CHAPTER TEN

Regional Inequality in China: Mortality and Health

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This chapter reviews the history of health improvement in contemporary China within a global context and uses census data to examine its regional variation in the postsocialist era. One of the most remarkable achievements for China over the past 50 years has been a dramatic increase in life expectancy. At the turn of the twenty-first century, a child born in China is expected to live almost twice as long as one born in 1949. The chapter focuses on two questions: How does regional mortality inequality in China compare to mortality inequality across the world? And what accounts for the current patterns? Because it is often assumed that economic growth improves life expectancy, I shall pay special attention to distinguishing the impact of macroeconomic development from the consequences of local ecology, education and cultural factors, and quality of public health programs.

RISING LIFE EXPECTANCY AND PERSISTING REGIONAL INEQUALITY

China's mortality transition since 1949 can be subdivided into three stages: (1) the dramatic increase of life expectancy in the 1950s brought by massive public health campaigns emphasizing sanitation and inoculation; (2) the consolidation in the 1960s and 1970s brought by the expansion of a cooperative medical care network to almost every village in China; and (3) modest gains during the postsocialist decades associated with economic growth and improved health care facilities. Across these several decades, mortality outcomes varied by region; for example, urban residents enjoyed greater gains than rural residents. Nevertheless, mortality reductions during the socialist era were praised as relatively egalitarian. In the postsocialist era, however, there is concern that marketization may have reversed the relatively egalitarian outcomes in health care of the socialist era. We now look more closely at change over time.

Rising Life Expectancy in China and Postsocialist Reforms

The success of China's mortality reduction is illustrated in Figure 10.1, in which I compare trends in female life expectancy (e_0^f) in China, India, and

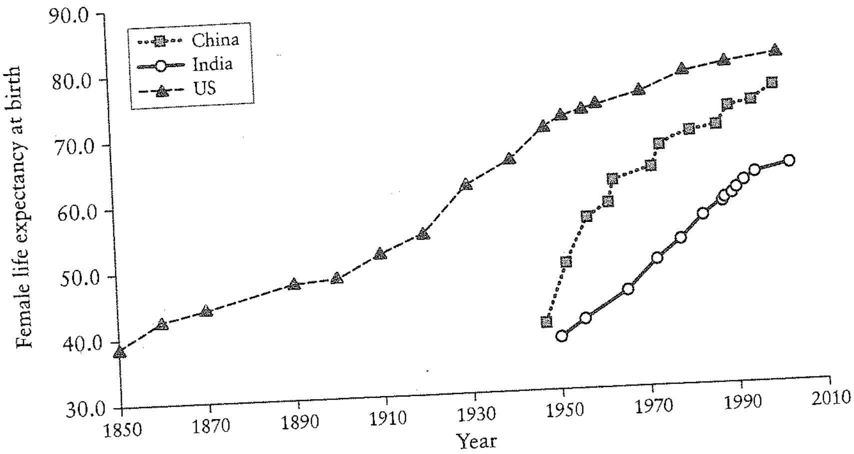

Figure 10.1. Female life expectancies at birth in China, India, and the United States, selected years

SOURCES: China: Huang and Liu 1995; National Bureau of Statistics 1996, 2004a. India and United States: UN 1997, 2002. When the life expectancy is calculated for a period of time, we choose the central year to graph.

the United States. The United States represents the developed world. India is often regarded as a good comparison for China because of the similarities in size, history, and social diversity. In the United States, e_0^f gradually increased from about 40 years in 1850 to about 70 years in 1950 and close to 80 years in 2000. Until 1950, e_0^f for India and China stood at the level that the United States had achieved by the middle of the nineteenth century. Over the next 50 years, however, China in particular quickly closed the gap. By the year 2000, e_0^f in China was a mere five years lower than that in the United States. Thus a mortality transition that took one century in the United States, occurred in China in only four decades. Similarly, it took India only four decades to increase its life expectancy from around 40 to 60 years—gains that took the United States 80 years.

With the risk of oversimplification, there are two general models of mortality decline. Mortality decline in developed countries was gradual and driven by rising standards of living, improvements in public health, and advances in medicine. By contrast, mortality decline in developing countries is often the result of aggressive public health efforts (Davis 1956; Preston 1977). Mortality rates declined more quickly in developing countries than they had in earlier decades in the developed countries due to the benefits from diffusions of knowledge and technology in health care that had already proven effective in the developed countries.

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The gains at relatively low levels of per capita income make China an extreme example of the developing country model of mortality decline (Livi-Bacci 1997). Before its economic reforms in the 1980s, China was among the poorest countries in the world, but it ranked near middle-income nations in terms of population life expectancy. The key to this outcome was the government's efforts on public health featured with emphases on simple, preventative measures and broad access to primary care, which were made possible by an egalitarian ideology, a powerful hierarchical delivering system, and well-organized grass-roots campaigns (Banister 1987; Jamison et al. 1984; Johnstone and McConnan 1995; Salaff 1973).

The experience of China in recent years is also distinctive. China's health care system has undergone dramatic changes in its postsocialist era. The market reforms and resulting economic growth have provided the economic foundation and the incentives to further expand China's health care system. For example, the total expenditure on health care increased fifty-fold from 11 billion yuan (3.06 percent of GDP) in 1978 to 568 billion yuan (5.42 percent of GDP) in 2002 (MoH 2004).[1] The number of physicians per 1,000 population increased almost 60 percent from 1.08 in 1978 to 1.69 in 2001 (MoH 2004). There were also dramatic increases in hospital beds, medical equipment, and other health care facilities in the same period. In short, the market reform greatly expanded the supply of medical resources. In contrast to the economic transitions in the former Soviet Union, China's market reforms have not precipitated a decline in life expectancy. In fact, there have been moderate gains. Life expectancy at birth increased from 67.7 years in 1981 to 70.1 in 1989–1990 and to 72.3 in 2000. Infant mortality declined from 37.7/1000 births in 1981, to 27.3 in 1989–1990, and to 26.3 in 2000 (NBS 2004).

However, simultaneous with the gains in population life expectancy, we also see some major negative consequences from the reform (Lim et al. 2004; Ooi 2005), such as the deterioration of endemic disease controls in some regions, the return of many sexually transmitted diseases, and the emergence of new problems, such as HIV/AIDS, SARS, and the bird flu. Because China's postsocialist reforms have increased economic inequalities and produced new forms of poverty, a question that naturally follows is, regardless of gains for the population as a whole in terms of average mortality rates, do we also see new inequalities within these outcomes or new determinants of mortality among different segments of the population?

Most notably, the reform shifted the burden of health care from the state to individuals. The contribution from individuals to the total health expenditure increased from a little over 20 percent in the late 1970s to close to 60 percent by 2000 (MoH 2004). In urban areas, the reform repealed the universal health care coverage and replaced it with market-based health insurance programs, which covered no more than 50 percent of the urban residents. In rural areas, the reform bankrupted the cooperative medical system, which had covered about 90 percent of China's rural population. A recent report by the State Council (DRCSC 2005) named the declines in equal access to medical care and deterioration of the health care system's macroperformance as the two most prominent challenges to China's health care reform. The same state council report rated China's reform of its medical and health care system "basically unsuccessful"[2] and called for new directions for the reform. Among WHO's 191 members, China ranked 141 for its health system's overall performance, and ranked 188 in terms of "fairness of financial contribution to health systems" (WHO 2000). This was a startling reversal given China's reputation for equal health care access in its socialist years.

How does the reform affect the regional inequality of health? We would expect a (re)strengthening of the association between economic development and health conditions, as the socialist system is replaced by a market-based system. We would also expect rising regional economic inequality to contribute to regional health disparity: People in coastal areas benefited more from the economic growth than those in the hinterland, not only due to the different paces in economic development, but also due to the migration of people with skills and knowledge, such as doctors, from less-developed to more-developed areas. Economic development also leaves the most dangerous jobs in the poor regions and shifts pollution-heavy industries to less-developed areas. There is indeed a great concern and public outcry over inequality in health care access, amplified by the sensational news stories such as those about hospitals that let patients who can't afford an operation bleed to death.[3] Next, we use mortality census data to examine the hypothesis that along with economic stratification, there is a widening health gap between poor and rich regions across China.

Persisting Regional Inequality

Mortality data from China's three most recent censuses provide a basis to assess the change of regional health inequality in the last two decades of the twentieth century. The 1982 census data represent a good approximation of conditions in prereform socialist China. The 1990 census data provide a midterm snapshot of the reforms, when market economic reforms were well established, but the dramatic health care reform had yet to be fully implemented. The 2000 census data reflect the dramatic social and economic reforms carried out in the 1980s and 1990s. Comparing regional patterns of life expectancy variation by these three census dates therefore provides strong data to assess the general trend of mortality change.

A comparison of regional life expectancy across China's provinces reveals persistent regional inequality.[4] According to the 1982 census, provincial life expectancies cover a range of 12.3 years with a high of 73.0 years for Shanghai to a low of 60.7 in Xinjiang. No data were available for Tibet. By 1990, the interprovincial range, including Tibet, increased to 14.7 years, with Shanghai at 75.5 and Tibet at 60.8. The 2000 census reports a range of 13.2 years, with Shanghai at 79.2 and Tibet at 66.0. However, such broad provincial comparisons might obscure important patterns because Chinese provinces are often as large and as diverse as many countries in terms of both population and geography.

To document the true range of geographic inequality, I now turn to county-level data.[5] There are several advantages of using the county as the primary study unit. First, counties are directly responsible for implementing social policies and thus capture variation in government efforts. Second, as the basic administrative units for more than 2,000 years, counties provide a basic social identity for Chinese. Third, county-level units in China have populations adequately large to calculate stable mortality parameters, such as infant mortality rate and life expectancy.

There are 2,378 county-level units in the 1982 census data. Excluding counties that reported no infant deaths, the reported infant mortality rates in 1982 range from as low as 6 per thousand (Langfang City in Hebei Province) to as high as 319 per thousand (Dacaidan in Qinghai Province). This wide range clearly indicates the large regional inequality across China in infant mortality. However, the extremely low infant mortality rates also signal potential data problems. For example, an infant mortality of 6 per thousand, which is roughly the level in the United States in 2005, is too low to be true for a Chinese county in 1982. Nevertheless, careful demographic examinations suggest the overall high quality of the 1982 census (Coale 1984; Banister and Hill 2004), and we therefore assume that problems in the data are mostly random.

International experience suggests that economic development, measured by GDP per capita, is one of the best predictors of mortality level. For example, there is a well-observed relationship between economic development and infant mortality (linear if both GDP per capita and infant mortality rate are log transformed). Using data published in the United Nations *Human Development Report* of 2005 from 172 countries and regions, in log scale, economic development explains about 77 percent of the variation in the infant mortality rate. In original scale, a one percent increase in per capita GDP is associated with an approximately 0.6 percent decrease in infant mortality.

However, the 1982 China data offer only limited support of such a linear relationship; the correlation between these two log-transformed measures at county level is merely −0.3: that is, logged economic development only explains about 14 percent of the variation in logged infant mortality, not 77 percent as observed with the international data. This relatively low correlation for the 1982 outcomes supports the disassociation between economic development and mortality reduction during the Mao era and suggests that the most important factor shaping differential mortality outcomes in that era was not the level of economic development.

To find out how the reform changes the landscape of regional mortality inequality in China, the same analysis as that for 1982 is repeated using data from 2000. To facilitate comparison, I exclude Tibet from the 2000 data because there were no data for Tibet in 1982. I also make the same assumption about measurement errors in infant mortality rates.

The range of reported infant mortality rates in 2000, from 0 to 245 per thousand, is smaller than what we saw in 1982, but is still a very large range: The high end of infant mortality shows that infant mortality in some counties in China was still at a predemographic transition level in 2000. This is a rather shocking reality of regional inequality in China: There are areas that have been left far behind.

What is more important is a restrengthened connection between economic development level and infant mortality. In 2000, the correlation between log transformed per capita GDP and infant mortality was –.59, that is, the economic development alone explains 35 percent of the variation in infant mortality. This relationship is still not as strong as seen in the international comparison; nevertheless, it is a dramatic increase from 1982. Moreover, the 2000 data suggests that 1 percent increase in the GDP per capita is associated with .66 percent decline in infant mortality, very similar to the value from the international comparison.

The comparison of infant mortality data at the county level between the 1982 and 2000 censuses clearly documents an important change and suggests that postsocialist reforms have indeed impacted differential mortality. During the socialist era, the association between mortality and economic development was dampened by government efforts to extend the primary health care network and strengthen infectious disease control. With the weakening of the public health system during the postsocialist era, economic development plays a more prominent role in shaping the map of regional health inequality in China.

EXPLAINING HEALTH INEQUALITY IN 2000

To provide a comprehensive picture of local health conditions, I next examine life expectancy at birth (e_0), which is an age-standardized comprehensive measure of mortality of general population.

Using the population age structure and death data from the 2000 census, Cai (2005) constructed life tables for 2,367 county-level administrative units that matched with a GIS base map (NBS 2003).[6] Two more sets of life tables are constructed, one based on Brass Logit Model, which adjusts age-specific mortality estimates assuming a linear relationship in mortality across age in logit scale, and the other using empirical Bayesian estimates, which assume spatial contiguity. There is very good consistency across these three sets of estimates. The fact that these three sets of estimates are based on totally different aspects of mortality reporting but produce similar results alleviates the major concerns on data quality. We use the estimates based on Brass Logit Model, which smoothes out some irregularities in mortality reporting.

Life expectancies at birth at the county level in 2000 display larger variation than those at the provincial level. Life expectancies for Chinese county-level units in 2000 range from a low of 46.0 to a high of 80.8, roughly equivalent to the range between Niger (46.0) and Japan (81.6) (UNDP 2004): the gap between the richest, most developed parts of China and the poorest parts of China is almost as large as the gap between the richest and the poorest nations in the world.

County-level life expectancies are mapped in Figure 10.2, with darker gray indicating a higher life expectancy. Provincial boundaries are shown

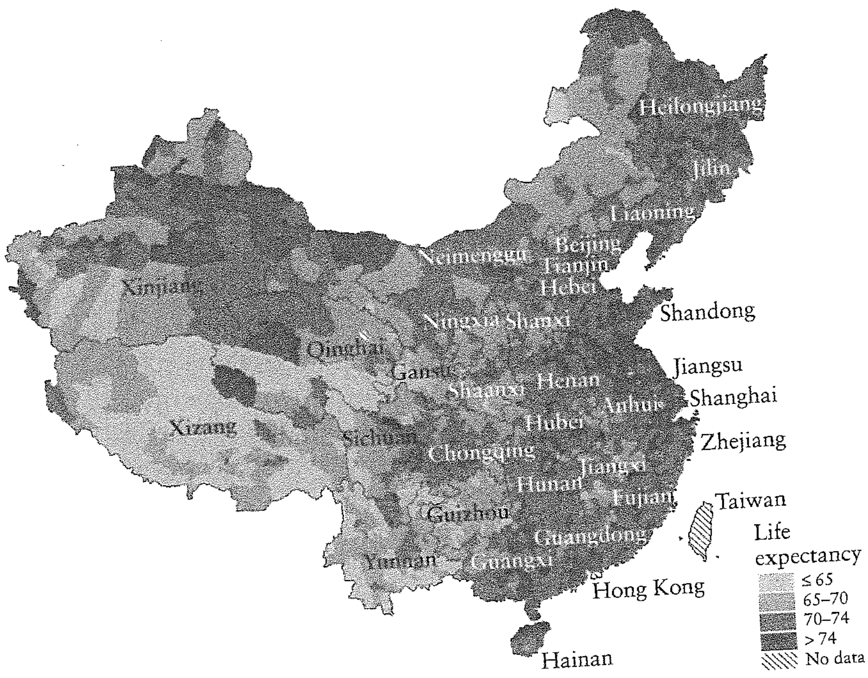

Figure 10.2. Life expectancy at birth, China 2000

for reference. Even with these simplified categories, one observes large variations and distinctive clusters both within and between provinces. Another major feature of regional mortality variation is the obvious division between east and west along a southwest-northeast line that runs across China through Guangxi, Hunan, Hubei, Henan, and Hebei Provinces, then turns farther northeast following largely the boundary of Inner Mongolia. East of this line, the life expectancy exceeds 70 years with the exception of a group of counties in Jiangxi province. West of this line, life expectancy is predominantly below 70 years with the exception of the Sichuan Basin and the northern half of Xinjiang.

What we see in Figure 10.2 is a startling indication of high regional health inequality generally consistent with the regional economic inequality. While coastal areas tend to have high life expectancies, the hinterland, particularly those counties in the southwest bordering areas, tend to have the lowest life expectancy in the country. The areas of high life expectancy in the hinterlands are also the cores of regional economies such as the Sichuan Basin, Weihe Valley, and the areas around Urumqi.

Health of a population is the outcome of a complex set of factors and processes. Among many, general economic development is often regarded as one of the most important, as we saw in the analysis of infant mortality. Urbanization also played an important role in the history of mortality transition (Wood 1985). Although in early stages of industrialization, urban settings were more prone to disease due to high population density and sanitation problems, over time better urban planning and environmental control provided health benefits to residents. In China, there is also a strong bias in favor of urban residents as a legacy of the harsh rural-urban divide of the socialist era.

In addition to the economic factors, specific public health efforts reduce the exposure to diseases, and cultural factors mediate a general strategy of disease management (Johansson and Mosk 1987; Caldwell 1990; Riley 2001). We have seen the importance of public health efforts in China's mortality transition. It is also well-known that education has positive effects on health and mortality reduction, particularly the effects of mother's education on their children's mortality (Caldwell 1986, 1990; Cleland and Ginneken 1988). Cultural identifiers such as ethnicity stand for a set of values and practices that may have an important effect on health but may not be otherwise directly measured (Caldwell 1986, 1990). For example, Chinese and Malays have rather different mortality patterns during infancy (in Malaysia: DaVanzo, Butz, and Habicht 1983) and in old age (in Singapore: Goldman 1980). Lee and Wang (1999) argue that a proactive mortality-control culture is one factor that contributed to the quick mortality reduction in China.

As China completes its epidemiological transition, moving from infectious diseases to degenerative diseases (He et al. 2005), how does this range of factors explain the regional mortality variations identified above? To answer this question, I use regression models. Because counties neighboring each other are likely to be correlated, I use a spatial regression model that provides control for spatial correlation structure (Haining 1990). Fourteen explanatory variables are grouped into four categories: (1) ecological variables, (2) general economic development indictors, (3) education and cultural factors, and (4) public health–related indicators. I include four ecological variables to control for possible large-scale effects, as suggested by the map of life expectancy in Figure 10.2.[7] Three general economic measures are GDP per capita, percentage of urban population, and percentage of population age 15 and above employed at the time of the census. Log transformed is used to capture GDP per capita's curve-linear effects on mortality. Also included in the model is a variable measuring population's sex composition to control for the well-known gap between male and female life expectancy. The two education and cultural variables are the average years of school and ethnicity. Public health–related variables include the proportion of people working in the health care industry, and percentages of households having lavatory, tap water, and bath facilities.

Definitions and descriptive statistics of these variables are presented in Table 10.1. Please note that the mean and standard deviation of each vari-

TABLE 10.1
Variable definition and summary statistics

Variable Name	*Definition*	*Mean*	*Std*
Life expectancy	life expectancy at birth of both male and female	71.5	3.8
Latitude	latitude of county centroid	33.0	6.6
Longitude	longitude of county centroid	111.2	9.5
Elevation	average elevation	853.1	1,098.6
Terrain	standard deviation of elevation	200.2	210.8
Sex composition	percentage of male population	51.7	1.1
GDP	GDP per capita (1,000 Yuan, log transformed)	1.5	0.7
Urbanization	percentage of urban population	28.9	23.5
Employment	percentage employed (age 15 and above)	24.1	8.9
Education	average years of school	7.1	1.4
Ethnicity	percentage of non-Han minorities	18.6	31.1
Health care	health care workers (per 1000 population)	5.4	2.9
Water	percentage of households having tapwater	40.1	28.2
Lavatory	percentage of households having lavatory	65.5	28.4
Bath facility	percentage of households having bath facility	19.3	19.9

SOURCES: Census data are from the 2000 *China County Population and Socioeconomic Indicators with County Maps*, distributed by University of Michigan China Data Center. Geographic variables are based on the U.S. Geological Survey's digital elevation model.

able are calculated using the county-level unit as the unit of analysis, thus those numbers are not the same as the reported national statistics (weighted by population size). Bivariate analysis (not shown here) between life expectancy and these 14 predictors reveal the generally expected correlations. Most of these predictors have a moderate to strong positive relationship with life expectancy.

I now turn to multivariate regression to further examine the relationship between these variables and life expectancy. The variables are added sequentially to the regression models by block. Model summary statistics (AIC, BIC, and Pseudo R^2) suggest that more complicated models fit the data better.[8] The modeling results are presented in Tables 10.2 and 10.3.

In Model 1, three out of four geographic measures are significant. This confirms what we have observed in Figure 10.2. In Model 2, the *Sex Composition* variable confirms the known gender gap in life expectancy, and all three economic variables are highly significant. However, the effects of *Latitude* and *Longitude* now become insignificant, which suggests that the geographic pattern we saw in Figure 10.2 is largely due to socioeconomic factors. In Model 3, we see *Education* has a significant positive effect on life expectancy. Ethnic minority populations are worse off than the Han majority, as shown by the significant negative effect of the percent of minority in the county on life expectancy. Adding the *Education* and *Ethnicity* variables also changes the effects of geographic variables, as well as reducing the predicting power

TABLE 10.2

Spatial conditional autoregressive models predicting life expectancy at birth, Models 1–3 (N = 2,367)

	MODEL 1		MODEL 2		MODEL 3	
Predictor	*coefficient*	*s.e.*	*coefficient*	*s.e.*	*coefficient*	*s.e.*
(Intercept)	65.4912	1.9640***	80.8323	3.1722***	79.1363	3.0612***
Latitude	0.0565	0.0179**	0.0254	0.0161	−0.0267	0.0156^{+}
Longitude	0.0535	0.0177**	0.0142	0.0158	0.0186	0.0152
Elevation	−0.0018	0.0001***	−0.0015	0.0001***	−0.0003	0.0001*
Terrain	−0.0006	0.0004	0.0001	0.0003	−0.0009	0.0003**
Sex composition			−0.2140	0.0498***	−0.3016	0.0474***
GDP			1.1419	0.1128***	0.8133	0.1083***
Urbanization			0.0211	0.0034***	−0.0008	0.0037
Employment			0.0356	0.0091***	0.0183	0.0087*
Education					1.1069	0.0867***
Ethnicity					−0.0236	0.0029***
Log likelihood	−11264.1		−10969.0		−10831.7	
AIC	22538.2		21956.0		21685.4	
BIC	22567.1		22008.0		21748.9	
Pseudo R^2	0.18		0.36		0.43	

$^{+}p < .1$; $^{*}p < .05$; $^{**}p < .01$; $^{***}p < .001$.

TABLE 10.3

Spatial conditional autoregressive model predicting life expectancy at birth, Model 4 (N = 2,367)

	MODEL 4		MODEL 4 (STANDARDIZED)	
Predictor	*coefficient*	*s.e.*	*coefficient*	*s.e.*
(Intercept)	76.7907	3.0818***		
Latitude	−0.0130	0.0173	−0.0223	0.0296
Longitude	0.0176	0.0151	0.0439	0.0377
Elevation	−0.0002	0.0001	−0.0615	0.0395
Terrain	−0.0009	0.0003**	−0.0512	0.0183**
Sex composition	−0.2702	0.0475***	−0.0809	0.0142***
GDP	0.7436	0.1118***	0.1363	0.0205***
Urbanization	−0.0007	0.0041	−0.0043	0.0252
Employment	0.0228	0.0089*	0.0529	0.0207*
Education	1.0621	0.0924***	0.3763	0.0327***
Ethnicity	−0.0228	0.0029***	−0.1853	0.0235***
Health care	−0.0513	0.0275+	−0.0389	0.0209+
Water	0.0030	0.0026	0.0219	0.0191
Lavatory	0.0058	0.0022**	0.0433	0.0160**
Bath facility	0.0125	0.0042**	0.0649	0.0217**
Log likelihood		−10817.44		
AIC		21662.88		
BIC		21743.65		
Pseudo R^2		0.44		

$^{+}p < .1$; $^{*}p < .05$; $^{**}p < .01$; $^{***}p < .001$.

of the socioeconomic variables in Model 2. For example, the coefficient of *GDP* declined from 1.14 to .81 and urbanization becomes insignificant.

To facilitate between-variable comparisons, I place the standardized version of Model 4 side by side with the unstandardized one in Table 10.3. Two of four public health related measures—water supply and bath facility have significant positive effects on life expectancy. One big surprise is that the availability of health care, measured by number of health workers per 1,000 people, has a negative effect on life expectancy, although it is only significant at the $\alpha = .1$ level. This may be interpreted as an indicator of the "unsuccessful" health care reform and the low efficiency of China's health care system. Given the cross-sectional nature of the data, we need to be cautious about making such a conclusion.

The standardized version makes it possible to compare the relative strength of each predictor on life expectancy in terms of standard deviation. Among all 14 variables, *Education* has the most powerful effect: Change in education level by one standard deviation is associated with an increase of life expectancy by .38 standard deviations, which is equivalent of 1.4 years. A similar change in *GDP* (log transformed) would result in an increase in life expectancy of .5 year, and a drop of 0.72 year with similar change in *Ethnicity*.

The relative strength of each variable's contribution to life expectancy highlights three important aspects in Chinese mortality and health. First, as Figure 10.2 suggests, a correlation between regional mortality inequality and the regional socioeconomic inequality, the multivariate analysis indicates that while economic development explains some proportion of regional mortality variation, it is not the most important factor. It is education rather than economic development that is most decisive. According to the regression models, increasing average schooling level by one year produces an increase of more than one year in life expectancy, net of all other socioeconomic development effects. This has a very important policy implication. Education, as the most important factor of social stratification, demonstrably has a central role in policies to foster social equality. Second, although we only have a rudimentary measure of ethnic diversity across China, the message from the analysis is unequivocal: Non-Han minorities have a considerable health disadvantage compared to the Han majority, even after controlling for general socioeconomic development variables. This conclusion certainly does not apply to every ethnic group—for example, the Hui (Chinese Muslim) have a life expectancy comparable to that of the Han, and the Man (Manchu) have a life expectancy higher than that of the Han according to the 1990 census.[9] Third, this analysis indicates that the prevalence of sanitation facilities, such as lavatory and bath facilities, still has a visible effect on mortality, suggesting that promotion of public and personal sanitation is likely to continue showing positive results on health.[10]

CONCLUSIONS AND DISCUSSIONS

Postsocialist China has not only ushered in a new economic and social stratification system, but also a new institutional context affecting the life chances of the population. Health condition is one such life chance that has been directly affected by recent reforms. Following the remarkable increase in life expectancy in the last 50 years through public health campaigns and economic development, some parts of China today still have very low life expectancy and the gap between the most developed counties and the least developed counties approaches the range of life expectancy across the world at the national level. Moreover, comparisons between 1982 and 2000 suggest that local economic conditions play an increasingly prominent role in shaping the regional map of health inequality. While similar to the current world stratification system and not an unexpected result given the uneven power of market forces in postsocialist China, it is still striking given that China is under a unified social and political system.

Could the regional inequality pattern diminish if China stays on the fast track of economic growth for another decade? The recent experience in the last 20 years seems to suggest the opposite. As market force became increasingly dominant, it did not equalize the country; rather it greatly increased economic disparity among different regions. Thus, we cannot expect the market to reduce regional health inequalities in the near term. In fact, it is possible that the poor health conditions in some regions will curb future growth as much as current economic poverty is increasingly decisive in predicting mortality outcomes (Bloom and Canning 2000). In addition, less than ideal local economic conditions may motivate selective out-migration as a form of human resource drainage, which places the less-developed areas in an even more unfavorable position economically and thus causes further deterioration in both the local economic and local health situations, and enlarges the regional inequality.

The unsuccessful reform of China's health care system and the emergence of new epidemiological threats such as SARS, the bird flu, and HIV/AIDS have pushed the Chinese government to reconsider earlier policies to marketize health care (Kaufman 2005). In a speech of 2005, President Hu emphasized the increasingly important role that his government must play in providing health care as the country seeks to narrow the gap in health care coverage for rich and poor: "We must uphold the public welfare character of public health care, deepen reform of the medical system, strengthen government responsibility, and have strict oversight and control."[11] However, it is yet to be seen how this new state intervention would change the regional pattern of health conditions. Unlike the political institutions in the United States, which have a constitutional protection in favor of rural and sparsely population areas, the Chinese political system has a strong bias in favor of its urban parts. It thus remains unclear how the poor and those concentrated in poor regions will reduce their current health "deficits."