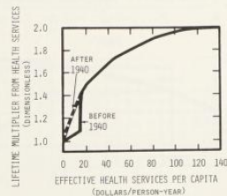


Figure 2-37 Hysteresis in lifetime multiplier from health