

In this paper we will use data from the newly collected China Health and Retirement Longitudinal Study (CHARLS), pilot to study health of the elderly in China; specifically the gradient of health measures with respect to socio-economic status (SES).

We have just finished collecting the data, covering 1,563 randomly selected households in two provinces, Zhejiang and Gansu. We sampled one person age 45 and over, plus their spouse if one exists, in each household with an age-eligible person. We have data on 2,951 individuals 45 and older and their spouses. The two provinces chosen for the pilot survey were chosen to represent one coastal, economically dynamic province and one inland, poorer province. Gansu, in the northwest of China, is one of the poorest provinces in China and has a large rural population. Zhejiang, on the southeastern coast, in contrast, is one of the leading centers of Chinese industrialization and exports to the west and is far more urban than Gansu province. Incomes there have risen more rapidly than the Chinese average.

CHARLS is the first publicly available data set (it will be public by or shortly after PAA, 2009) on the elderly in China that is so broad in its content and designed explicitly after the Health and Retirement Study (HRS) and its offshoots (ELSA, SHARE, KLoSA, etc.). This paper will be the first study of SES and health using the new CHARLS data.

With respect to aging issues, China is arguably the most important developing country in Asia. Not only does China have the world's largest elderly population, but because of rapid economic growth, increases in longevity, and the impacts of strong family planning policies, notably the One Child Policy for over 25 years, China's population is aging very rapidly. It is projected that the proportion of those age 60 or over will increase from 10% of the population in 2000 to about 30% in 2050 (United Nations, 2002). China's elderly support ratio (the number of prime-age adults 25–64 divided by the number of adults older than 64) is projected to fall from nearly 13 in 2000 to 2.1 by 2050. China has also been aging at a much lower level of national income than other countries and yet is expected to have a higher proportion of elderly in 30 years than several countries that are today much richer, including Singapore and Israel (Kinsella and Velkoff, 2001). Reinforced by economic reforms that are moving China toward a market economy, China faces particular problems today with regard to the support of the elderly that are different than are the problems seen in industrial countries today.

As part of the aging process, China has been undergoing a rapid health transition from infectious to chronic diseases and a nutrition transition from under-nutrition and malnutrition to over-nutrition (Popkin, 2003). Indeed, China is one of a few Asian countries in the middle of these transitions. Part of the reason for this rapid nutrition and health transition in China is the extraordinary economic growth that China has had over the past thirty years, since they began a process of economic reform away from a planned economy.

There is some indication that in low and middle income countries better education helps to improve health from bad health states associated with poverty, such as being underweight (Strauss and Thomas, 2008). However the same is not always true, as yet, for bad health states associated with plenty, like overweight. Here, education is often associated with a higher likelihood of being overweight, at least for men; however this is apparently not true for women, at least not better educated women, who often have lower body mass than less well educated women (Strauss and Thomas, 2008). Hence better educated women seem to learn the benefits of being within a normal body mass range more than do better educated men in transitioning countries. We will examine these issues, among others, for the aging population in China using CHARLS.

Health seems central to aging. We will explore the links between socioeconomic factors and health, by gender. Within SES, it is education, income and wealth that are emphasized by economists and other social scientists. In China urban-rural differences are likely to be important as are provincial differences between Gansu and Zhejiang. Many studies have shown strong, positive correlations between education and wealth of adults and their health status. Much of the literature has tried to explore whether those correlations represent causality

(see for instance, Smith, 1999, 2007; Strauss, 1986, 1993; Strauss and Thomas, 1995, 1998, 2008). Many background variables, including health *in-utero* or when very young, may confound interpreting these correlations, particularly with just a cross-section as we have with the CHARLS pilot, but it is important, as a start, to explore whether these correlations exist in Chinese data and to examine whether there are important differences in the SES gradients between men and women. Furthermore, there are many health measures available in CHARLS, both biomarkers and self-reports. Some of the health measures are ones in which health of the Chinese population is undoubtedly improving, underweight as one example. For other dimensions, however, health has been worsening, overweight for instance. We will examine the SES correlations in the sample across these variables.

The biomarkers measured include height and weight, from which body mass index (BMI) can be calculated. In addition we took lower right leg length and arm length (from shoulder to wrist) for those who could not stand up erect to have their height taken. From these two measures, height can be estimated. We also measured waist circumference, which conditional on BMI is a good measure of body fat content. Blood pressure, together with pulse, were measured three times for each respondent. Studying hypertension will, along with BMI and waist circumference, be part of this paper.

In addition, several performance measures indicating strength and movement were collected. A peak flow meter was used to get a measure of lung capacity, and a dynamometer was used to measure grip strength. Both of these measures are now included in the HRS. Each respondent was timed performing 5 chair sit to stands. For this measurement, a respondent, begins in a sitting position in a portable plastic chair, and is asked to stand and sit down five times.

In addition to biomarkers, CHARLS has very rich data on self-reports and other health measures. We start with a standard general health question, which is asked two ways, using excellent, very good, good, fair, poor and very good, good, fair, poor, very poor. The two questions are separated by substantial time in the interview and which comes first is chosen randomly. This is followed by questions asking about diagnoses by health practitioners (doctors) and the timing of diagnoses of specific conditions. Where relevant, we also ask about current medications for each specific condition. We follow this subsection with a section to obtain information on activities of daily living (ADLs), instrumental activities of daily living (IALDs), and physical functioning. Again, we follow the other HRS surveys in the specific questions asked, although we adjust some of them to make them more relevant for China, especially for poor rural areas. We use the CES-D-10 series of 10 questions on depression. There is then a cognition section in which we ask the respondent to recognize the solar calendar year we are in and the month and day of the week, followed by questions on recognition of the respondent's address. We also include a short memory, re-memory test of ten words, followed by a short series of very simple arithmetic questions. These are patterned exactly after cognition questions in the HRS.

In this paper we will begin to describe these various health measures, and their associations with education, household income and wealth, urban/rural residence and other factors. We will separate men from women and the younger old from the older old.

References

- Kinsella, Kevin and Victoria Velkoff. 2001. *An aging world, 2001*, Washington D.C.: US Census Bureau.
- Popkin, Barry. 2003. The nutrition transition in the developing world, *Development Policy Review*, 21:581-597.
- Smith, James P. 2007. The impact of socioeconomic status on health over the life-course, *Journal of Human Resources*, 42(4):739-764.
- Smith, James P. 1999. Healthy bodies and thick wallets, *Journal of Economic Perspectives*, 13(2):145-166.
- Strauss, John. 1986. Does better nutrition raise farm productivity? *Journal of Political Economy*, 94(2):297-320.
- Strauss, John. 1993. The Impact of Improved Nutrition on Labor Productivity and Human Resource Development: An Economic Perspective, in P. Pinstrup-Andersen (ed.), *The Political Economy of Food and Nutrition Policies*, Baltimore: Johns Hopkins Press.
- Strauss, John and Duncan Thomas. 1995. Human Resources: Empirical Modeling of Household and Family Decisions, in T.N. Srinivasan and Jere Behrman eds., *Handbook of Development Economics, Volume 3A*, Amsterdam: North Holland Press.
- Strauss, John and Duncan Thomas. 1998. Health, Nutrition and Economic Development, *Journal of Economic Literature*, 36(2):766-817.
- Strauss, John and Duncan Thomas. 2008. Health over the Life Course, in T.P. Schultz and J. Strauss (eds.), *Handbook of Development Economics, Volume 4*, Amsterdam: North Holland Press.