4

Mortality

DURING the last three decades, as China has attacked one cause of death after another, the mortality level of the population has undergone a profound transformation. As in many other developing countries, China's mortality transition took place most spectacularly during the 1950's, with subsequent gains being more gradual and modest. Therefore, a careful look at mortality data for the 1950's should tell us much about the historic shift from China's traditional very high mortality to the relatively low mortality of today.

Mortality Change in the 1950's

Keeping in mind trends in China's health system during the 1950's, let us explore China's reported mortality data for that decade. Official and semiofficial sources have reported the national crude death rate estimates presented in Table 4.1. One Chinese source estimated the death rate before the founding of the PRC in October 1949 as around 28 per thousand population. An earlier official estimate was that "during the period of Kuomintang control, the population death rate [in China] was 25 for every thousand."[1] Because there was no nationwide vital registration system at that time, these estimates are probably based on a variety of surveys conducted in different localities during this century, such as those compiled in Table 4.2. But careful analysis has demonstrated that deaths in the farmers survey of 1929–31, for example, were seriously underreported—a crude death rate of 27 per thousand population calculated from the data as reported corresponded to an actual death rate estimated at over 40 per thousand.[2] Similarly, the other surveys in Table 4.2 probably also tended to undercount deaths; the surveys in four provinces in 1924–25, in Ding county 1931–36, and in Chenggong county 1940–44

TABLE 4.1
Reported Crude Death Rates in the PRC, 1949–57
(Deaths per 1,000 population)

	Source					
Year	(1)	(2)	(3)	(4)	(5)	(6)
1949					20.0	20.0
1950		18	18	18.0	18.0	18.0
1951					17.0	17.8
1952	18		17		17.0	17.0
1953	17				14.0	14.0
1954	13	14			13.2	13.2
1955	12.4				12.3	12.3
1956	11.4				11.4	11.4
1957	11.0	10.8	10.8	10.8	10.8	10.8

SOURCES: (1) Chandrasekhar (1959); (2) Zhu Zhengzhi (1980); (3) Liu Zheng (1980b; 1981a); (4) Ling (1981); (5) Zhang Huaiyu et al. (1981); (6) Statistical Yearbook of China 1983.
NOTE: Three of the sources provide estimates of China's death rate "prior to liberation"; Zhu Zhengzhi, "around 28"; Liu Zheng, "nearly 30"; and Ling, "about 25."

TABLE 4.2
Reported Crude Male and Female Birth and Death Rates in China, 1920's–1940's

Area and date	Crude birth rate	Crude death rate		Infant mortality rate	
		Males	Females	Males	Females
Four provinces, 1924–25	42.2	27.9		129.4	
Rural areas in 22 provinces, 1929–31					
All areas	38.3	26.7	27.6	160	152
North China	37.4	22.1	26.2	152	159
South China	39.0	31.0	28.9	166	147
Xiaoxi, Jiangyin county, Jiangsu, 1931–35	45.1	38.3	39.2	220.7	263.6
1931–32	48.3	44.0	41.4	184.8	223.8
1932–33	44.1	35.2	37.2	201.2	284.8
1933–34	40.0	49.3	55.0	378.5	402.4
1934–35	48.0	24.8	22.8	153.8	154.5
Ding county (Ting Hsien), Hebei					
1931	37.1	33.7		—	
1933	40.1	27.2		199.0	
1934	27.4	27.2		163.1	
1935	25.9	29.1		185.2	
1936	25.1	20.4		145.0	
1st Special Health Area, Beijing, 1920's–30's	19.9 (1926–31)	18.5 (1926–31)		138.6 (1934)	113.1 (1934)
Chenggong county, Yunnan, Feb. 1940–June 1944	24.9	26.3	23.1	212.1	211.1

SOURCE: King & Locke (1983): 378–79.
NOTE: Crude birth and death rates are per 1,000 population; infant mortality rates are per 1,000 live births. Figures centered in the male-female columns represent the combined rate for the two sexes.

all gave suspiciously low death rates, in contrast to the relatively complete death rates reported for Xiaoxi in 1931–35. The high and volatile death rates of this locality provide a more appropriate model for China's pre-1949 mortality level and pattern than any of the other surveys cited in Table 4.2. It is likely that the crude death rate was close to 40 per thousand population in 1930 and stayed that high or higher during most of the 1930's and 1940's, in part because of active warfare between Japan and China and between the Communist and Nationalist armies. It is fair to conclude that the last half of the 1940's may have witnessed some mortality gains where hostilities had subsided, but that no major improvement in China's mortality level would be expected by 1949. Several other scholars concur in this conclusion.[3] As of 1948–49, China's crude death rate was probably high, around 35 per thousand population or above. The death rates of 25–30 reported in Table 4.1 underestimate the mortality of the pre-1949 period, thereby also underestimating the great gains that have been made since that time.

Similarly, every crude death rate officially or semiofficially reported by the PRC for any year in the 1950's is likely to be far below the actual crude death rate at the time. China could not have achieved a crude death rate of 18 in 1950. Warfare had just ceased in many parts of the country and recovery from its ravages was just beginning. A tumultuous land-reform struggle was in progress, and public health work was barely launched. There was as yet no patriotic public health campaign. There were very few epidemic-control centers, maternal and child health stations, or specialized disease-prevention centers. There was a plague epidemic in 1950, plus high mortality from typhus, measles, scarlet fever, and dysentery, according to scattered hints in press reports. As of 1950 China had not begun to prevent or cure tuberculosis, diphtheria, malaria, kala-azar, typhoid, poliomyelitis, or parasitic diseases. The one big public health success in that year was a widespread smallpox vaccination campaign, which no doubt began to reduce mortality from smallpox. A crude death rate as low as 18 is a relatively advanced death rate by historical standards, yet mortality conditions in China were still backward in the first year after the Red Army victory. It is most likely that in the year 1950 the PRC had a crude death rate of about 30 per thousand population or above.

All other reported crude death rates for China in the 1950's are also far too low for conditions at the time. As another example, let us look closely at the year 1957. China reported that it had achieved in that year the very advanced death rate (for a developing country) of 10.8 per thousand, corresponding to an expectation of life at birth of 57 years.[4]

This is an unrealistic claim. Of course, the PRC made great strides in mortality reduction during the 1950's. As of 1957, the patriotic public health campaigns had reduced the level of filth and the number of disease-carrying pests. A large proportion of China's midwives had received instruction in modern midwifery. There were many epidemic-control stations monitoring infectious diseases and specialized centers attacking particular diseases. Smallpox was almost eradicated. Death rates from many infectious diseases—plague, typhus, syphilis, measles, scarlet fever, dysentery, and kala-azar—were far below their 1950 levels. Yet underlying health conditions in China remained poor. The populace was still afflicted with typhoid, tuberculosis, diphtheria, malaria, poliomyelitis, and many other infectious diseases with high cause-specific mortality. Contamination of water, soil, and food was also a problem. China in 1957 had over one-fifth of the world's people in its sphere of responsibility, yet it had a very tiny health budget, severe shortages of all kinds of pharmaceuticals, very little available curative medical care, a bare beginning on immunizing the rural populace, continuing occasional outbreaks of infectious disease, and a massive burden of parasitic diseases debilitating most of the population. This population might have achieved a crude death rate below 20 per thousand by 1957, but not nearly so low as the official death rate of 10.8.

What was the source of China's reported crude death rates for the years 1950 through 1957? China began setting up a vital registration system after 1954. The regulations for reporting of births and deaths were promulgated in 1955. But it appears that the vital registration system never attained nationwide coverage during the 1950's. If the system of death registration was used as a basis for any of the estimated death rates for 1955 through 1957, the rates were derived from only those localities that had set up the system, which would tend to be more advanced or more urbanized locations.

It is likely that the reported death rates are based on sample surveys for some years. China took several surveys of vital rates during 1951–54. One major survey was the source of the reported crude death rate of 17 for 1951 and 1952. This was an unrepresentative survey based on a population of 30 million people, a disproportionate number of whom lived in cities and towns.[5]

Let us review the figures. The reported 1949 and 1950 death rates are obviously unsubstantiated estimates, since there were no data for those years except perhaps in a few cities. The death rates reported for 1951 and 1952 are based on the skewed survey just described. The figures for 1955–57 are probably based on an incomplete registration system biased toward urban and advanced rural areas. All of these were affected by significant underreporting or underregistration of deaths.

Estimates of infant mortality for the 1950's and before were also too low. During the 1950's three Chinese sources estimated that before 1949 or "during the period of Guomindang control" the national infant mortality rate was approximately 200 deaths in the first year of life per thousand live births.[6] Two Soviet publications in 1958 claimed that China's 1955 infant mortality rate was down to 74.3 deaths per thousand live births.[7] China's Minister of Public Health reported an infant mortality rate of 77 for 1956, and the *Chinese Journal of Pediatrics* reported a rate of approximately 70 for about 1958.[8] Similar claims for the 1950's are still being released; for instance, a 1981 paper reported that in 1957 China had an infant mortality rate of 71.[9] The basis for these claims is unknown.

Complete reporting of infant mortality, in China and everywhere else, is usually very hard to achieve. For instance, pre-1949 infant mortality rates shown in Table 4.2 appear in most cases to be unrealistically low. The Princeton reanalysis of Chinese farmers survey data from 1929–31 indicated that almost half of the infant deaths were unreported and estimated the infant mortality rate at about 300, rather than the much lower reported rates of 160 for males and 152 for females.[10] Because these data were from rural farm families only, it is possible that other groups in the population such as city dwellers had lower infant mortality, and that the national infant mortality rate for 1929–31 was below 300. Given the lack of significant improvement in conditions that affect infant mortality during the 1930's and 1940's, it is unlikely that China attained an infant mortality rate of 200 before 1949.

There is no doubt that China made great progress in the reduction of infant mortality during the 1950's. Training midwives probably had the greatest impact in reducing neonatal tetanus and other infections associated with non-sterile childbirth conditions. Relatively stable nutritional conditions for mothers during the mid-1950's probably helped them in nursing their babies, almost all of whom were breastfed. The emphasis on environmental sanitation and control of pests beginning in 1952 no doubt reduced the incidence of fatal diseases among infants. Epidemic-control measures were also instrumental in lowering infant mortality.

But as of the late 1950's there were still many conditions that contributed to high infant mortality. Almost all births in the country were at home rather than in hospitals or clinics, except in advanced urban areas. Midwives could handle a normal birth but had essentially no emergency backup in cases of complications, which usually affect 5–10 percent of all births. For example, almost everywhere it was impossible to carry out a cesarean section or provide oxygen or blood transfusions to mothers and infants in distress during childbirth. If a woman could not properly nurse her baby, there was little or no safe infant formula. Respiratory and intestinal diseases continued to be serious problems for infants. Many contagious diseases continued to cause infant death, especially in rural areas. For example, pneumonia epidemics in 1953 and 1958 raised fatality rates among infants in northern China.[11] Under these conditions, it is very unlikely that China could have achieved the officially estimated infant mortality rates of 70–77 for the years 1955–58.

Somewhat more realistic infant mortality rates were reported from a peasant household survey taken in 1954 and 1955. For rural areas, the survey derived an infant mortality rate of 138.52 for 1954 and 109.66 for 1955. The 1954 figure was based on results from fourteen provinces and the 1955 figure on 24 provinces, but the report cautioned that "in both cases registration is incomplete."[12] The actual rural infant mortality rate was probably considerably higher. Similarly, urban areas underreported their infant mortality during the 1950's. Nine cities already recorded relatively low infant mortality rates in the range of 44–87 for the year 1952, declining to 25–44 in 1956. China estimated overall urban infant mortality rates of 47 for 1954 and 32 in 1957. Considering the health problems that continued to affect even urban areas in China, these estimates are probably too low.

It is clear, nevertheless, that the PRC attained very rapid mortality decline during the 1950's. It is probable that the pre-1949 crude death rate and infant mortality rate were approximately halved by 1957. This is a monumental achievement for such a huge population. China was similar to most other developing countries during the 1950's in that it achieved significant mortality control through cheap public health measures, but the reduction of mortality in the PRC was steeper and more far-reaching than in most other countries, in part because China started with a worse mortality situation.

How can we explain this extraordinary mortality decline? First, the cessation of warfare and the maintenance of public order were powerful factors. For almost a century the Chinese had been victimized by foreign invasion, civil war, feuds between local warlords and clans, and constant banditry. These calamities, which caused catastrophic mortality, largely ended with the establishment of the PRC.

Second, the redistribution of agricultural land and the gradual nationalization of business and commercial assets during the 1950's greatly diminished the extremes of wealth and poverty in China. Though the average per capita wealth and income were not much increased by 1957, China's national income was more evenly distributed than ever before. Therefore, the poorest part of the population had a better chance to provide for their own basic subsistence needs than before the 1950's. This

TABLE 4.3
Reported Crude Death Rates in the PRC, 1957–83
(Deaths per 1,000 population)

Year	Sources (1)	Sources (2)	Year	Sources (1)	Sources (2)
1957	10.80	10.80	1973[b]	7.08	7.04
1958	11.98	11.98	1974[b]	7.38	7.34
1959	14.50	14.59[a]	1975[b]	7.36	7.32
1960	25.43	25.43	1976	7.29	7.25
1961	14.38	14.24	1977	6.91	6.87
1962	10.08	10.02	1978	6.29	6.25
1963	10.10	10.04			6.27[c]
1964	11.56	11.50	1979	6.20	6.21
1965	9.55	9.50			6.29[d]
1966	8.87	8.83			6.24[e]
1967	8.47	8.43	1980	—	6.2[f]
1968	8.25	8.21			6.34[g]
1969	8.06	8.03	1981	—	6.36[h]
1970	7.64	7.60	1982	—	6.60[i]
1971	7.34	7.32	1983	—	7.08[j]
1972	7.65	7.61			

SOURCES: (1) Zhang Huaiyu et al. (1981): 83; (2) Statistical Yearbook of China 1983 (1983): 105, except as noted.
[a]Also Tian Xueyuan (1981): 39, 41.
[b]7.30 for the 3-year period 1973–75, according to unadjusted survey data in Banister & Preston (1981a): 99.
[c]Wu Zhongguan et al. (1980): 28.
[d]"In the Coming Years China's Population Should Not Have Negative Growth," GMRB, 13 Apr. 1980: 3.
[e]Li Chengrui (1982a): 15–16.
[f]"From 36 to 68," BR 24, no. 27 (6 July 1981): 4.
[g]Li Muzhen (1982): 3.
[h]Also Communique on 1982 Census: K3.
[i]Also Statistical Abstract of China 1983 (1983): 13.
[j]Communique on 1983 Economic Plan (1984): K14.

change alone surely had a major impact on the mortality of China's poorest people.

Third, the government set up a system of state purchase, storage, and distribution of grain. During the period 1950–57, whenever local areas experienced crop failures but national grain production was adequate, the government reportedly tried to move grain to the affected areas. Given the abysmal state of China's transportation, communication, and food-storage systems, it was and still is probably impossible for the government to make up for all local shortfalls by moving grain. Even so, the distribution of food grain as part of China's disaster relief program in the 1950's helped to minimize local famine mortality.

Fourth, preventive public health measures resulted in rapid reduction

in mortality from infectious diseases and filth. The PRC, therefore, achieved very rapid mortality decline through cessation of warfare, maintenance of public order, redistribution of agricultural land, movement of grain to deficit areas, and a massive preventive public health system. Unfortunately, these successes could not guarantee that mortality would not rise again. After 1957 China entered the Great Leap Forward, which was accompanied by a dramatic and temporary reversal of its earlier mortality decline.

What happened to China's mortality level during this period of food shortages and diminished public health work? Official mortality data, presented in Table 4.3, show a slight rise in the crude death rate in 1958, a somewhat sharper increase in 1959, a sudden peak famine death rate of 25.4 per thousand population in 1960, recovery in 1961 back to the 1959 level, and full recovery from the famine in 1962. We do not have province-by-province data, but some provinces were much harder hit than others, for example Gansu, which recorded a peak death rate of 41 per thousand population in 1960.[13]

Assuming that without the Great Leap Forward's policies and experiences China would have maintained its claimed 1957 death rate of 10.8 during the years 1958–61, the official data imply that those four years saw 15 million excess deaths attributable to the Great Leap Forward in combination with poor weather conditions. The computer reconstruction of China's population trends utilized in this book, which assumes underreporting of deaths in 1957 as well as in all the famine years, results in an estimated 30 million excess deaths during 1958–61.

The official figures may actually underestimate China's mortality during the crisis years. At that time the death registration system was inadequate to record all deaths even in ordinary years. But during a famine, vital registration systems have a tendency to be neglected. Deaths among a destitute population engaged in a fight for survival are not likely to be properly registered.

Post-Famine Mortality

Once the famine was over, health conditions and mortality returned to previous levels within a couple of years, according to official mortality data and according to the adjusted mortality estimates given in this book. Since then mortality has stayed relatively low and improvements in health have been impressive. Table 4.3 lists the PRC's reported crude death rates since the 1950's, and Table 4.4 gives the reported or estimated expectation of life at birth for some years. The most problematic rates in this

TABLE 4.4
Reported Male and Female Life Expectancy, 1957–81
(In years)

Year	Total	Males	Females
1957	57[a]	—	—
1973–75	(65.81–66.20)[b]	63.62[c]	66.31[c]
1975	68.25[d]	67.17[e]	69.32[e]
1978	68.28[f]	66.95[f]	69.55[f]
1979	Over 70[g]	68[h]	70[h]
1981	67.88[i]	66.43[i]	69.35[i]

SOURCES:
[a]Liu Zheng (1980b): 2.
[b]Life tables calculated by Judith Banister, Victoria Ho, and Frank Hobbs based on Cancer Epidemiology Survey data.
[c]Rong et al. (1981): 25–26. [d]Song & Li (1980): 63.
[e]Liaoning Provincial Statistical System (1982): 75.
[f]Liaoning Provincial Statistical System (1982): 75; also Ling (1981): 128, 131, and "Woguo renkou pingjun shoming yanchang" (The life expectancy of China's population has been prolonged), JFRB, 15 Feb. 1981: 2.
[g]Zhu Zhengzhi (1980); also "Average Life Expectancy Passes 70 Years in China," JPRS 76642 (17 Oct. 1980): 48.
[h]"Measures to Improve Population Quality Outlined," JPRS 77665 (25 Mar. 1981): 4.
[i]Jiang, Zhang & Zhu (1984): 15–17.

series are the reported death rates of 10 per thousand for 1962 and 1963. As the year 1961 was reportedly a bad crop year and followed two other poor crop years, people were still starving or malnourished and vulnerable to disease throughout 1961 and at least until the first crops of 1962 were harvested. This implies excessive mortality in the first half of 1962, with considerable improvement in the last half of the year. The proposition that malnutrition was still serious in 1962 is supported by a local study in Jiangxi province that measured indices of chronic and acute malnutrition among children in March 1962. The study team documented a significant reduction in the proportion of malnourished children between March 1962 and March 1964.[14] Though the official death rates of 10 per thousand population for 1962 and 1963 are probably too low in absolute terms, the concept of a two-year trough in the death rate after a famine is consistent with experience elsewhere, because the most vulnerable members of the population had already died in the famine. It is reasonable to assume that there was some mortality improvement between 1962 and 1963, though the official death rates do not indicate any. The official death rate for 1964 of 11.6 is a more reasonable level for the time than the reported 1962 and 1963 death rates. It is possible that death registration in the areas where the system worked was conscientiously improved just before 1964 so that in 1964 for the first time there was relatively complete reporting of deaths. A more plausible explanation is that the official 1964 death rate comes not from the weak death registration system but from 1964 census data. The census asked a question on deaths in the first half of 1964, from which an annual death rate for 1964 could be extrapolated.[15]

After 1965 the political system dissolved into the chaos known as the Cultural Revolution, and the statistical record-keeping and reporting system was again under attack, as it had been during the Great Leap Forward. It is likely that some provinces did not compile and report province-wide demographic data for the years 1966 through 1969 or so; therefore, any numbers now reported as the official death rates for those years may be educated guesses based on incomplete data. The neatly and gradually declining death rates after 1965 may represent no more than the national government's interpolation of death rates between the beginning and end of the Cultural Revolution. These official death rates are probably lower than the true death rates, and there is no guarantee that even the hypothesized trend is correct. It is just as possible that mortality either rose temporarily and then returned to the 1965 level or remained approximately steady for most of the Cultural Revolution. The number of excess deaths directly attributable to persecution, atrocities, mass murders, and armed conflicts during those years has been estimated from a minimum of 34,300 deaths, blamed personally on the top leaders, to an upper estimate of 400,000 excess deaths nationwide, including 67,000 in Guangxi province alone and 40,000 in Guangdong province alone.[16] Even the larger number, though horrifying, would not noticeably increase the crude death rate for those four years, because China's huge population already had 7 or 8 million deaths a year without the added atrocities. If the crude death rate rose during 1966–69, it would have to be attributed to indirect effects of administrative breakdown, such as neglected public health and epidemic work, disruption of curative medical care, and the spread of disease by young people traveling around the country.

Starting around 1969 or 1970, the first beneficial effects of the massive deployment of barefoot doctors in rural areas should have been evident in conditions affecting rural mortality. The rapid spread of the cooperative medical system must have regularized access to simple primary medical care for most of China's people. Once this medical system was functioning by around 1971 or 1972, a rise in life expectancy and decline in death rate would be expected. It is therefore reasonable to suppose that China's death rate, which probably stayed at or above 10 per thousand population throughout the 1960's, dipped and stayed below about 10 from the early 1970's on.

In all years prior to 1973–75 the PRC's data on crude death rates, infant mortality rates, expectation of life at birth, and causes of death were

nonexistent, useless, or, at best, underestimates of actual mortality. But finally, China conducted what is perhaps the largest mortality survey ever taken anywhere, and derived imperfect but usable statistics on mortality for the survey reference years 1973–75.

China's Mortality Level, 1973–75

In 1980, for the first time, age-specific mortality data became available from China's Cancer Epidemiology Survey, a nationwide survey of deaths by age and causes of deaths. The collected data as reported are shown in Table 4.5.[17] The primary purpose of this survey was to determine causes of death throughout China, with an emphasis on cancer mortality. The survey was conducted by health personnel. The data on China's 1976 age structure, shown in the second column of Table 4.5, were taken from household registration lists and were to be verified by household surveys of approximately 10 percent of the 842 million "study population," then extrapolated to the whole study population. In contrast, the age-specific death data presented in the fourth column apparently came from a 100 percent sample of all the deaths detected in the whole study population for three successive years, in most cases 1973, 1974, and 1975.[18] This means that survey personnel filled out a cause-of-death card for each of the 18.4 million deaths in an unprecedented attempt to discover China's age pattern of mortality and exact ranking of the major causes of death.

For each production brigade in rural areas and each residential committee in urban areas, survey workers searched permanent population registration records and, where available, any records of who died during 1973–75. They inquired about additional unregistered deaths in some places, and they were required to document in the survey at least as many deaths as had been reported by the local unit for each of the three years. For each death, survey workers attempted to record the name of the deceased, sex, dates of birth and death, age at death, major illness prior to death, cause of death, and basis of the diagnosis. Because most of this information was not written down in easily usable form in rural areas, survey workers called meetings of local officials, health workers, and knowledgeable village elders to help fill in some of the details. Then they visited the family of the deceased, if the cause-of-death card was not already complete, to get further information that might help pin down the cause of death. The work went on in most provinces throughout 1976, but a few provinces did not complete the work for several years. Death data from those provinces might refer to 1974–76 or 1975–77, but these data were simply lumped with data from 1973–75 to produce the death totals by age listed in Table 4.5.

TABLE 4.5
Age-Specific Death Rates for China, 1973–75, from the Cancer Epidemiology Survey

Age group	Study population: Number (thousands)	Study population: Percent of population	Average annual deaths (thousands)	Death rate (per thousand)
0–4	104,413	12.41%	1,422	13.62
5–9	113,808	13.52	251	2.21
10–14	103,941	12.35	95	0.92
15–19	78,425	9.32	81	1.03
20–24	77,000	9.15	112	1.45
25–29	63,154	7.50	104	1.65
30–34	50,067	5.95	102	2.04
35–39	46,595	5.54	133	2.85
40–44	42,981	5.11	168	3.91
45–49	38,390	4.56	221	5.76
50–54	32,896	3.91	291	8.85
55–59	27,610	3.28	375	13.58
60–64	23,285	2.77	512	21.99
65–69	16,936	2.01	559	33.01
70–74	11,739	1.39	653	55.63
75–79	6,444	0.77	485	75.26
80±	3,986	0.47	579	145.26
TOTAL	841,670	100.01%	6,143	7.30

SOURCE: Frederick P. Li (1980).
NOTE: The survey covered 842 million of a total population of 900 million at the midpoint of the survey reference years 1973–75.

These data were intended to provide nationwide figures for causes of death and age-specific mortality. Indeed, a major attempt was made to include information from at least some part of every county or county-level unit in China. This goal was achieved, except for about 35 counties in Tibet and Sichuan.[19] Even so, the survey's data probably were not fully representative of the PRC's total population. The "study population" comprised 841.67 million persons estimated (for most provinces) at the midpoint of the period 1973–75. This study population was 93 percent of a midyear 1974 population total of just over 900 million persons. The study apparently excluded military personnel and their dependents, nomads, people in inaccessible areas of the country, members of some minority groups, and people in the poorest and least developed localities where death registration was probably weak.[20] It is likely that mortality conditions were on average considerably worse among the excluded 7 percent than among the included 93 percent.

A life table is a tool for understanding the mortality experience of a large group from birth until all have died, showing the ages at which they died. It is often based on age-at-death data from one point in time, and so