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***FEATURE***

# Health and Disease Trends in Low Income Economies: Can We Escape the Double Burden of Disease?

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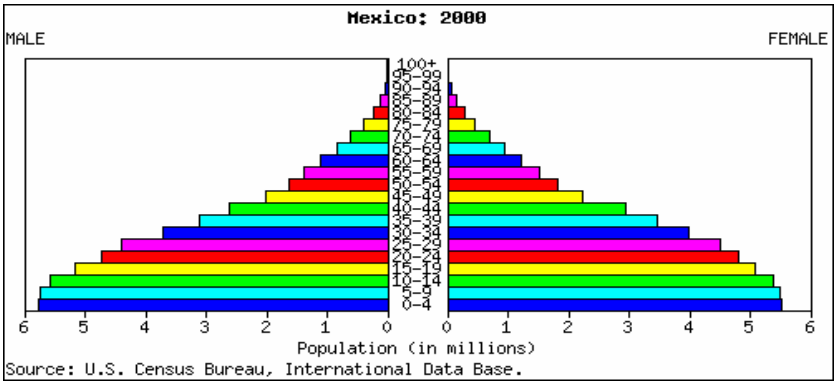
***ABSTRACT*** *- Demographic transitions can explain public health phenomena and predict the types of health problems countries will experience. Developing countries are suffering from infectious diseases which kill a disproportionate number of children, but at the same time, they are beginning to suffer from the chronic, lifestyle diseases of more developed countries. This double burden of disease maintains the need for a high birth rate due to infant mortality, but also reduces the number of productive workers to care for the large number of dependents. The challenge is to find a way for Stage II nations to escape this demographic and public health phenomenon that plunges them into poverty.*

This may sound like an insult to you, but I wish for all readers to die of heart disease, cancer, and stroke! Before explaining myself I will escalate the insult by adding that your children, grandchildren, and great-grandchildren deserve the same destiny: heart disease, cancer, and stroke! Finally, in the following presentation, I will do nothing but try to salvage my reputation tarnished by this introduction.

## The Demographic Transition

Health and disease trends in low income economies start making more sense if we consider the demographic transition. This consists of a shift from a population composed mostly of young people (consumers of resources), to a population that consists of more producers of resources (more young and middle-aged adults). The beginning and possible endpoint of this shift is illustrated in Figures 1 and 2. Figure 1 shows Mexico in the year 2000 as an example of a low income economy and Figure 2, Sweden, showing an established market economy.

The burden of disease a country experiences is often closely related to the demographic transition, and I will come back to the topic as we discuss the implications of the demographic transition.



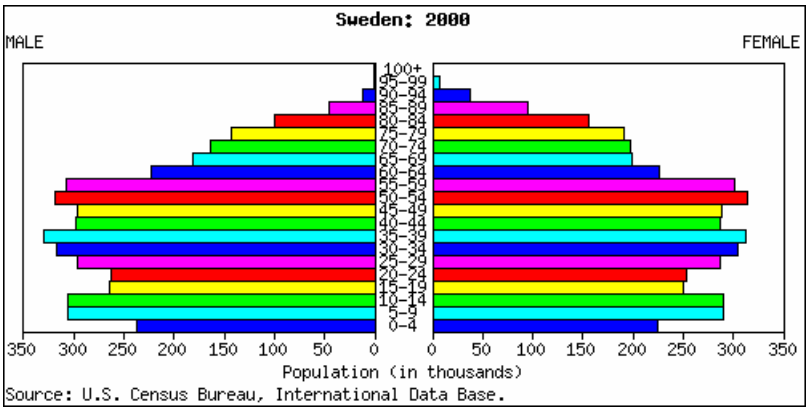




*Figure 2.* Population pyramid illustrating more producers than consumers.

Populations can be divided into three general stages regarding their placement in the demographic transition (Stages I, II, and III).

### Stage I of the Demographic Transition: The Hopeless Stage

Stage I is confined to the most destitute segments of the world population. Only a small fraction of the world population is in the first stage. The features of the first stage of the demographic transition are staggering: high infant mortality and high early childhood death rates. This encourages high fertility to ensure family survival. Stage I frequently shows zero population growth at a terrible cost: most infants born into the first stage will suffer the ravages of malnutrition and infectious diseases that prevent them from reaching adulthood.

### Stage II of the Demographic Transition: The Unfulfilled Promise

Most of the world population is trapped in Stage II of the demographic transition. Limited resources and cultural practices maintain unnecessarily high birth rates. A generalized, cursory survey reveals that the segments of the world population that hold the fewest resources have the most rapidly growing populations and, therefore, have the greatest need for curbing population growth.

Figure 3 illustrates the population of a nation trapped in the second stage of the demographic transition. The example is India in the year 2000. Features of the second stage of the demographic transition include vast expenditures of resources intended to reduce infant mortality, with success that is offset by an ever-growing demand for more and more and more resources.

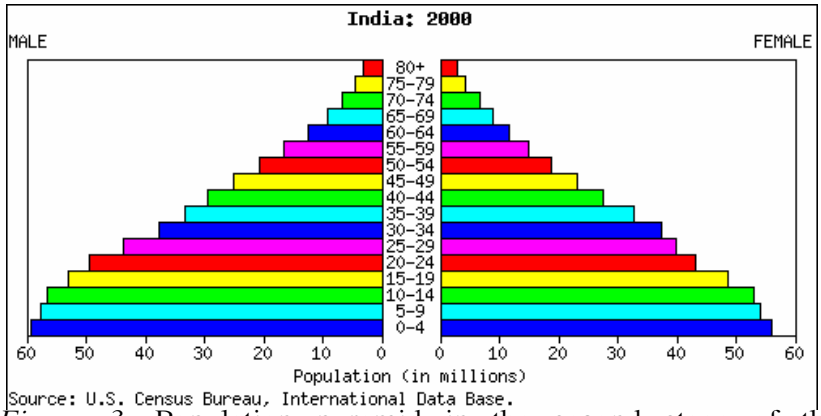



*Figure 3*. Population pyramid in the second stage of the demographic transition

In this transitional stage, slight reductions in infant mortality require more resources to support the needs of the ever-growing number of consumers. There will never be sufficient resources to escape the second stage and reduce infant mortality without limiting population growth.

### Stage III of the Demographic Transition: The Fortunate Few

A relatively small fraction of the world population is born into Stage III of the demographic transition. A few nations have quickly moved most of their population from the second stage to the third.

Stage III of the demographic transition is characterized by low infant mortality, low birth rate, and zero population growth. An infant born into Stage III of the demographic transition can be expected to live 70 to 80 years. The rapid shift is illustrated by Singapore and China, as seen in Figures 4 and 5.

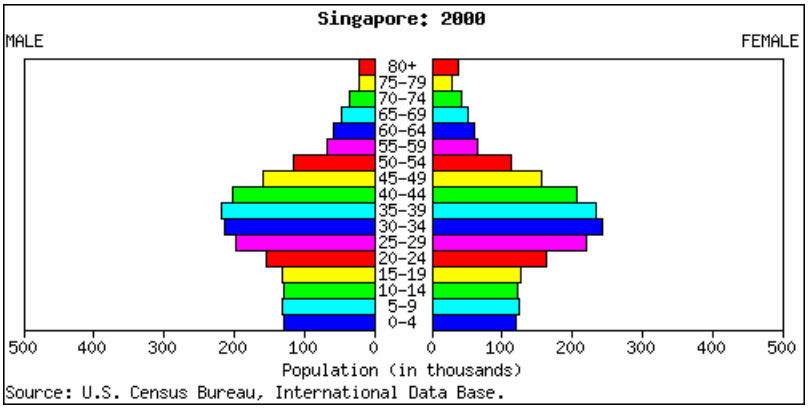



*Figure 4.* Rapid transition from Stage II to Stage III in Singapore

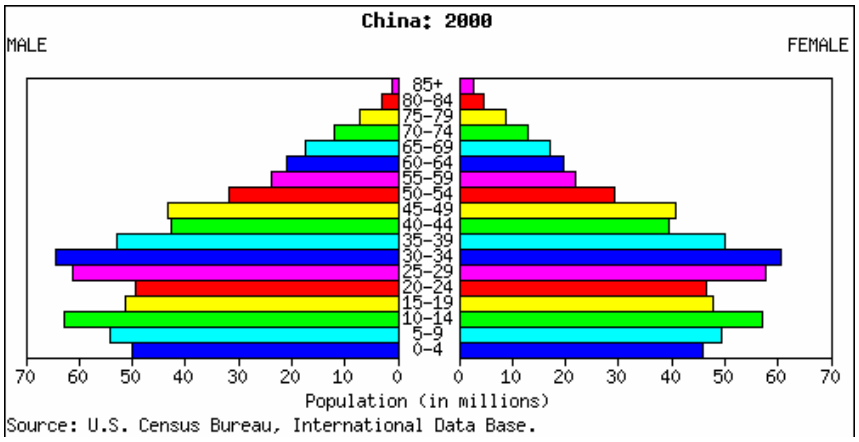



*Figure 5.* Rapid transition from Stage II to Stage III in China.

### Disease Shifts During the Demographic Transition

Infectious diseases constitute the leading causes of death in Stages I and II of the demographic transition. Among these, the leading causes of death in the world today are malaria, respiratory diseases, infant diarrhea, and measles. These infectious diseases disproportionately take the lives of infants and children.

Heart disease, cancer, and stroke are among the most common old-age-related causes of death. The growing list of those who escape deaths from premature causes will most likely succumb in their 70s or 80s to a failed heart, degraded immune surveillance (cancer), or vascular disease (stroke). These are the most "natural" causes of death at that age and, in a public health context, represent success, not failure.

### Can We Escape the Double Burden of Disease?

The double burden of disease refers to the second stage of the demographic transition, when infectious diseases still produce their toll of high infant mortality, but at the same time chronic diseases creep in, which may also cause premature suffering and death. For example, tobacco consumption patterns are shifting. In the past, most tobacco was consumed in Stage III countries. Tobacco consumption has sharply risen in Stage II countries. Diseases related to tobacco consumption in Stage II countries may eventually reach eight million

premature deaths per year worldwide, introducing a double burden of disease. A shift from traditional diets to highly refined ones and a reduction of exercise in the lives of the majority of people in Stage II countries will contribute to the toll of immature chronic disease.

Public health leaders need to counteract behaviors that add premature death from chronic diseases to the burden of premature death from infectious diseases. We may not escape the double burden, but we can make a big difference in the impact of these diseases. At the same time, the public health leaders need to come to terms with their own mortality and understand that eventual death is not the problem. *Premature death is the problem*. Therefore, we need to focus on leaving Stage II of the demographic transition and progressing to Stage III.

**Conclusion**

As the majority of the world population shifts to the third demographic stage, most premature deaths will diminish. When population growth is checked, the majority of the world population will have the opportunity to survive to the seventh and eighth decades of life. Heart disease, cancer, and stroke will predominate as the leading causes of death in the seventh and eighth decades. After all, these are the most common old-age-related causes of death.

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