

# DOWNLOAD PDF MORTALITY PATTERNS IN ANTHROPOLOGICAL POPULATIONS

## Chapter 1 : Project MUSE - Nutrition and the Variation in Level and Age Patterns of Mortality

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Theory[ edit ] Omran divided the epidemiological transition of mortality into three phases, in the last of which chronic diseases replace infection as the primary cause of death. The Age of Pestilence and Famine: Mortality is high and fluctuating, precluding sustained population growth, with low and variable life expectancy vacillating between 20 and 40 years. It is characterized by an increase in infectious diseases, malnutrition and famine, common during the Neolithic age. Before the first transition, the hominid ancestors were hunter-gatherers and foragers, a lifestyle partly enabled by a small and dispersed population, however unreliable and seasonal food sources put communities at risk for periods of malnutrition. The Age of Receding Pandemics: Mortality progressively declines, with the rate of decline accelerating as epidemic peaks decrease in frequency. Average life expectancy increases steadily from about 30 to 50 years. Population growth is sustained and begins to be exponential. Mortality continues to decline and eventually approaches stability at a relatively low level. Mortality is increasingly related to degenerative diseases , cardiovascular disease CVD , cancer, violence , accidents , and substance abuse , some of these due primarily to human behavior patterns. The average life expectancy at birth rises gradually until it exceeds 50 years. It is during this stage that fertility becomes the crucial factor in population growth. In Barrett et al [6] proposed two additional phases in which cardiovascular diseases diminish as a cause of mortality due to changes in culture, lifestyle and diet, and diseases associated with aging increase in prevalence. In the final phase, disease is largely controlled for those with access to education and health care, but inequalities persist. Technological advances in medicine stabilize mortality and the birth rate levels off. Emerging diseases become increasingly lethal due to antibiotic resistance , new pathogens like Ebola or Zika , and mutations that allow old pathogens to overcome human immunity. The birth rate declines as lifespan is extended, leading to an age-balanced population. Socioeconomic, ethnic, and gender inequalities continue to manifest differences in mortality and fertility. The epidemiological transition occurs when a country undergoes the process of modernization from developing nation to developed nation status. The developments of modern healthcare and medicine, such as antibiotics , drastically reduce infant mortality rates and extend average life expectancy which, coupled with subsequent declines in fertility rates, reflects a transition to chronic and degenerative diseases as more important causes of death. The theory of epidemiological transition uses patterns of health and disease as well as their forms of demographic, economical and sociological determinants and outcomes. Each bar represents an age category and its percent of the total population, with males to the left and females to the right. In early pre-agricultural history, infant mortality rates were high and average life expectancy low. Mortality in Western Europe and North America was halved during the 19th century due to closed sewage systems and clean water provided by public utilities, with a particular benefit for children of both sexes and to females in the adolescent and reproductive age periods, probably because the susceptibility of these groups to infectious and deficiency diseases is relatively high. Treatment breakthroughs of importance included the initiation of vaccination during the early nineteenth century, and the discovery of penicillin in the mid 20th century, which led respectively to a widespread and dramatic decline in death rates from previously serious diseases such as smallpox and sepsis. In several European nations replacement rates have even become negative. Omran gives three possible factors tending to encourage reduced fertility rates: Impact on fertility[ edit ] Improvements in female and childhood survival that occur with the shift in health and disease patterns discussed above have distinct and seemingly contradictory effects on fertility. While better health and greater longevity enjoyed by females of reproductive age tend to enhance fertility, the reduced risks to infants and young children that occurs in the later stages of the transition tends to have the opposite effect: This shift in demographic and

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disease profiles is currently under way in most developing nations, however every country is unique and transition speed is based on numerous geographical and sociopolitical factors. Whether the transition is due to socioeconomic improvements as in developed countries or by modern public health programs as has been the case in many developing countries, the lowering of mortality and of infectious disease tends to increase economic productivity through better functioning of adult members of the labor force and through an increase in the proportion of children who survive and mature into productive members of society. Omran developed three models to explain the epidemiological transition. England, Wales, and Sweden Countries in Western Europe typically experienced a transition that began in the late eighteenth century and lasted over years to the post-World War II era. The lengthy transition allowed fertility to decline at virtually the same rate that mortality also declined. Germany might be considered another example of this model. Japan Japan experienced a rapid transition as a result of a few decades of intensive war-driven industrialization followed by postwar occupation. China might be considered another example of this model. Chile, Ceylon Due to slow economic development, Chile and Ceylon Sri Lanka experienced delayed transitions that have lasted into the 21st century. Medical and public health improvements have reduced mortality, while the birth rate continues to remain high. Cultural traditions combined with political and economic instability and food insecurity mean that mortality for women and children fluctuates more than for men. Mauritius might be considered another example of this model. Determinants of disease[ edit ] Ecobiological: These alter the frequency of epidemic infectious diseases as well as chronic infections and other illnesses that affect fertility and infant mortality. Hygiene and nutrition are included here, rather than under medical determinants, because their improvement in western countries was largely a byproduct of social change rather than a result of medical design. Medical and public health factors came into play late in the western transition, but have an influence early in certain accelerated and contemporary transitions. One of the first to refine the idea of the epidemiological transition was Preston, who in proposed the first comprehensive statistical model relating mortality and cause-specific mortality. He used multiple linear regression to analyze the cause-specific-age-standardized death rates by sex. The estimated slopes represented the proportional contribution of each cause to a unit change in the total mortality rate. With the exception of neoplasms in both sexes and cardiovascular disease in males, all of the estimated slopes were positive and statistically significant. This demonstrated that the mortality rates from each specific cause were expected to decline as total mortality declined. The major causes accounting for the decline were all infectious and parasitic diseases. Countries have varied in the speed with which they go through the transition as well as what stage of the transition they are in. The global burden of disease website provides visual comparisons of the disease burdens of countries and the changes over time. Worldwide, mortality rates have decreased as both technological and medical advancements have led to a tremendous decrease in infectious diseases. Rapid gains among countries such as Chile, Mexico and Tunisia that have strong economic and technical relationships with developed countries Slower plateauing gains mostly among developed countries with slower increases in life expectancy for example, France Frank reversals occurring mostly in developing countries where the HIV epidemic led to a significant decline in life expectancy, and countries in the former Soviet Union, afflicted by social upheavals, heavy alcohol consumption and institutional inadequacy for example, Zimbabwe and Botswana [12] Leading causes of DALYs and percentage change between , France Leading causes of DALYs and percentage change between , Zimbabwe Murray and Lopez offered one of the most important cause-of-death models as part of the Global Burden of Disease Study. Their "cause of death" patterns sought to describe the fraction of deaths attributed to a set of mutually exclusive and collectively exhaustive causes. They divided diseases into three cause groups and made several important observations: Group 1 - communicable, maternal, perinatal, and nutritional: These causes of death decline much faster than overall mortality and comprise a small fraction of deaths in wealthier countries. Group 2 - non-communicable diseases: These causes of death are a major challenge for countries that have completed or nearly completed the epidemiological transition. Group 3 - injuries: This cause of death is most variable within and across different countries and is less predictive of all-cause mortality. Using Global

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Burden of Disease data from , they disintegrate the transition across three cause groups: This analysis validates the underlying premise of the classic epidemiological transition theory: Decomposing this overall impact by age-sex groups, they find that for males, when overall mortality decreases, the importance of non-communicable diseases NCDs increases relative to the other causes with an age-specific impact on the role of injuries, whereas for women, both NCDs and injuries gain a more significant share with mortality decreases. For children over one year, they find that there is a gradual transition from communicable to non-communicable diseases, with injuries remaining significant in males. For young adults, the epidemiological transition is particularly different: Finally, for both males and females over 50, there is no epidemiological transition impact on the cause composition of mortality. Ranks are based on the number of DALYs. Communicable, maternal, neonatal, and nutritional disorders causes are shown in red, non-communicable causes in blue, and injuries in green. The majority of the literature on the epidemiological transition that was published since these seminal papers confirms the context-specific nature of the epidemiological transition: Increasing obesity rates in high-income countries are further confirming the epidemiological transition theory as the epidemic leads to an increase in NCDs. The picture is more nuanced in low- and middle-income countries, where there are signs of a protracted transition with the double burden of communicable and noncommunicable disease. A recent review of cause-specific mortality rates from 12 low- and middle-income countries in Asia and sub-Saharan Africa by Santosa and Byass shows that broadly, low- and middle-income countries are rapidly transitioning to lower total mortality and lower infectious disease mortality. The concept of linear transition from infectious diseases to other conditions referred to as degenerative or non-communicable, was based on a false dichotomy as common microorganisms have now been confirmed as causal agents in several conditions recorded as the underlying cause of many deaths. A revised transition model might focus more on disease aetiology and the determinants of cause-specific mortality change, while encompassing the possibility that infectious causation may be established for other morbid conditions through the vast amount of ongoing research into associations with infectious diseases.

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## Chapter 2 : Population - Mortality | [www.nxgvision.com](http://www.nxgvision.com)

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A closed population that is, one in which immigration and emigration do not occur can change according to the following simple equation: In other words, only addition by births and reduction by deaths can change a closed population. Populations of nations, regions, continents, islands, or cities, however, are rarely closed in the same way. If the assumption of a closed population is relaxed, in- and out-migration can increase and decrease population size in the same way as do births and deaths; thus, the population open at the end of an interval equals the population at the beginning of the interval, plus births during the interval, minus deaths, plus in-migrants, minus out-migrants. Hence the study of demographic change requires knowledge of fertility births, mortality deaths, and migration. These, in turn, affect not only population size and growth rates but also the composition of the population in terms of such attributes as sex, age, ethnic or racial composition, and geographic distribution. Demographers distinguish between fecundity, the underlying biological potential for reproduction, and fertility, the actual level of achieved reproduction. The difference between biological potential and realized fertility is determined by several intervening factors, including the following: The magnitude of the gap between potential and realized fertility can be illustrated by comparing the highest known fertilities with those of typical European and North American women in the late 20th century. A well-studied high-fertility group is the Hutterites of North America, a religious sect that views fertility regulation as sinful and high fertility as a blessing. Hutterite women who married between and are known to have averaged 10 children per woman. Meanwhile, women in much of Europe and North America averaged about two children per woman during the s and sâ€™a number 80 percent less than that achieved by the Hutterites. Even the highly fertile populations of developing countries in Africa, Asia, and Latin America produce children at rates far below that of the Hutterites. The general message from such evidence is clear enough: It is strongly constrained by cultural regulations, especially those concerning marriage and sexuality, and by conscious efforts on the part of married couples to limit their childbearing. Dependable evidence on historical fertility patterns in Europe is available back to the 18th century, and estimates have been made for several earlier centuries. Such data for non-European societies and for earlier human populations are much more fragmentary. The European data indicate that even in the absence of widespread deliberate regulation there were significant variations in fertility among different societies. These differences were heavily affected by socially determined behaviours such as those concerning marriage patterns. Beginning in France and Hungary in the 18th century, a dramatic decline in fertility took shape in the more developed societies of Europe and North America, and in the ensuing two centuries fertility declines of fully 50 percent took place in nearly all of these countries. There is no dispute as to the fact and magnitudes of such declines, but theoretical explanation of the phenomena has proved elusive. See below Population theories. Page 1 of

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## Chapter 3 : - MORTALITY PATTERNS IN ANTHROPOLOGICAL POPULATIONS by Ellen R. (ed) Brennan

*MORTALITY PATTERNS IN ANTHROPOLOGICAL POPULATIONS* by Brennan, Ellen R. (ed). Detroit: Wayne State University Press, Boards. Very good+. viii+pp., illst.

Mortality As noted above, the science of demography has its intellectual roots in the realization that human mortality, while consisting of unpredictable individual events, has a statistical regularity when aggregated across a large group. This recognition formed the basis of a wholly new industry—that of life assurance, or insurance. The basis of this industry is the life table, or mortality table, which summarizes the distribution of longevity—observed over a period of years—among members of a population. This statistical device allows the calculation of premiums—the prices to be charged the members of a group of living subscribers with specified characteristics, who by pooling their resources in this statistical sense provide their heirs with financial benefits. Overall human mortality levels can best be compared by using the life-table measure life expectancy at birth often abbreviated simply as life expectancy, the number of years of life expected of a newborn baby on the basis of current mortality levels for persons of all ages. Life expectancies of premodern populations, with their poor knowledge of sanitation and health care, may have been as low as 25–30 years. The largest toll of death was that exacted in infancy and childhood: In the developing countries by the 1950s, average life expectancy lay in the range of 55 to 60 years, with the highest levels in Latin America and the lowest in Africa. In the same period, life expectancy in the developed countries of western Europe and North America approached 75 years, and fewer than 1 percent of newborn children died in their first 12 months. For reasons that are not well understood, life expectancy of females usually exceeds that of males, and this female advantage has grown as overall life expectancy has increased. In the late 20th century this female advantage was seven years 78 years versus 71 years in the industrial market economies comprising western Europe, North America, Japan, Australia, and New Zealand. It was eight years 74 years versus 66 years in the nonmarket economies of eastern Europe. The epidemiologic transition The epidemiologic transition is that process by which the pattern of mortality and disease is transformed from one of high mortality among infants and children and episodic famine and epidemic affecting all age groups to one of degenerative and man-made diseases such as those attributed to smoking affecting principally the elderly. It is generally believed that the epidemiologic transitions prior to the 20th century i. In contrast, those occurring in developing countries have been more or less independent of such internal socioeconomic development and more closely tied to organized health care and disease control programs developed and financed internationally. There is no doubt that 20th-century declines in mortality in developing countries have been far more rapid than those that occurred in the 19th century in what are now the industrialized countries. Infant mortality Infant mortality is conventionally measured as the number of deaths in the first year of life per 1,000 live births during the same year. Roughly speaking, by this measure worldwide infant mortality approximates 80 per 1,000; that is, about 8 percent of newborn babies die within the first year of life. This global average disguises great differences. In certain countries of Asia and Africa, infant mortality rates exceed and sometimes approach per 1,000, that is, 15 or 20 percent of children die before reaching the age of one year. Meanwhile, in other countries, such as Japan and Sweden, the rates are well below 10 per 1,000, or 1 percent. Generally, infant mortality is somewhat higher among males than among females. In developing countries substantial declines in infant mortality have been credited to improved sanitation and nutrition, increased access to modern health care, and improved birth spacing through the use of contraception. In industrialized countries in which infant mortality rates were already low the increased availability of advanced medical technology for newborn—in particular, prematurely born—infants provides a partial explanation. Infanticide The deliberate killing of newborn infants has long been practiced in human societies. It seems to have been common in the ancient cultures of Greece, Rome, and China, and it was practiced in Europe until the 19th century. In many societies practicing infanticide, infants were not deemed to be fully human until they underwent a rite of initiation that took place

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from a few days to several years after birth, and therefore killing before such initiation was socially acceptable. The purposes of infanticide were various: With the development and spread of the means of effective fertility regulation, infanticide has come to be strongly disapproved in most societies, though it continues to be practiced in some isolated traditional cultures. Mortality among the elderly During the s and s in industrialized countries there were unexpectedly large declines in mortality among the elderly, resulting in larger-than-projected numbers of the very old. In the United States, for example, the so-called frail elderly group aged 85 years and older increased nearly fourfold between and , from , to 2., Given the high incidence of health problems among the very old, such increases have important implications for the organization and financing of health care. Marriage One of the main factors affecting fertility, and an important contributor to the fertility differences among societies in which conscious fertility control is uncommon, is defined by the patterns of marriage and marital disruption. In many societies in Asia and Africa, for example, marriage occurs soon after the sexual maturation of the woman, around age In contrast, delayed marriage has long been common in Europe , and in some European countries the average age of first marriage approaches 25 years. In the 20th century dramatic changes have taken place in the patterns of marital dissolution caused by widowhood and divorce. Widowhood has long been common in all societies, but the declines of mortality as discussed above have sharply reduced the effects of this source of marital dissolution on fertility. Meanwhile, divorce has been transformed from an uncommon exception to an experience terminating a large proportion sometimes more than a third of marriages in some countries. Taken together, these components of marriage patterns can account for the elimination of as little as 20 percent to as much as 50 percent of the potential reproductive years. Many Western countries have experienced significant increases in the numbers of cohabiting unmarried couples. In the s some 12 percent of all Swedish couples living together aged 16 to 70 were unmarried. When in the United States in the number of such arrangements approached 1,, the Bureau of the Census formulated a new statistical categoryâ€”POSSLQâ€”denoting persons of the opposite sex sharing living quarters. Extramarital fertility as a percentage of overall fertility accordingly has risen in many Western countries, accounting for one in five births in the United States, one in five in Denmark, and one in three in Sweden.

### Chapter 4 : Epidemiological transition - Wikipedia

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*group.*