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# Chapter 3

# China's Rural–Urban Health Gap: Paradoxical Results of Health Insurance Reforms*

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**Abstract**

One of the worrisome results of China's post-1978 market reforms was that the village cooperative medical insurance plans established during the Mao era collapsed. As a consequence, by the early 2000s urban Chinese were much more likely to be covered by health insurance than were rural Chinese. During subsequent years, a major national effort led to dramatic increases in health insurance coverage for all Chinese and closed this gap, so that the rate of health insurance coverage for rural and urban Chinese is now virtually the same — both 94% in 2014, according

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to our survey results. However, our data reveal that in 2004, rural Chinese respondents were likely to rate their own physical and emotional health better than urban respondents. But in two subsequent national surveys, in 2009 and 2014, this unexpected advantage of rural Chinese in self-rated health largely disappeared or was replaced by the more "normal" pattern of urban residents rating their health better than their rural counterparts. Data from all three surveys are analyzed in an effort to understand the reasons for the more favorable views of Chinese villagers in 2004 and the subsequent disappearance of this paradoxical pattern.

**Keywords:** rural–urban inequality; medical insurance; physical health; emotional health



# 1. Introduction

One of the most robust findings of research on social variations in health around the world is that individuals with high socio-economic status tend to be healthier than those with low status. No matter whether measured in terms of objective indicators, such as life expectancy and prevalence of diseases or subjective reports of health status in surveys, the general finding, as Pritchett and Summers summarize (1996), is that "Wealthier is Healthier."[1] This strong association between social status and health has generated a large amount of research and debate over the years that attempts to explain the status–health relationship. For example, what is it about high status that fosters relatively good health, or is the main causal arrow the reverse, with healthier people better able to attain high status?

When it comes to objective indicators of health, there is little doubt that the positive status–health correlation also characterizes contemporary China. For example, there are sharp differences in life expectancy and the prevalence of most infectious diseases between richer and poorer Chinese provinces and between urban and rural Chinese (see, for example, Banister and Hill, 2004; Yip, 2010). Many analysts believe that these status and locational health disparities were exacerbated by changes in China's medical care system after market reforms were launched in 1978

[1]Actually, the article by Pritchett and Summers compares the health statistics of wealthier and poorer nations, not individuals. However, the bulk of this literature documents the positive correlation between health indicators and socio-economic status for individuals. See, for example, Elo (2009), Marmot *et al*. (1987), and Williams (1990).

(see Blumenthal and Hsiao, 2005; Sen, 1992). A central dynamic in that change was the shrinking of the medical insurance safety net that had provided at least minimal coverage (as well as paramedical treatment by local village "barefoot doctors") for about 90% of China's population at the close of the Mao era. As a consequence of China's market reforms, most village cooperative medical insurance programs collapsed (as did the network of barefoot doctors) during the 1980s and urban health insurance coverage was cut back, and by the 1990s, perhaps 90% of the population had to pay out of pocket for medical treatments, with the costs of medical care also rising sharply. As China's income gaps also increased sharply after the 1980s, the inevitable result was that status disparities in obtaining needed medical treatment widened (Henderson, 1990). Since in China, national income inequality is much more attributable than in other societies to the country's unusually large gap between average urban and rural incomes, inevitably a major focus of concern was how the sharp drop in medical insurance coverage was aggravating the disparity in health status between urbanites and villagers (see Yip, 2010; Zimmer *et al*., 2007).[2]

By the first decade of the new millennium, a consensus had emerged that China's healthcare system was in crisis due to the large number of Chinese being driven into poverty by medical emergencies as well as by widespread failure to seek treatment due to the high costs of medical care. One major part of the response to that crisis was a high-priority national effort to rebuild and universalize medical insurance coverage so that family income would not be such a barrier to obtaining needed medical treatment. This effort to rapidly expand medical insurance coverage, which was a central goal among the "harmonious society" programs of the Chinese Communist Party (CCP) leadership of Hu Jintao (2002–2012), has been very successful, as the figures to be presented shortly will show.[3] However, it is not so clear whether that success has translated into a

[2]Estimates of the ratio of average urban-rural income ratio after 2000 generally point to a gap of at least 3:1 and rising, levels that do not appear to be equaled anywhere else in the world (see Whyte, 2014). Between 1990 and 2000, the estimated life expectancy gap between rural and urban China increased from 3.5 years to 5.5 years. Estimates courtesy of Cai Yong, cited in Whyte and Sun, 2010.

[3]See Li *et al*. (2013) on the multiple goals of the harmonious society campaign and their income distribution consequences.

meaningful reduction in the social-status disparities in the health of Chinese citizens.

## 2. Paradox of China's Rural–Urban Gap in Subjective Health Reports

This chapter is motivated by a curious set of findings emerging from the China Inequality and Distributive Justice Project. That project conducted three surveys in 2004, 2009, and most recently in 2014, with nationally representative samples of Chinese adults selected through spatial probability sampling, to examine how ordinary Chinese view the rising income inequalities with which they now live.[4] One set of questions asked survey respondents a variety of questions on how they perceived their current physical health, whether they were experiencing a variety of specific kinds of emotional distress, as well as how they viewed their ability to pay for medical care.

In analyzing the results of the 2004 survey, an unexpected pattern emerged which was the focus of an earlier publication co-authored by one of the current authors (Whyte and Sun, 2010). Briefly, despite the fact that

[4]Using spatial probability sampling methods, a representative national sample of 3267 adults between the ages of 18 and 70 were interviewed for the 2004 survey, with urban areas over-sampled to provide enough urban cases for separate analysis. The 2009 survey utilized the same sampling points to draw a five-year follow-up national sample, yielding 2967 cases. In 2014, a new national sample was drawn, again relying on spatial probability sampling, but this time without over-sampling urban locales, yielding a final sample of 2507 cases. Sampling weights have been used, where appropriate, to make comparisons across the three surveys. For details on spatial probability sampling, see Landry and Shen (2005). On the larger purpose of this series of surveys, see the book based upon the 2004 survey, Whyte (2010a). A large but shifting array of researchers has participated in the China Inequality and Distributive Justice Project surveys, including Jieming Chen, Juan Chen, Maocan Guo, Chunping Han, Dong-Kyun Im, Pierre Landry, Xiaobo Lu, Albert Park, and Wang Feng, and for the 2014 survey, also Kristin Dalen and Hedda Flatø and their Norwegian colleagues. All three surveys were administered by Shen Mingming and his colleagues at the Research Center for Contemporary China at Peking University. The funding for these surveys has likewise come from a variety of sources, including Harvard University, Peking University, the University of California at Irvine, the Smith Richardson Foundation, and the Norwegian government, through grants administered by the Fafo Institute for Applied International Studies in Oslo, Norway.

rural respondents in that survey (as well as rural-to-urban migrants) were much less likely than urban respondents to have medical insurance coverage (as well as having lower average incomes and multiple other disadvantages), they tended to rate both their physical and emotional health more positively than did urbanites.[5] In other words, at least in terms of the subjective health indicators in the 2004 survey, our results contradicted the virtually universal findings of research elsewhere. Substantially disadvantaged Chinese villagers rated their health better than favored urbanites.

Any effort to explain this unexpected pattern is complicated by the trends revealed in our two subsequent surveys. In particular, there have been major changes in health insurance coverage since 2004. The medical insurance coverage rates reported in our surveys, classified by whether respondents were villagers, rural-to-urban migrants, or citizens with urban *hukou*, are displayed in Table 1. As detailed in the earlier analysis based upon the 2004 survey alone, in that year 50.8% of urban respondents had public medical insurance coverage, but only 15.4% of villagers (and 9.2% of migrants) did. However, by the time of our 2009 survey, the situation had changed dramatically. The national program to build a new network

Table 1. Public health insurance coverage (%).

| | 2004 | 2009 | 2014 |
|---|---|---|---|
| Rural | 15.4 | 89.6 | 94.0 |
| Urban | 50.8 | 75.2 | 94.2 |
| Rural migrants | 9.2 | 56.1 | 86.7 |
| Total | 29.0 | 82.4 | 93.4 |
| *N* | 3250 | 2878 | 2384 |

[5]Note a distinctive feature of Chinese institutions that complicates how we compare these groups. The operation of China's distinctive household registration (*hukou*) system means that two groups with different social status and legal rights reside in Chinese cities today — urban migrants from rural areas (who may number as much as one-third of the de facto urban population of large cities) and urbanites who have local urban *hukou* (see the discussion in Whyte, 2010b). So, even though migrants would normally be considered urbanites, in this chapter, we will follow the common practice of using the terms urbanites, or urban citizens, to refer only to those city residents who have local urban household registrations.

of rural cooperative medical insurance programs while also expanding the two main forms of urban public medical insurance programs (for workers and employees and for other urban citizens), resulted in coverage gains for all three groups, and with villagers actually having a higher coverage rate (89.6%) in 2009 than urban citizens (75.2%), not to mention migrants (56.1%). Five years later, our 2014 survey revealed further progress, with some type of public medical insurance coverage almost universal, with urban citizens catching up with and slightly exceeding the coverage rate of villagers (94.2% vs. 94%), and with migrants only lagging modestly behind (86.7%), yielding an overall public medical insurance coverage rate as calculated from our 2014 survey of 93.4%.

It is important to note, however, that not all types of coverage are equal. At the time of our surveys, there were three primary types of public medical insurance in China, and the types and proportions of incurred medical expenses covered and reimbursement rates differed across those types.[6] Generally, the medical insurance provided to workers and employees in urban enterprises and organizations (Urban Employee Basic Health Insurance, UEBHI) is more generous than insurance for other urban citizens (Urban Resident Basic Health Insurance, URBHI), and both have often been more generous than what villagers (and migrants) receive in the new village cooperative medical insurance plans (New Cooperative

[6]Describing the terrain of public medical insurance in China is very difficult because the terrain is constantly shifting in terms of the categories of insurance, regional variations in specifics of coverage, and other features as China struggles to overcome the legacy of inadequate coverage and coverage that varies from one category of Chinese citizens to another. Chinese elites and health policy advocates seem to recognize that eventually it would be desirable to have one unified system of medical insurance covering all citizens, as is the case in many other countries with government healthcare systems. In fact, after our 2014 survey was carried out, Xi Jinping announced a plan to combine the medical insurance systems covering rural citizens, rural-to-urban migrants, and urban citizens who do not obtain insurance through their urban employers into a single system (combining the URBHI and NCMS discussed in the text, more or less, and eventually eliminating the NCMS as a separate system), a reform which, if fully implemented, would presumably make it easier for migrants to obtain medical treatment and reimbursement in their urban locations rather than back in their home villages. However, the medical insurance system enjoyed by urban workers and employees remains separate and superior. See the discussion in Müller (2016, 2017).

Medical Scheme, NCMS).[7] For example, generally UEBHI covers both outpatient and inpatient services, but some URBHI and NCMS plans were initially designed mainly to cover inpatient care, with only limited coverage for outpatient services. (However, over time, coverage of outpatient treatments in URBHI and NCMS has generally increased.) And reimbursement rates for hospital stays vary by type of plan, from 68.8% in 2013 for UEBHI patients to 53.6% for URBHI and 50.1% for NCMS (Tang, 2014, Figure 3).[8] The deductible and co-pay amounts also differ widely by locality and type of plan. As a result of the very unequal and often only partial coverage by different health insurance plans, one study reported that in 2014 more than 30% of the medical expenditures of Chinese families remained out of pocket rather than covered or reimbursed by insurance (Jain-Chandra *et al*., 2018, Figure 10).

The very different types of coverage of villagers, migrants, and urbanites in 2014, according to our survey that year, are shown in Table 2. Note one particular feature of the figures in Table 2: the great majority of migrants in 2014 (72.1%) were covered by NCMS health insurance back in their villages of origin, although they were living and working in urban areas.

The multiple disadvantages of villagers and rural-to-urban migrants persist. Nonetheless, it is particularly striking that at least in terms of having some minimal health insurance, villagers went from being much worse off than urbanites in 2004 to being more likely to be

[7]These types of insurance are reformed versions of predecessor plans that existed prior to 1978. The UEBHI funding comes through a combination of employee and employer contributions, supplemented by government funds. The URBHI and NCMS funding comes from individual contributions and government funding. There is also substantial variation in coverage and reimbursement rates geographically within each of these three types of plans. See the general discussion in Tang (2014). It should be noted that the higher living costs of urban areas may undercut the advantage of higher reimbursement rates of URBHI compared to NCMS.

[8]The NCMS hospital reimbursement rate in 2003 was only 6.9%, but it has increased substantially since then, though not enough to close the gap (Tang, 2014, Figure 3). One study found that, comparing survey data from 2000, 2004, and 2006, participation in NCMS had not decreased rural respondent out-of-pocket spending to cover medical costs. See Lei and Lin (2009). The sharp differences in social-welfare program treatment of different sectors of the population stem from policies adopted during the rule of the supposed champion of social equality, Mao Zedong, during the 1950s. See the discussion in Dillon (2015).

Table 2. Type of health insurance, 2014 (%).

| | Rural | Urban | Migrant |
|---|---|---|---|
| Worker's insurance | 4.0 | 46.6 | 11.1 |
| Urban resident insurance | 3.1 | 49.4 | 6.2 |
| New rural cooperative insurance | 88.0 | 8.6 | 72.1 |
| Total | 95.1 | 104.6 | 89.4 |
| *N* | 1139 | 1019 | 226 |

*Note*: The column totals in Table 2 are higher than those in Table 1 due to some respondents claiming more than one type of insurance.



covered in 2009 and then covered roughly equally, and almost universally, in 2014.

Given these trends in medical insurance coverage, we might have guessed that the unexpected pattern of rural respondents reporting better physical and emotional health in 2004 than their urban counterparts would have been even more visible in the later surveys, and that this would be particularly the case in 2009, given the temporary rural advantage in medical insurance coverage at that time (as shown in the second column in Table 1). However, when we examine respondent reports of their physical and emotional health in 2009 and 2014, that is not what we find. Instead, in these subsequent surveys, we see evidence of a more familiar pattern, with favored urbanites reporting at least as good or better current health than their rural counterparts (see the details in a subsequent section of this chapter). Hence the paradox — why when they were substantially disadvantaged in terms of medical insurance coverage (and in many other ways), were villagers in 2004 more likely than their urban counterparts to report they were healthy? And when that medical insurance gap had closed or was even reversed, why did their more favorable health reports disappear?

## 3. Subjective Health Ratings and Overall Trends

Our surveys contain one simple self-report question on physical health and then a battery of questions we combine into a summary index as a measure of self-reported emotional distress, with these questions modeled

after self-report survey questions that have been widely used in other countries. The physical health question is, "Generally speaking, do you think your physical health is very good, relatively good, average (*yiban*), relatively poor, or very poor?" with the resulting five-point scale reversed so that a high score indicates good health. The emotional health questions ask how often respondents experienced a list of eight emotional situations within the past week, with the available responses "often, sometimes, rarely, or never," and with these responses used to construct a summary emotional distress score.[9]

Before examining trends in villager, migrant, and urban citizen scores on physical and emotional health across surveys, it is worth examining whether there was any overall trend toward better or worse health between 2004 and 2014. The weighted physical and emotional health self-ratings for all respondents are displayed in Table 3.[10] Although the differences are not that large, in general the figures in Table 3 suggest that Chinese citizens in 2009 and 2014 rated both their physical and emotional health better than their counterparts in 2004. On self-rated physical health, the proportion reporting relatively good or very good health increased from 56.7% in 2004 to 63.5% in 2014, while the proportion reporting relatively poor or very poor health dropped from 13.5% to 8.6%. For emotional health, the proportion who reported relatively low or low levels of distress symptoms rose from 66.8% in 2004 to 74.1% in 2014, with a corresponding drop in the proportion reporting relatively high or high levels of distress symptoms, from 33.2% in 2004 to 26% in 2014. So, underlying the group differences we are about to examine, our surveys indicate a trend

[9]The listed situations are "I worry about small things," "I have no appetite for food," "I cannot focus my attention while doing things," "I feel my life is a failure," "My quality of sleep is poor," "I feel fortunate," "I feel isolated," and "I feel my life is very happy." The scores of items 1–5 and 7 were reversed so that a high score indicates frequently feeling distressed. Then, a mean of the eight items was computed and used as a summary measure of self-reported emotional distress.

[10]In computing overall national statistics from our surveys, we use sampling weights to correct for over-sampling of urban locales in the two earlier surveys and to make the results comparable across all years. In order to display the summary emotional distress mean scores in a categorical form somewhat comparable to the physical health responses, we used identical but arbitrary cutting points in the distress scores for all three surveys to sort respondents into four categories, ranging from low to high distress, with more cases clustered in the low distress than the high-distress categories.

Table 3. Trends in self-rated health across surveys.

| | Self-rated physical health (row %) | | | | | |
|---|---|---|---|---|---|---|
| | Very poor | Fairly poor | OK | Fairly good | Very good | *N* |
| 2004 | 2.5 | 11.0 | 29.8 | 34.7 | 22.0 | 3,261 |
| 2009 | 1.0 | 11.0 | 26.9 | 37.5 | 23.6 | 2,861 |
| 2014 | 1.1 | 7.5 | 28.0 | 39.4 | 24.1 | 2,501 |
| | Self-rated emotional distress (row %) | | | | | |
| | Very low | Low | High | Very high | | |
| 2004 | 34.5 | 32.3 | 25.8 | 7.4 | | 3,232 |
| 2009 | 33.7 | 38.2 | 21.7 | 6.4 | | 2,818 |
| 2014 | 39.9 | 34.2 | 20.9 | 5.1 | | 2,463 |

over time for average Chinese citizens to increasingly rate both their physical and emotional health positively.[11]

## 4. Health Self-Evaluations of Villagers, Migrants, and Urban Citizens

Our next step is to analyze how the physical and emotional health self-ratings of respondents in each national survey varied by the type of household (rural, rural-to-urban migrant, and urban), as well as by other background characteristics. We do that by examining the bivariate correlations between background characteristics and our health measures and then examining the standardized regression coefficients for those same associations, once other background characteristics are controlled for statistically. We display the results in the following, first for self-rated physical health (Table 4(a)) and then for the scale of emotional distress (Table 4(b)). Both tables follow the same format, with the standard set of background characteristics we have used in other analyses of these data

[11]These figures are consistent with the fact that, judged by objective indicators, the health of Chinese citizens has continued to improve during the reform era, despite the sense of crisis associated with the initial sharp reductions in health-insurance coverage. For the trends in life expectancy, see Whyte and Sun (2010, Figure 1).

Table 4. (a) Self-rated physical health trends.

| | 2004 | | 2009 | | 2014 | |
|---|---|---|---|---|---|---|
| | *r* | *β* | *r* | *β* | *r* | *β* |
| Household type | | | | | | |
| Rural | 0.02*** | 0.12*** | –0.11*** | 0.02 | –0.10*** | –0.03 |
| Migrant | 0.06*** | 0.06*** | 0.07*** | 0.02 | 0.05** | –0.01 |
| Urban | –0.05** | n/a | 0.08*** | n/a | 0.07*** | n/a |
| Female | –0.09*** | –0.08*** | –0.09*** | –0.07*** | –0.09*** | –0.08*** |
| Age | –0.26*** | –0.40*** | –0.30*** | –0.17 | –0.36*** | –0.32*** |
| Age-squared/100 | –0.25*** | 0.16 | –0.29*** | –0.08 | –0.35*** | 0.01 |
| Years of schooling | 0.16*** | 0.06* | 0.26*** | 0.09*** | 0.26*** | 0.05 |
| Married | –0.06** | 0.02 | –0.08*** | 0.00 | –0.10*** | 0.02 |
| Han ethnicity | 0.06** | 0.04 | 0.06*** | 0.02 | 0.01 | 0.02 |
| (ln) Family income | 0.16*** | 0.01 | 0.24*** | 0.05* | 0.25*** | 0.02 |
| CCP member | 0.04* | 0.04 | 0.07*** | 0.04* | 0.03 | 0.00 |
| Has health insurance | 0.06** | 0.06 | –0.04* | 0.00 | –0.03 | –0.03 |
| Geographic location | | | | | | |
| East | 0.10*** | n/a | 0.12*** | n/a | 0.07*** | n/a |
| Central | –0.04* | –0.07** | –0.08*** | –0.09*** | –0.05** | –0.04 |
| West | –0.09*** | –0.11*** | –0.07*** | –0.08*** | –0.02 | –0.05 |
| Marketization | 0.05** | –0.03 | 0.06** | –0.04 | 0.08*** | –0.01 |

(*Continued*)

Table 4. (a) (*Continued*)

| | 2004 | | 2009 | | 2014 | |
|---|---|---|---|---|---|---|
| | *r* | *β* | *r* | *β* | *r* | *β* |
| Subjective status | | | | | | |
| Five-year standard-of-living trend | 0.21*** | 0.11*** | 0.21*** | 0.14*** | 0.16*** | 0.12*** |
| Relative social status | 0.23*** | 0.14*** | 0.22*** | 0.12*** | 0.20** | 0.13*** |
| *R*-squared | | 0.17 | | 0.19 | | 0.18 |
| Adjusted *R*-squared | | 0.17 | | 0.18 | | 0.18 |
| *N* | | 2,867 | | 2,753 | | 2,270 |

Table 4. (b) Self-rated emotional distress trends.

| | 2004 | | 2009 | | 2014 | |
|---|---|---|---|---|---|---|
| | *r* | *β* | *r* | *β* | *r* | *β* |
| Household type | | | | | | |
| Rural | –0.02 | –0.13*** | 0.00 | –0.07** | 0.04 | 0.02 |
| Migrant | –0.01 | –0.04 | –0.02 | –0.03 | 0.06** | 0.06** |
| Urban | 0.03 | n/a | 0.01 | n/a | –0.08*** | n/a |
| Female | 0.11*** | 0.10*** | 0.10** | 0.08*** | 0.07*** | 0.05* |
| Age | 0.07*** | 0.47*** | 0.09*** | 0.18 | 0.05* | 0.04 |
| Age-squared/100 | 0.07*** | –0.38** | 0.09*** | –0.10 | 0.05* | 0.01 |
| Years of schooling | –0.11*** | –0.05* | –0.15*** | –0.04*** | –0.14*** | –0.06* |
| Married | –0.09** | –0.14*** | –0.08*** | –0.11*** | –0.07*** | –0.08** |

Table 4. (b) (*Continued*)

| | 2004 | | 2009 | | 2014 | |
|---|---|---|---|---|---|---|
| | *r* | *β* | *r* | *β* | *r* | *β* |
| Han ethnicity | –0.05* | –0.03 | –0.03 | 0.02 | 0.02 | 0.00 |
| (ln) Family income | –0.14*** | –0.01 | –0.22*** | –0.10*** | –0.17*** | –0.03 |
| CCP member | –0.07*** | –0.02 | –0.09*** | –0.04* | –0.07*** | –0.02 |
| Has health insurance | –0.12*** | –0.11*** | –0.08*** | –0.07*** | –0.07*** | –0.04* |
| Geographic location | | | | | | |
| East | –0.05** | n/a | –0.15*** | n/a | 0.00 | n/a |
| Central | 0.01 | 0.02 | 0.11*** | 0.10*** | –0.08*** | –0.05 |
| West | 0.06*** | 0.03 | 0.08*** | 0.08** | 0.09*** | 0.09* |
| Marketization | –0.03 | 0.01 | –0.12*** | –0.03 | –0.03*** | 0.04 |
| Subjective status | | | | | | |
| Five-year standard-of-living trend | –0.22*** | –0.13*** | –0.18*** | –0.09*** | –0.18*** | –0.13*** |
| Relative social status | –0.24*** | –0.17*** | –0.23*** | –0.15*** | –0.18** | –0.11*** |
| *R*-squared | | 0.14 | | 0.13 | | 0.09 |
| Adjusted *R*-squared | | 0.13 | | 0.13 | | 0.08 |
| *N* | | 2,837 | | 2,713 | | 2,237 |

*Note*: *$p$ <= 0.05; **$p$ <= 0.01; ***$p$ <= 0.001; n/a = not applicable.

arrayed in the rows of each table, with the household type categories located at the top, and then with six columns showing the bivariate correlations ($r$) and the standardized regression coefficients ($\beta$) for each of the three surveys.[12]

Looking first at comparisons across the three surveys in self-rated physical health, we can see in the top panel of Table 4(a) the unexpected findings described earlier. In 2004, rural respondents (as well as migrants) rated their physical health more positively than others (in column 1), and when other characteristics are controlled for statistically (in column 2), their higher ratings compared to urbanites remained statistically significant. In contrast, in both 2009 and 2014, rural respondents rated their physical health as worse than other respondents (columns 3 and 5). When compared with urbanites while controlling for other background traits (in columns 4 and 6), these rural self-ratings were no longer statistically



[12]For self-rated physical health, we treat the five response categories as if they were an interval scale ranging from 1 (very poor) to 5 (very good). For emotional distress, we use the original mean score of the eight-item scale, not the categorical version used in Table 3. (Note that the meanings of these two health measures are different, with a high score on physical health meaning good health, while a high score on emotional distress means poor health.). Household type is measured with three dummy variables (for rural, rural-to-urban migrant, and urban *hukou* respondents, with urban as the omitted reference category in regression analyses). Female is a dummy variable (female = 1, male = 0); we include age-squared/100 as well as age as predictors in order to detect curvilinear relationships with age; married is a dummy variable (married = 1, otherwise = 0); Han ethnicity is a dummy variable (Han = 1, other ethnic group = 0); CCP member is a dummy variable (CCP member = 1, non-member = 0); has health insurance is a dummy variable (has public health insurance = 1, no insurance = 0), geographic location of residence of respondents is captured with three dummy variables (for Eastern, Central, and Western provinces, using conventional divisions, with the East as the omitted reference category in regression analyses); marketization is a measure of the relative progress in market reform of the province of residence as summarized from multiple indicators based upon research by Fan and Wang (2004; Fan *et al.* 2011); five-year standard of living is a five-category response to a question of how the family's current living standard compares with that five years earlier, ranging from 1 = much worse to 5 = much better; and relative social status is a five-category response to a question about how the family's current living standard compares with local reference groups, ranging from 1 = much worse to 5 = much better, with these last two measures again treated as if they were interval measures.

different, although by 2014 they were slightly negative.[13] So, as of 2014, rural respondents were not rating their physical health as much worse than urbanites, once other background factors, such as age, education, and income, are taken into account, but the unexpectedly favorable ratings of rural respondents in the 2004 survey had disappeared.

The other associations in Table 4(a) deserve only brief comment since they do not contain similar surprises or differ much across the three surveys. In general, the remaining rows of the table largely confirm the pattern of advantaged respondents reporting better physical health. So, women, older respondents, and residents in interior provinces report poorer physical health, while the educated, ethnically Han, CCP members, high-income families, and residents of Eastern provinces, and those who feel that their incomes have improved then compared to five years earlier and that they are better off than their neighbors report better health, although not all the coefficients are statistically significant.[14] One unexpected finding in Table 4(a) is that the possession of health insurance does not have a significant association with self-rated physical health, once other background characteristics are controlled for statistically.[15]

The comparable results for the scale of self-rated emotional distress are displayed in Table 4(b). Again, looking first at the top panel of this table, for 2004 we can see that the weak tendency for rural respondents to report lower levels of emotional distress (in column 1) becomes stronger and statistically significant once we control for other background characteristics (in column 2). So, this is the flip side of the unexpected patterns we reported from the 2004 survey, with rural respondents rating both their physical and emotional health better than urbanites, once other background traits were controlled for statistically. In this case, the same pattern was still visible in the 2009 survey, although the standardized regression coefficient (–0.07**) had weakened somewhat compared to 2004 (–0.13***). However, in the 2014 survey, that rural advantage has disappeared, with rural respondents showing weak positive associations with emotional

[13]In both 2009 and 2014, the better self-ratings of physical health of migrants also disappear into insignificance in multiple regressions, perhaps primarily reflecting the younger age and physical health selectivity of migrants compared to urban residents.

[14]Married respondents appear to rate their health as worse than the non-married, but this association disappears in multivariate analyses, perhaps largely due to an age effect.

[15]One other China survey study found that participation in NCMS (as of 2006, at least, the last year covered) was not correlated with health self-ratings. See Lei and Lin (2009).

distress, while migrants have significantly higher emotional distress levels than urbanites (see columns 5 and 6). So, urbanites had slightly or significantly higher emotional distress levels than rural respondents and migrants in 2004, but in 2014, they had significantly lower levels. So, for both physical and emotional health, over time the pattern of how Chinese subjective ratings of their own health vary by household type has ceased to be so unusual and unexpected, and by 2014 it was closer to the "normal" patterns reported in prior research from around the world, with advantaged urbanites rating their health more favorably than their rural counterparts.

Again, the remaining findings in Table 4(b) deserve only brief comment, and once again they largely fit expected patterns already observed with regard to physical health in Table 4(a). Women, older respondents, and residents of Western provinces report more emotional distress, while the educated, those with high family income, CCP members, residents of Eastern provinces, and those who judged their standard of living to have improved and that they are better off than their neighbors report lower levels of emotional distress, although again not all of the associations are statistically significant. Being married appears here to be associated with lower levels of emotional distress, even when other background characteristics are controlled for statistically. And somewhat unexpectedly, given the weak associations for physical health in Table 4(a), across all six columns, having health insurance is associated with significantly lower levels of emotional distress, even when other background characteristics are controlled for statistically (and even in 2014, by which time almost all respondents had health insurance).

## 5. Explaining the Puzzle

How can the unexpected pattern of better subjective health ratings of rural respondents than urban ones in 2004 and the disappearance of that rural advantage in 2009 and 2014 be explained? One possibility is that at the time of the 2004 survey, since most rural respondents (and migrants) lacked health insurance, they were much less likely than urbanites to see doctors and therefore also much less likely to be aware of worrisome medical conditions they might have. We could call this the hypothesis that "blissful ignorance" of the poor state of their health might explain the more positive self-ratings of rural respondents in 2004. Given the

extraordinarily rapid spread of rural health insurance coverage by 2009 (see again Table 1), perhaps by the time of our later surveys, rural respondents were less reluctant to see doctors and thus more likely to become aware of medical problems that they might have.[16]

However, there are reasons to doubt this "blissful ignorance" explanation of the 2004 rural advantage in subjective health ratings. First, this explanation does not seem applicable to the lower emotional distress scores of rural respondents in 2004 since those depend on individual reports of their own feelings that do not require consultation with any doctor. Second, the non-significant associations between having health insurance and subjective physical health in multivariate analyses in all three survey years (in columns 2, 4, and 6 in Table 4(a)) cast doubt on the importance of health insurance coverage in explaining variation in these ratings, as previously noted.

One other possible explanation of our puzzle is the "healthy migrant" hypothesis: perhaps in the years between 2004 and 2014, major continuing migration flows from rural to urban China have drained villages of many young and relatively healthy community members so that those who remained within rural areas and were interviewed in the 2014 survey were on average older and sicker. However, the figures from our surveys offer evidence contradicting both the "blissful ignorance" and the "healthy migrant" explanations for the disappearance of the relatively more positive rural health self-ratings in 2004.

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[16]Unfortunately, in our surveys, we did not ask about frequency of visiting a doctor or being hospitalized. One survey study (Lei and Lin, 2009) indicated that participation in NCMS did increase the rate of participating in preventive care, and in particular obtaining a physical exam, but did not increase the likelihood of visiting a doctor when sick. And in general, the spread of medical insurance documented in Table 1 has only reduced, but has not eliminated, citizen worries about paying for medical bills, with the worries of rural residents remaining higher than those of urban citizens. We noted earlier that the study by Lei and Lin (2009) found that participating in NCMS did not reduce respondent out-of-pocket spending on medical costs. Our surveys included a question about the degree of worry about paying for future medical bills, and for rural respondents, the proportion who were very worried declined from 38.5% in 2004 to 22.4% in 2014; for urban respondents, the corresponding decline was from 34.4% to 17.8%. Another question asked whether the respondent or anyone in their family had had difficulty paying for medical bills within the past three years, and for rural respondents, the proportion who replied yes declined from 40.4% in 2004 to 22.4% in 2014; for urban respondents, the corresponding figures were 27.2% and 12.2%.

Table 5. Physical health self-ratings by household category (row %).

| | Very poor or fairly poor | Average | Very good or fairly good | Total |
|---|---|---|---|---|
| Rural respondents | | | | |
| 2004 | 15.6 | 28.5 | 56.0 | 100.1 |
| 2009 | 16.5 | 27.3 | 56.3 | 100.1 |
| 2014 | 13.8 | 27.9 | 58.2 | 99.9 |
| Migrants | | | | |
| 2004 | 7.1 | 32.7 | 60.2 | 100.0 |
| 2009 | 6.9 | 21.6 | 71.6 | 100.1 |
| 2014 | 4.7 | 26.8 | 68.5 | 100.0 |
| Urban respondents | | | | |
| 2004 | 12.0 | 38.2 | 49.7 | 99.9 |
| 2009 | 8.8 | 26.5 | 64.7 | 100.0 |
| 2014 | 5.9 | 29.9 | 64.1 | 99.9 |

In Table 5, summary figures for rural, migrant, and urban respondent physical health self-ratings across the three surveys are displayed. What these figures show is that, as with the samples overall (see Table 3), both rural and urban respondents in later surveys reported better physical health than their counterparts in 2004.[17] However, the improvements for rural respondents were quite small — from 56% reporting fairly good or very good health in 2004 to 58.2% in 2014, with a corresponding decline in reported fairly poor or very poor health in those same years from 15.6% to 13.8%. For urban respondents, in contrast, the improvement in self-ratings was much larger — from only 49.7% reporting fairly good or very

[17]Migrants tended, in fact, to report themselves as healthy more often than either rural or urban respondents in all three surveys, consistent with the "healthy migrant" hypothesis, and their physical health self-ratings also tended to improve over time (although both migrants and urban respondents show slightly fewer "very good" health ratings in 2014 than in 2009). The same general pattern of improvement over time is visible for our emotional-distress scale, although more weakly (details not displayed here). Furthermore, about 1% more urban than rural respondents reported moderately high or high levels of emotional distress in 2004, whereas in 2014, about 4% fewer urban than rural respondents responded similarly.

good health in 2004 to 64.1% in 2014, with a corresponding decline in ratings of fairly poor or very poor health from 12% to 5.9%.

These figures make it apparent that our task here is not primarily to explain the unexpectedly favorable health self-ratings of rural respondents in 2004 but as much or more so to explain the unusually low subjective ratings of physical health of urban respondents in that year. What was the situation of urban citizens that might explain the relatively low self-ratings of their health in 2004? They were almost at the end of a major and quite traumatic process of downsizing of urban state-owned enterprises, the hulking bulwarks of China's socialist planned economy, which was initiated during the late 1990s under then Premier Zhu Rongji. After decades of secure employment in conditions referred to as the "iron rice bowl," millions of urban workers and employees had been laid off, producing severe anxiety about how families would survive.[18] During the same time period, sharp cutbacks occurred in the levels of health insurance coverage of urbanites and particularly cutoffs in coverage of family dependents of state workers. So urbanites, accustomed to the state providing for their medical needs and much else, were likely to feel depressed and anxious about their health and their lives in general in 2004.[19] Our questionnaires included a question about whether the state versus individuals and families should be mainly responsible for various public goods, including medical care. In 2004, 46.7% of urban respondents replied that the state should be mainly or fully responsible for medical care, whereas only 22.2% of rural respondents gave those responses.

[18]Between 1995 and 2002, employment in urban state-owned enterprises shrank from 113 million to 41 million (Whyte, 2012, p. 232).

[19]When Eastern Europe and the former Soviet Union experienced dramatic economic downturns and surges of unemployment in their post-socialist transitions, the evidence is clear that these shocks contributed to serious deteriorations in the health and life expectancies of citizens in those countries. See Brainerd and Cutler (2005); King *et al*. (2009). Sudden mass privatization of the formerly planned socialist economies of these countries has been pointed to as the major culprit contributing to these negative health trends. China's reforms did not entail mass privatization of state enterprises, and instead of an economic downturn, economic growth has continued robustly throughout the reform period, so the economic anxieties associated with Zhu Rongji's reforms (and their possible negative health consequences) were much milder than those experienced by citizens in Eastern Europe and the former Soviet Union.

By 2009, and even more so by 2014, the situation had changed. The massive urban layoffs beginning in the mid-1990s were a thing of the past, with no comparable major threats to urban livelihoods (and medical insurance coverage) recently. Urban incomes have continued to grow rapidly, with the urban–rural income gap widening, at least through 2009 (see the discussion in Whyte, 2014). Urban home ownership also had become close to universal by 2009 and afterward,[20] with automobile ownership also spreading rapidly. The spread of public medical insurance, from barely over 50% of urban families covered in 2004 to over 94% in 2014, is also a testament to the improved living standards and economic security that characterize Chinese cities recently. So, the special conditions that likely contributed to the depressed levels of subjective physical health and elevated levels of emotional distress of Chinese urbanites at the time of the 2004 survey are now past history, with recent years characterized by a more bullish atmosphere.[21]

Our survey data provide corroborating evidence for these generalizations. One of the questions we asked in each survey was, "Compared to five years earlier, do you feel that your current family economic situation is much better, a little better, no change, a little worse, or much worse?"[22] Reversing the responses and then simplifying things by combining the "a little worse" and "much worse" responses, and the "a little better" and "much better" responses, and comparing the responses of rural residents with urban citizens (and migrants), we arrive at the figures in Table 6, which can be viewed in parallel with the figures in Table 5. In viewing the figures in this table, the reader should keep in mind the general context.

[20]Prior to the urban housing reforms launched during the late 1990s, home ownership was virtually universal in rural areas, but rented housing was the general rule in urban China. As of 2009 and 2014, after the completion of urban housing reform, China has achieved much higher levels of home ownership (about 84%, according to our survey data) than the United States, where only about two out of three families own their own homes.

[21]Even more recently, there has been widespread discussion of the slowdown of economic growth that China has been experiencing, from more than 10% growth per year for most of the three decades after 1978 down to at best 6–7% currently. However, at the time of the 2014 survey, most Chinese were continuing to experience strong income growth and feel optimistic about the future. See the details from our surveys presented in Whyte (2016, Table 4).

[22]This is the question used for the "Five-year standard-of-living trend" used as a predictor variable in Tables 4a and 4b.

Table 6. Family living standard compared to five years earlier (row %).

| | Worse or much worse | No change | Better or much better | Total |
|---|---|---|---|---|
| Rural respondents | | | | |
| 2004 | 11.6 | 22.3 | 66.1 | 100.0 |
| 2009 | 5.2 | 22.4 | 72.4 | 100.0 |
| 2014 | 3.8 | 21.0 | 75.1 | 99.9 |
| Migrants | | | | |
| 2004 | 10.7 | 13.3 | 76.0 | 100.0 |
| 2009 | 4.4 | 18.1 | 77.4 | 99.9 |
| 2014 | 4.3 | 15.7 | 80.0 | 100.0 |
| Urban respondents | | | | |
| 2004 | 20.8 | 20.1 | 59.1 | 100.0 |
| 2009 | 5.8 | 22.3 | 71.9 | 100.0 |
| 2014 | 4.1 | 15.7 | 80.2 | 100.0 |



China throughout the period of our surveys continued to grow and generate new jobs and rising incomes very rapidly so that many observers commented that the rising tide of economic development was lifting all, or virtually all, boats. So, in all years and for both rural and urban respondents, the dominant picture was standard of living trend to an extent that other societies can only envy.

Nonetheless, there is a secondary trend visible in the figures in Table 6 beyond the overall dominance of improving family living standards. In 2004, a lower percentage of urbanites than of rural residents (59.1% vs. 66.1%) reported that their family living standards had improved since 1999, while a higher proportion reported that their living standard had gone down (20.8% vs. 11.6%). By 2014, the situation had reversed, with a higher proportion of urbanites than rural residents reporting better living standards compared with 2009 (80.2% vs. 75.1%), although with the proportions reporting lower living standards virtually the same (4.1% vs. 3.8%).[23] These figures support two conclusions: first,

[23]In the 2009 survey, the pattern of responses for rural and urban respondents was virtually identical. Migrants in 2004 were more likely than either rural or urban respondents to

in general, increased proportions of respondents in each successive survey report that their families have benefited compared to five years earlier. Second, the negative impact on urban families that can be attributable to the campaign after the mid-1990s to downsize state-owned enterprises is clearly visible in the 2004 survey results, with a sizable minority (21%) of such families reporting declining living standards compared to five years earlier. But the pall cast by that campaign had clearly dissipated by the time of our 2009 and 2014 surveys.

Although the major focus here has shifted to explaining the relatively poor subjective health ratings of urban respondents in 2004, the more favorable subjective health ratings of rural Chinese in that year deserve some additional comment. It may well be the case that rural expectations for their own health at the time were lower than those held by urbanites. In addition, it can be argued that early in the new millennium, rural views and satisfaction about their overall situation, including their own health, revolved mainly around comparisons with the past and with the conditions faced by their parents, rather than with urban Chinese. There is considerable evidence that rural gratitude for being "liberated" from the forced poverty and lack of geographic and social mobility of the commune system of the Mao era, and for the resulting dramatic improvements in their living standards and options in life after 1978, continued to generate a "halo effect" of optimism in rural China even decades later, and despite the fact that rural citizens continued to be very severely disadvantaged compared to people living in cities.[24] So at the time, Chinese villagers were unlikely to feel that they and urban citizens shared a lot in common or were part of the same reference group.[25]

The likely influences on rural attitudes and evaluations of their health had changed by 2009 and 2014. Rural family incomes have increased

report improvements in their standard of living compared to five years earlier, a pattern that is still visible in 2009. In the 2014 survey, in contrast, urban respondents had caught up with and slightly surpassed the reports of improved living standards of migrants.

[24]See the general discussion and evidence in Whyte (2010a). In the Mao-era commune system, migration to urban areas was effectively prohibited, forcing rural Chinese to remain in the labor force of collectivized agriculture and effectively barring them from pursuing commerce, manufacturing, construction, or other trades, as Chinese villagers had been able to do before the socialist transformation of the 1950s.

[25]One of the differences has already been noted: the much weaker tendency of villagers in 2004 to assume that medical care should be mainly or fully the responsibility of the state.

relatively rapidly and perhaps even slightly more rapidly than urban incomes since 2009.[26] At the same time, the cultural and social isolation of the countryside has continued to decline. Outmigration of the young has continued to grow, urban encroachment on farmland for commercial development has spread widely, and better roads, rail communications, and electronic information flows make even villages distant from large cities less isolated than in the past. Cities have been expanding at a break-neck pace, with China going from being one-third urban in 2004 to 55% or so in 2014. All of this means that even Chinese who continue to reside in villages and engage in farming are more thoroughly drawn into awareness of, and social connections with, cities and urbanites than was the case a few years earlier. And as villagers are becoming less isolated, they are likely becoming increasingly aware of how relatively disadvantaged they are compared to their urban counterparts, perhaps specifically in terms of the more modest coverage of their medical expenses in new cooperative medical insurance plans and their relatively poor access to the best quality medical facilities and personnel.

We are suggesting that these changes across time between 2004 and 2014 are likely to have undermined the tendency for Chinese villagers to view their health status mainly in comparison with their own even more deprived pasts, rather than in comparison with urbanites, while also reducing the sources of extra anxiety that urbanites faced at the time of the 2004 survey. The relative reduction of the differences in expectations of villagers and urbanites regarding medical care finds support in responses to the question about whether it is primarily the state or individuals and families who should be responsible for medical care (displayed in Table 7). As noted earlier, in 2004, villagers were significantly more likely than urbanites to say that individuals and families should shoulder the main responsibility for medical care. In 2009 the same contrast between rural and urban attitudes was visible, but it had weakened somewhat. By the 2014 survey, however, there was no significant difference on this question between villagers and urban citizen respondents — in fact, in 2014, slightly more rural respondents (65.5%) than urban ones (64.2%),

[26]According to preliminary results from the latest two rounds of the China Household Income Project surveys, the ratio of urban to rural household income declined from 3.82:1 in 2007 to 2.38:1 in 2013 (with the urban category including rural-to-urban migrants but without making purchasing power parity adjustments) due to more rapid growth of rural incomes during this interval. See Luo *et al*., (2017, Table 2.19).

Table 7. Views on responsibility for healthcare (row%).

| | State mainly | Equal | Individual/ Family mainly | Total |
|---|---|---|---|---|
| Rural respondents | | | | |
| 2004 | 22.2 | 53.2 | 24.5 | 99.9 |
| 2009 | 47.7 | 46.8 | 5.6 | 100.1 |
| 2014 | 65.5 | 32.1 | 2.4 | 100.0 |
| Migrants | | | | |
| 2004 | 29.6 | 49.0 | 21.5 | 100.1 |
| 2009 | 59.3 | 36.3 | 4.4 | 100.0 |
| 2014 | 67.2 | 27.2 | 5.6 | 100.0 |
| Urban respondents | | | | |
| 2004 | 46.7 | 42.6 | 10.8 | 100.1 |
| 2009 | 59.0 | 38.5 | 2.5 | 100.0 |
| 2014 | 64.2 | 33.8 | 2.0 | 100.0 |



responded that the state should be mainly responsible for healthcare, reflecting a growing national consensus.[27]

Before concluding, perhaps a word should be said in defense of the underlying logic we have used in explaining both the anomalous rural advantage in subjective health ratings in 2004 and the disappearance of that advantage in the subsequent surveys. Can relative expectations and comparisons with particular reference groups actually have a significant impact on how survey respondents rate their physical and emotional health? We won't attempt to summarize here the abundant research literature on whether and how psychological states, reference groups, and relative expectations can influence health, except to note that we are dealing with subjective self-ratings of health, rather than, say, the results of tests in medical laboratories. However, it is worth citing a recent effort to apply very much the same kind of thinking to explain why the death rates of poorly educated, middle-aged whites in the United States have been climbing since 1999, while the comparable rates for African-Americans and Hispanics have been declining. Cherlin (2016) presents an

[27]The figures in Table 7 are reduced from five categories to three, with the state fully and mainly responsible for healthcare combined and individuals fully and mainly responsible combined.

explanation that is very similar to ours. Here is his conclusion: "It's likely that many non-college educated whites are comparing themselves to a generation that had more opportunities than they have, whereas many blacks and Hispanics are comparing themselves to a generation that had fewer opportunities." So yes, it seems likely that similar sorts of mechanisms can help explain the puzzling trends in Chinese subjective health ratings considered in this chapter.

## 6. Conclusions

On balance, the trends over time in Chinese respondent assessments of their physical and emotional health can be interpreted as the weakening and eventual disappearance of an anomalous pattern of more positive rural than urban assessments. However, this trend should not be interpreted as indicating any deterioration of rural health standards, which have continued to improve, according to our surveys and ample outside evidence. Instead, it seems likely that this anomalous pattern was produced primarily by a temporary but very dark cloud affecting urbanite attitudes in general in 2004, in combination the relative greater isolation of Chinese villages and villagers then from urban life and its advantages. While the changes since 2004 have eliminated the anomalous situation of villagers viewing their health more positively than urban citizens, in most respects the changes over time can be seen as positive developments. China may be increasingly displaying a more "normal" pattern of high-status individuals reporting better health than their more disadvantaged counterparts. However, in terms of the general improvements in subjective assessments of respondents about their own health, as displayed in Tables 3 and 5, as well as in terms of the rapid spread and virtual universalization of at least rudimentary medical insurance coverage displayed in Table 1, the trends documented by our surveys indicate substantial progress in addressing the healthcare crisis that China faced two decades earlier as a result of the unintended consequences for healthcare of China's post-1978 market reforms.

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