Consumption and poverty of older Chinese: 2011-2020

Jinquan Gong[*]
Gewei Wang[*]
Yafeng Wang[*]
Yaohui Zhao[†]

Abstract

Based on fives waves of CHARLS data from 2011 to 2020 with expenditure imputations, we estimate living standards and poverty rates among older Chinese and study factors associated with consumption and poverty. Our results indicate that in the 2010s, China's poverty profile among older people was no longer characterized by regional concentration, such as the case in the first decades following China's economic reforms. Rather, old-age poverty is dispersed and varies mainly by demographics. Rural-urban differences, low education, and older age are the main factors associated with poverty. In the past decade, people of these characteristics enjoyed substantially more reductions in poverty, but they remain chief predictors. After controlling for demographics, consumption grew by 72.9%, and the poverty rate declined by 59.2% from 2011 to 2020, revealing remarkable progress. By interacting marital status with sex and urban/rural residence, we identify gaps in older people's economic support and find that the never-married urban people, widowed and divorced women, especially divorced rural women are the most at risk for poverty. Our research implies that future poverty alleviation policies should have more precise targeting.

[*] Peking University.
[†] Correponding author, Peking University and IZA, email: yhzhao@nsd.pku.edu.cn. Grant support for research and the collection of survey data used in this paper (the China Health and Retirement Longitudinal Study, CHARLS) came from the National Institute on Aging (R01-AG037031), the China Medical Board (16-249 and 20-364), and the Natural Science Foundation of China (72061137004). All authors contributed equally.

1. Introduction

Older individuals tend to be economically vulnerable because their productivity has peaked long ago, and some lose the capacity to work altogether. Thus, how to protect against old-age poverty is crucial for everyone. Such concerns become collectively prominent with population ageing. For example, China had 264 million people aged 60 and older in 2020, accounting for 18.7% of the total population. By 2050, the numbers will grow to 485 million and 34.6% (United Nations, 2019).

While high-income countries have protected the livelihood of the older population, as reflected in higher consumption levels by older people relative to the young, the age-consumption profiles in lower and middle-income countries (LMICs) tend to be flat despite higher medical expenses at old age (Lee and Mason, 2011). Wealth levels may explain part of the differences, but social security is critical—older people in high-income countries receive generous social security, but their LMIC counterparts still mainly depend on their labor or family. Such a distinction is also evident within China. Giles et al. (2021) showed that older Chinese urban residents retire much earlier than rural people, mainly because they enjoy generous social security. The Chinese family has traditionally provided support to older members. However, with fertility declines and out-migration, the role of the family is significantly weakened.

China has developed rapidly over the past decades, with an 8.3% annual per capita GDP growth from 1980 to 2020. Consequently, poverty has drastically reduced, reducing the number of poor by 770 million from 1978 to 2020 (The State Council Information Office, 2021). Meanwhile, in the most recent two decades, China greatly expanded social insurance programs that benefit older people disproportionally, including New Rural Cooperative Medical Insurance in 2003, New Rural Pension Program in 2009, and Urban Resident Pension Program in 2010. Additionally, benefits under these programs have steadily risen over time. With all these efforts to protect the older population, it is of interest to learn whether older people were able to benefit from the economic growth and whether and to what extent old-age poverty has declined in the most recent decade.

A large literature has described the living standards and poverty status of the Chinese population as a whole or evaluated the impact of various programs. Luo, Li, and Sicular (2020) used the China Household Income Project data to show that between 1988 and 2013, rural poverty reduced from 75% to 10%. Chen and Ravallion (2021) used China's national household surveys

for rural and urban areas and estimated that China's poverty rate fell from almost 90% in the early 1980s to under 4% in 2014. A few papers examined the impact of various policies or programs on poverty (e.g., Chen and Ravallion, 2003, 2008; Du, Park, and Wang, 2005; Meng, 2013). The poverty profile has shifted over time. The poor were regionally concentrated initially (Ravallion and Jalan, 1999). However, the remaining poor have become more dispersed in recent decades (Datt and Chaudhuri, 2009).

Relatively little research has paid attention to the elderly living standards and poverty. Benjamin, Brandt, and Rozelle (2000), using a 1995 survey covering six counties and 30 villages in Hebei and Liaoning provinces, showed that older people had significantly lower consumption levels. Cai et al. (2012), using the 2006 China Urban and Rural Elderly Survey, reported consumption poverty of 19% (6%) among rural (urban) residents 60 and older. Park et al. (2012) used the two-province pilot of the China Health and Retirement Longitudinal Study conducted in 2008 and reported that the expenditures per capita are significantly lower for the elderly than those aged 45–60. Huang and Zhang (2021) examined the impact of a new rural pension program on household income and food expenditure for older residents. Zhao and Zhao (2018) focused on the social security incomes of the elderly population.

We use the China Health and Retirement Longitudinal Study (CHARLS) from 2011 to 2020, a nationally representative sample of the older population, to study the living standard of poverty of older people in China and their evolution in the most recent decade. Specifically, older adults are referred to as individuals aged 60 and over. We measure living standards by consumption rather than income because consumption is a better measure of long-run resources than current income, particularly in low-income rural settings, where incomes vary greatly from year to year (Deaton, 1997; Strauss and Thomas, 1995). Additionally, consumption can be measured with less error than income. Meyer and Sullivan (2012) recommended using consumption to measure poverty in the U.S. In practice, consumption is reported as household expenditure on weekly, monthly, or yearly figures based on the frequency of purchases. Consumption of self-produced food, even though no purchase is made, is included as part of the consumption. Therefore, although we use the term "consumption" for brevity, it is more accurately described as a hybrid of consumption and expenditure. We define poverty status by comparing household per capita consumption against the national poverty lines. Consumption and poverty statistics are presented for China as a whole and

by rural and urban residents. Using regression models, we also examine demographic patterns of consumption and poverty and identify which demographic groups are the most vulnerable.

To our knowledge, our paper is the first systematic study of the living standards and poverty among older Chinese at the national level in the most recent decade. The National Bureau of Statistics (NBS) of China published annual poverty statistics by age groups of the household heads from 2014 to 2019, showing that those 60 and older have significantly higher poverty. Unfortunately, disaggregated statistics by other demographics were not available, and the NBS stopped publishing the figures after 2019.

The paper is organized as follows. Section 2 describes China's policies to reduce old-age poverty, followed by a description of the data and the national poverty line (Section 3). Section 4 describes the trend of old-age consumption and consumption-based poverty over the past decade. Section 5 presents regression-based analyses. Section 6 summarizes and concludes.

2. Background: Policies to Support Older Populations in China

The Chinese efforts to combat poverty took multiple stages. The first stage was spontaneous poverty reduction via individual efforts, made possible by the de-collectivization of agriculture which gave incentives for farmers to work and the freedom to engage in non-farm activities (Lin, 1992). The second stage saw massive government-led efforts to promote out-migration from poor areas and invest in rural infrastructure and businesses. However, by the early 2000s, the earlier demographics-blind, development-driven policies had largely exhausted their potential (Ravallion and Chen, 2007); at least half of the poor were in non-poor areas (Datt and Chaudhuri, 2009). At this stage, the causes of poverty increasingly became illnesses and/or the loss of work capacity among older people in the household.

Against this background, the Chinese government introduced the New Rural Medical Insurance in 2003 to cover the rural population, aiming to reduce poverty due to high medical expenses. Furthermore, in 2009, the Chinese government implemented the New Rural Pension Scheme (NRPS) to provide pensions to rural people 60 and older. The amount of pension was initially very small, but the amount of money has been growing steadily (Lei, Zhang, and Zhao, 2015). Around the same time, medical and pension programs were also provided to urban residents who fell out of the formal social protection programs.

With social insurance programs in place, the government made a final push in 2016 (The State Council Information Office, 2015) to eliminate all absolute poverty via massive targeted campaigns, aiming to officially retire the development-driven poverty reduction programs. During the process, poor households with no productive potential were granted protection from the Low Income Guarantee Program, the Chinese version of social assistance. The campaign was declared a victory at the end of 2020, removing all 832 (128,000) counties (villages) from the official list of "poor" counties (villages).

3. Data and the Poverty Line

3.1. The China Health and Retirement Longitudinal Study (CHARLS)

CHARLS is a nationally representative longitudinal study of middle-aged and older Chinese residents (Zhao et al., 2014). Between June 2011 and March 2012, CHARLS conducted a baseline survey of 17,708 individuals. The sample was chosen using a multi-stage PPS (probability proportional to population size) sampling systematic strategy with stratification. In the first stage, from a sampling frame of all county-level units in China implicitly stratified by region, urban districts or rural counties, and GDP per capita, CHARLS randomly selected 150 counties/urban districts. In the second stage, within each county/district, three rural villages or urban communities were selected. Next, a census of all dwelling units within the village/community was conducted to produce the sampling frame, from which CHARLS drew a sample of 80 households. After a screening process, all households with at least one age-eligible member (45 and over) became our intended sample. Finally, within each household, CHARLS sampled randomly chose one respondent 45 and over and included the spouse. Respondents were reinterviewed at follow-up waves in 2013, 2015, and 2018. In 2020, amid COVID-19, a scaled-down version of CHARLS was conducted, but the submodule of household expenditure remained the same. Therefore, we examine trends in consumption and poverty from 2011 to 2020.

As mentioned earlier, we measure living standards by per capita consumption through a household expenditure survey. CHARLS records household consumption items weekly, monthly, or yearly according to the frequency of purchases in the interview year to avoid recollection bias. Weekly food expenditures include purchased food, eating out, the value of home-grown food, tobacco, and alcoholic beverages. Monthly expenditures include utilities, central heating, postage,

phone and Internet bills, household essentials, fuel, transport, domestic helper, and recreation. Yearly items consist of banquets, medical, clothing, education, non-motorized vehicles, phones, travel, rental, health maintenance, beauty, HOA fee, and donations. We aggregate all weekly and monthly expenditures to the annual level and define individual consumption as household expenditures per person deflated to 2011 prices by the national consumer price index.

Expenditure items in CHARLS remained broadly consistent across waves, but there are also changes (Appendix Table A1 lists all the items across waves). One type of change was splitting an item into two. In the 2011 wave, home-grown food was grouped with purchased food but separated since 2013. In 2018, banquet expenses were separated from food expenses. In 2020, we also separately asked about expenses due to Covid-19, such as masks, disinfectants, medical gowns, etc.; these were part of household essentials in previous waves. Splitting items do not affect our definition of consumption but could affect the amount reported, the extent of which could be an interesting future research question. The second type of change was to modify the specifics of an item. When asking about expenses, an item name was first read to the respondent and followed by examples. In 2011, cosmetics were included both in household essentials (item 8) and beauty expenses (item 9) by mistake, which potentially led to double counting. In 2013, this was fixed by removing cosmetics from household essentials. Because beauty expenses were tiny (the mean beauty share was 0.21% and the median 0% in 2011), this glitch was unlikely to affect the overall consumption measure, and the effect on the poverty rate is likely minimal as the poor hardly use expensive cosmetics. In the 2011 survey, natural gas was omitted from the list of examples of fuel expenses, but this is likely insignificant because (1) households that use natural gas for cooking are likely to report it even without being prompted, and (2) the impact on poverty is likely insignificant because natural gas is usually provided in multi-level residential buildings and the poor are mostly in rural areas or live in one-story urban dwellings. The last example is how travel expenses were asked. In 2011 examples of travel were given, including those by trains, automobiles, planes and boats. In 2013-18, no examples were given. In 2020, travels were specified to include home trips from migrant work destinations and trips for leisure. The third type of change was the place an expenditure was asked in the questionnaire. In the first three waves, rental payments were placed in the housing module; they were moved to the expenditure survey from 2018 onward.

More changes occurred in how durable goods purchases and repairs were asked. For example, we merged the expenditures on durable goods and electric appliances in 2013. Before 2020, we did not say whether the expenses included repairs or not. In 2020, such expenses were specified to include labor and parts in repairs. For automobile expenses, in the first four waves, we only asked about purchasing costs; in 2020, we included repair costs. These changes are irrelevant for our current study because we excluded durables from the consumption.

We also exclude medical expenditure in this study because we are mainly concerned with poverty at old age. Otherwise, if a family situated just below the poverty line experienced an illness and incurred medical spending, the family would be considered out of poverty by this expenditure; in reality, this family was likely to have fewer resources for food and clothing due to the extra expenses. Citro and Michael (1995) recommended subtracting medical spending from income for the United States, followed by Canada and many Western European countries. While Meyer and Sullivan (2012) considered this practice "probably the most controversial" adjustment for the income measure, they argue that medical expenses can be subtracted from expenditures on the grounds of being human capital investments. Following the literature, taxes and fees collected by the government were also excluded from our study.

3.2. Imputation of missing consumption values

With expenditures items totaling more than twenty, missing values become a major issue. In CHARLS, we first ask whether the household has an expenditure on a certain item. If the answer is no, then the expenditure is naturally 0. However, if a household reported yes to an item but could not remember the amount of money or refused to answer, such values should be missing, not 0. As a result, missing one item leads to missing for the whole household.

Missing values for expenditure items are common in household surveys. Although refusing the answer in expenditure surveys should theoretically be less than in income surveys, retrospectively recalling expenses may still be difficult, especially given cognitive decline among older people. In some surveys, households are asked to keep a diary of all expenses, but such a practice may usher in other biases, especially since many older people are illiterate.

In our data, many households had at least one missing value in the expenditure items, 17.4% in 2011, 37.6% in 2013, 35.9% in 2015, 17.8% in 2018, and 23.8% in 2020 (Table A2). Therefore, imputation of missing values is necessary to retain the representation of the sample. Fortunately,

as revealed in Table A2, in most cases, the number of missing items is one or two, and those missing more than 12 items accounted for less than 10%. The missing data problem varied across years; the best was 2011, 2018 and 2020, when at least 92% of all households had less than three items missing; the worst was in 2013, when 9.3% of households skipped the whole expenditure module, followed by 2015 when 6.6% of households skipped it. The missing item problem significantly improved in more recent waves, reflecting better survey management. In the 2020 wave, only 0.77% of the households have twelve or more missing items.

We impute consumption values for households that had missing items based on information about the non-missing portion of the consumption and the imputed consumption share of the missing portion. The basic idea for imputing the consumption share is to assign the community median to the households that need imputation.

A formal derivation is as follows. For an item i consumed by household j in community k, denote c_{ijk} the expenditure on item i. Define the total household consumption

$$c_{jk} = \sum_i c_{ijk}\,. \tag{1}$$

Denote the set of household j's missing items by $\mathcal{M}_{jk}$. $c_{jk}^{NM} \stackrel{\text{def}}{=} \sum_{i\notin\mathcal{M}_{jk}} c_{ijk}$ is j's total non-missing consumption that we actually observe. $c_{jk}^{M} \stackrel{\text{def}}{=} \sum_{i\in\mathcal{M}_{jk}} c_{ijk}$ is j's total missing consumption that we don't observe. We have

$$c_{jk} = \sum_i c_{ijk} = c_{jk}^{M} + c_{jk}^{NM}. \tag{2}$$

Let the share of all missing items be $s_{jk}^{M} \stackrel{\text{def}}{=} c_{jk}^{M}/c_{jk}$ and the non-missing items be $s_{jk}^{NM} \stackrel{\text{def}}{=} c_{jk}^{NM}/c_{jk}$, and $s_{jk}^{M} + s_{jk}^{NM} = 1$, we have

$$c_{jk} = s_{jk}^{M} c_{jk} + s_{jk}^{NM} c_{jk} = s_{jk}^{M} c_{jk} + c_{jk}^{NM}. \tag{3}$$

The second term is known, so our goal is to estimate c_{jk} by finding a proxy for s_{jk}^{M}.

Our strategy is to assign the community (median) shares among households that do not have non-missing items, $\hat{s}_{jk}^{M}$, to the household. Denote s_{ik} the median of the community share for item i,

$$\hat{s}_{jk}^{M} = \sum_{i\in\mathcal{M}_{jk}} s_{ik} \tag{4}$$

When only one item is missing, then the community median share for this item is used. In cases where more than one item is missing, we aggregate community median shares of all missing items and assign the total share to the set of all missing items $\mathcal{M}_{jk}$. Once this is done, we derive the total consumption c_{jk} for the household.

From Equation (3), we have

$$c_{jk} - \hat{s}_{jk}^{M} c_{jk} = c_{jk}^{NM} \tag{5}$$

thus,

$$\hat{c}_{jk} = \frac{c_{jk}^{NM}}{1 - \hat{s}_{jk}^{M}} \tag{6}$$

Our imputation method, i.e., assigning the community-median share to the household's missing items, may have consequences for poverty analysis. If the missing pattern is independent of living standards, then imputation does not affect our analysis; otherwise, it may. There are reasons to believe that missing may not be random. For example, rich people may be more likely to hide their luxurious consumption for fear of revealing their wealth, or the poor may not remember their expenses due to worse cognitive health.

Although missing is non-random, we posit that the problem is not serious for average households because their consumption shares are likely conforming to the community averages and unlikely to cause major biases in the estimation. To understand biases for poor and rich households, we consider two cases in which either a necessary good is missing or a luxury good is missing. We are mainly concerned about whether the poor status is changed.

Scenario 1: Food consumption is missing.

For poor households. Due to Engel's Law, a poor household spends a larger share of consumption on food; thus, the community food share is likely an underestimation, and our imputed total consumption will be underestimated, making the household poorer. Therefore, our imputation is likely to cause some low-income households to fall below the poverty line, exaggerating the number of poor.

For rich households. A rich household spends a smaller share of consumption on food; thus, the community food share is likely an overestimation, and our imputed total consumption will be overestimated, making the household richer. Therefore, a rich household will stay rich; no impact on poverty is expected.

Scenario 2: Luxury good consumption is missing.

For poor households. We expect the community's luxurious goods share to be higher than poor households. Thus, our imputed total consumption for the poor household will be overestimated. If the poor have many luxury consumptions missing, this will artificially lift them out of poverty. Otherwise, it is unlikely to be an issue.

For rich households. A rich household spends a larger share of consumption on luxurious items; thus, the community share is likely an underestimation, and our imputed total consumption will be underestimated, making the household less rich. Despite this underestimation, a rich household is unlikely to fall below the poverty line because of the imputation.

Because of the above problems with missing imputations, we choose to limit the scope of imputation to households that have less than 12 items missing.[1] To understand the extent of remaining biases, we examine in Table A3 whether rich or poor households tend to have missing items and whether they are more or less likely to miss consumption of food and luxury goods. These exercises are based on the subset of households for which consumption is not missing or successfully imputed, i.e., those with 12 or more missing items are excluded. We control for community fixed effects to consider within-community variations of item missing because we impute a share of missing items from the community median. Column (1) examines the missing patterns of food consumption, and Column (2) shows that for the beauty products or services which represent luxury goods. We find that the literate but not finishing elementary school had a little more propensity to have missing food items, but the association is not strong. Other than that, no education gradient can be found in missing food or missing beauty items. Based on these results, it appears that the imputation is unlikely to cause major biases in consumption or poverty estimations.

Figure A1 compares our imputed total consumption distributions against the distribution using only the sample with no missing items. There is barely any difference for waves 2011, 2018, and 2020. The imputations for 2013 and 2015 have shifted the distribution a little leftward, yielding a little higher poverty rates.

Some household expenditures cannot be imputed successfully either because all community households had missings (n = 17) or because the value of a household's non-missing consumption

[1] We have repeated our imputations using other thresholds and the results remain similar.

is zero (n = 93). In total, 4.13% of individuals are excluded from the imputation, mainly because their households had 12 or more missing items. Because these exclusions may cause our sample to lose national representation, we need to recalculate the weights. For this purpose, we run a probit model to predict sample inclusion. Details of the model are shown in Table A4. The inverse of the predicted inclusion probability is used to re-construct the sample weights.

3.3. Poverty lines

China publishes poverty lines for rural residents to reflect minimal living standards for subsistence, calculated based on a basket of necessary consumer goods. The official line is adjusted once every few years, most recently in 2011, to allow for a larger share of nonfood expenditures in the commodities basket. In between basket composition changes, the thresholds are adjusted by price indexes for items in the basket. Another commonly used poverty line is the World Bank's international line ($1.90 a day). We use the Chinese lines because our purpose is to examine trends in consumption standards and poverty reduction over time and the Chinese official poverty lines are inflation-adjusted.

China does not publish a poverty threshold for urban people. Ravallion and Chen (2007) suggested that the cost of living in urban China could be adjusted by a multiplier of 1.412 from the consumption bundle.[2] Therefore, we adopt the same multiplier to derive the urban poverty line. We could not find an official poverty threshold for 2020 and used the rural consumer price index to inflate the poverty line for 2020.[3]

Table A5 lists the poverty lines for rural and urban residents in five years corresponding to the CHARLS surveys. In 2011, the poverty line for rural (urban) residents was 2,536 (3,581) yuan, going up to 3,315 (4,681) yuan in 2020.[4] Because the basket components stayed the same in this period, the change reflects price inflation only. In addition, we do not adjust for the equivalence scale, which considers household size and age composition, because China's official poverty line

[2] In Ravallion and Chen (2007), the rural and urban baskets are worth 850 yuan and 1,200 yuan respectively in 2002 price.

[3] Note that the historical inflation of the line basket is higher than the bundle to calculate rural consumer price indices. For example, the 2019 price of the line basket is 140 percent of its 2010 price, whereas the inflation rate of the rural CPI is 125 percent for the same period. Using the CPI to adjust poverty lines may underestimate poverty rates.

[4] One US dollar is approximately 6.5 yuan in 2020.

does not consider the equivalence scale.[5] We compare the per capita consumption level at its current prices against poverty lines to determine a household's poverty status.

4. Old-Age Consumption Poverty: Levels and Trends

Consumption

We use the term "rural" for agricultural hukou (household registration) and "urban" for non-agricultural hukou. There were changes in hukou status across the years, most commonly converting to "unified" hukou in places where the rural/urban distinction was erased from their registration book. However, the conversions are mostly nominal for older people, as the historical rural hukou still reflects lower economic status throughout their whole life. Therefore, we define the hukou status as the first one since entering the CHARLS survey. Those who had converted to the unified hukou in the baseline reported their previous hukou status, and we use that.

The consumption and poverty statistics are all weighted, and so are regressions. The baseline household and individual weights have been adjusted for non-response biases (Zhao et al., 2013). CHARLS later developed a set of post-stratification individual weights to adjust for sample attribution to conform to external national population statistics. The weights were further adjusted for omitting households whose consumption levels are not imputed, as we discussed in Section 3.2.

Table 1 shows median consumption levels across five waves for all of China and by urban and rural residency. All prices have been set at the 2011 levels. We first observe that urban people have significantly higher consumption levels than rural people. In 2020, for example, the median consumption level for those 60 and older was 14,200 yuan among urban people, but only 7,300 yuan among rural people, 49% less. Next, we find that the consumption level generally declines with age for both urban and rural residents. Figure 1 shows median consumption levels by the five-year age group. Due to the smaller sample size, urban residents' consumption profile across ages is noisier, especially those over 70 and in the 2015 wave, but the general declining trend is still present. Take 2020, for example. The median rural resident aged 60-64 consumed 8,700 yuan,

[5] In the United States, official poverty thresholds vary by family size and composition, indicating an implicit equivalence scale. Meyer and Sullivan (2017) consider an alternative three-parameter scale to construct measures of consumption poverty for the United States.

while those aged 70-74 consumed 6,500 yuan, about 25% less. The consumption of the median urban residents of 60-64 was 15,600 yuan, while the consumption of 70-74 was 17% less at 13,000 yuan. The declining age-consumption profile for China is in contrast to those in high-income countries, suggesting a higher poverty rate among older adults.

The optimistic side of the story is that, for both urban and rural groups, consumption levels have continuously increased for every age group, mirroring the macroeconomic growth. For all people aged 60 and over, median urban (rural) consumption grew at 7.5% (9.8%) annually during the 2010s, keeping pace with per capita GDP growth (7.4%). Thus, the past decade has treated older Chinese quite well, especially the rural people.

Figure 2 examines the cumulative distribution of consumption by urban and rural residents separately, showing that consumption levels increased for every percentile, implying that the growth in living standards was universal, benefitting both rich and poor. Table 2 presents Gini coefficients, 90-10 and 75-25 percentile ratios. The overall Gini coefficient for the older Chinese population was 0.48 in 2011, fluctuated across years before declining to 0.45 in 2020. Similar patterns are observed for 90-10 or 75-25 ratios and within urban or rural residents. The national inequalities are larger than within urban or rural, reflecting large urban-rural differences. Consumption inequalities among rural residents are larger than among urban areas. Not surprisingly, the magnitudes of these inequality indicators are generally much smaller than income inequality (Wang, Zhao, and Zhao, 2022).

Figure 3 zooms into the consumption distribution among the bottom twenty percentiles, a region of the consumption distribution that is more relevant to the poor. The poverty lines in 2011 are plotted to indicate the position of poverty thresholds.[6] It is immediately apparent that the poorest households all enjoyed improved living standards. The improvements were relatively evenly distributed across years for urban residents, but rural improvements centered around two years, 2011–13 and 2018–20, coinciding with the staggered implementation of the Rural New Pension Scheme from 2009 to 2013 and the campaign to eradicate poverty in 2020.

Poverty

Table 3 (Columns labeled "FGT_0 headcount") presents poverty headcounts for older Chinese. Dramatic declines in poverty occurred over time. The overall poverty rate was 35.2% in 2011,

[6] Remember the consumption levels are in 2011 prices, so the poverty line roughly reflects the poverty thresholds.

declining to 13.1% in 2020. The rural-urban difference in poverty is large. In 2011, 15.8% of rural residents were poor, while 43.6% were in rural areas. Both urban and rural poverty rates declined. By 2020, the urban poverty rate had fallen to 4.3%, and the rural to 16.9%.

The poverty rate posted the largest decline from 2011 to 2013 (9.3 percentage points), mainly from the fall in the rural poverty rate (12.6 percentage points). This is explainable by the expansion of the rural pension scheme, which started in 2009 and covered all of China in 2013. Although the amount of the pension was minimal at the beginning, at 650 yuan a year, it was 28% of the poverty line (2300 yuan) in 2010. Recall that our imputations may result in higher poverty estimates for 2013 and 2015 compared to using the unimputed sample, suggesting this finding is robust. Nevertheless, by 2020, many (13.1%) older Chinese people are still poor despite the progress, especially the rural people (16.9%). This number is significant considering that we are using the absolute poverty line.

Table 4 presents disaggregated poverty statistics by age group and region. The age pattern is stark. Take the year 2020, for example. For all of China, compared to those aged 60-64 (8.3% poor), poverty rates among 65-74 and 75+ were 74.7% and 100.0% higher (at 14.5% and 16.7%). In contrast, although regional differences still exist, they are much smaller. In 2020, compared to Eastern China (11.8% poor), the elderly poverty rates in the Central and Western regions were 13.6% and 24.6% higher (at 13.4% and 14.7%).[7] The poverty rates between the Central and Western regions have become similar. Another fact revealed in Table 4 is that declines in poverty rates were apparent for all ages and regions.

The poverty rate based on headcount measures the prevalence of poverty. In addition, we are interested in measuring the extent of poverty, answering the question of how "poor" the "poor" are. We use the FGT index (Foster, Greer, and Thorbecke, 1984) for this purpose:

$$FGT_\alpha = \int_0^z \left[\frac{z-x}{z}\right]^\alpha f(x)dx,$$

where $f(x)$ is the density of individual consumption and z denotes the poverty line. When α=0, FGT_0 measures the poverty headcount; when $\alpha = 1$, FGT_1 becomes the poverty gap index that

[7] Eastern region includes 11 provinces (municipalities): Beijing, Tianjin, Hebei, Liaoning, Shanghai, Jiangsu, Zhejiang, Fujian, Shandong, Guangdong and Hainan. Central region includes 8 provinces: Shanxi, Jilin, Heilongjiang, Anhui, Jiangxi, Henan, Hubei and Hunan. Western region includes 12 provinces (autonomous regions, municipalities): Inner Mongolia, Guangxi, Chongqing, Sichuan, Guizhou, Yunnan, Tibet, Shaanxi, Gansu, Qinghai, Ningxia and Xinjiang.

measures the distance to the poverty line for those in poverty; when $\alpha = 2,$ the poverty depth (or squared gap) index FGT_2 can be used to compare the inequality amongst the "poor," given the poverty gap. We provide the two additional poverty measures, the poverty gap and the poverty depth, in Table 3.

It is clear that between 2011 and 2020, not only did the poverty rate decline by roughly 2/3, but the poverty gap also shrank significantly. In 2011, the gap was 0.131; by 2020, it was reduced by 71% to 0.038. The poverty depth declined from 0.082 in 2011 to 0.025 in 2020, a reduction of 70%. The rural poverty gap or depth are both higher than the urban numbers, and all have declined over time. By 2020, the rural poverty gap was 0.048, three times the urban level. The poverty depth among rural residents was 0.033, more than four times the urban level.

5. The Demographics of Consumption Levels and Poverty

The above analyses revealed important living standards and poverty patterns between rural and urban residency, age groups, regions, and their trends over time. This section depicts a more nuanced picture using a multivariate regression framework, aiming to pinpoint the most deprived demographic groups.

5.1. The Regression Models

A linear probability regression on consumption and the poverty indicator is specified as follows:

$$y_{it} = \alpha + \beta_1 sex_{it} + \beta_2 hukou_{it} + \beta_3 marital\ \ status_{it} + \beta_4 age_{it} + \beta_5 education_{it} + \beta_6 region_{it} + \beta_7 household\ \ size + \gamma_t + \varepsilon_{it}.$$

The dependent variable y_{it} is either a binary indicator of whether a person's consumption is below the official poverty line or the consumption level in logarithm. γ_t are survey wave dummies. The independent variables include sex, hukou, marital status (married, widowed, divorced, and never married), age groups, education attainment, the region of residence (Eastern, Central, Western), and household size (controlling for scale economy). Our second set of regressions examines the gender and marital status mix to pinpoint the most vulnerable group further.

Summary statistics of all variables used in the regression are shown in Table 5. The first five columns are for each of the five years, and the last two presented pooled statistics, mean and standard deviations. These statistics and the following regressions are all weighted to reflect the

national situation. Our discussion below is mainly based on the pooled sample. A little more than half are women (52%). Sixty-nine percent of Chinese aged 60 and over are rural residents. The regional distribution in Western and Central China is more or less equal, at 31%, while 38% live in Eastern China. The great majority (78%) are married with a spouse, 20% are widowed, and divorced and never-married account for no more than 1-2%. Roughly a third are aged 60-64, a quarter aged 65-69, 17% aged 70-74, and another quarter aged 75 and older. Older Chinese people have much less schooling than the current young. A little more than a third are illiterate, 16% are literate but did not finish elementary school, 22% finished elementary school, 16% finished middle school, and only 12% finished high school or more. There has been significant improvement in educational level. In 2011, only 9% finished high school or more; by 2020, it had increased to 12%. The average household size is 2.93, with some fluctuations over time.

5.2. Regression Results

Consumption

Table 6 shows the regression results on the logarithm of consumption. Column (1) contains basic demographics, and Columns (2) and (3) add interactions to examine heterogeneity between sex, marital status, and rural vs. urban areas.

Our first goal is to verify whether claims made by the previous literature (Datt and Chaudhuri, 2009) are valid, i.e., living standards have converged between regions, and differences mainly exist across demographics. Column (1) shows the pooled results for the five waves, so they represent the entire decade.

Some regional differences still exist. Compared to older people in Eastern China, Western region residents consume 9.02% less, and those in the Central region consume 17.7% less. These differences are smaller in magnitudes than some of those differences between demographic groups. For example, compared to the base group 60-64, those aged 65-69 consumed 9.84% less, those aged 70-74 consumed 19.7%, and 75+ consumed 29.2% less. Educational differences matter more. Compared with the most educated group who completed high school or more, middle school graduates consume 26.7% less, elementary school graduates consume 35.7% less, the literate but did not finish elementary school consume 45.3% less, and the illiterate consume 57.6% less. Therefore, it is true that demographics matter more than regions.

That the Central region's older people are economically better off than the West, given demographics, is illuminating because the Western provinces were the poorest initially. It would be interesting to see whether the same is true among younger cohorts. Despite the dwindling importance of regions, one type of difference by residence, the urban-rural difference, remains significant: Rural older adults have 60.2% lower consumption than their urban counterparts.

The improvement over time is evident in the coefficients of year dummies. Because consumption is in 2011 prices, the coefficients reflect real growths. Compared to 2011, consumption grew by 24% in 2013, 37.2% in 2015, 53.5% in 2018 and 72.9% in 2020. These are large and impressive improvements that will contribute to poverty alleviation.

We now turn to the rest of the demographics. The result that women have higher consumption levels than men, by 4.7%, may seem intriguing given that women have lower pension incomes (Zhao and Zhao, 2018). However, this phenomenon is still plausible because older women are more likely than men to co-reside with adult children and share children's higher living standards. Compared to married individuals, consumption by the widowed is 6.91% higher, and the divorced and never-married also have higher consumption but are statistically insignificant. The positive widowhood coefficient is likely explained by increased family support, either financial or co-residence with children.

To see whether the living standards of widowed/divorced/never married people may differ between men and women, in Column (2), we interact the female dummy with marital statuses. We find that older widowers have 22.2% higher consumption than married older men, but widows have nearly the same level as married women. Overall, widows' consumption level is 13.5% less than widowers, which could be due to men having higher pension incomes (Zhao and Zhao, 2018). Divorce seems to be more impactful than widowhood for women. Divorced older men have 18.5% higher consumption than married older men but divorced older women have 17.8% (=0.185-0.363) less consumption than married older women. Among divorced people, women have 36.3% less consumption than men. Chinese people rarely divorce at older ages, so the observed divorces likely occurred long ago, and the significantly lower living standards of divorced women probably reflected chronic economic deprivation. The interaction term between never-married status with the female is positive but statistically insignificant.

Column (3) includes triple interactions between the female dummy, marital statuses and rural residency. None of the terms is statistically significant. We will more closely examine the poverty status of various groups by their marital status in the following poverty section.

Poverty

Table 7 uses the same explanatory variables as in Table 6 but changes the dependent variable to a binary indicator of poverty. The results are broadly consistent, as poverty is derived by cutting consumption at threshold levels, but there are still new insights from examining poverty as a discontinuous measure.

Similar to what we found in the consumption analysis, regional differences in poverty in our study period (2011-2020) are considerably smaller than previous estimates.[8] Compared to the Eastern region (20.1% poor), poverty rates in Western and Central regions are 6.2% and 19.6% (1.24 and 3.93 percentage points, ppts hereafter) higher. These numbers are considerably smaller than those between age and educational groups. Compared to the group aged 60-64 (17.2% poor), those aged 65-69, 70-74, and 75+ were 18%, 43% and 64.5% (3.1, 7.4, and 11.1 ppts) more likely to be in poverty. Poverty across educational groups is even more stark. Compared to those who completed high school or higher (5.8% poor), those who completed middle school were 69% (4.0 ppts) more likely to be poor, those who completed elementary school were 1.1 times (6.4 ppts) more likely to be poor, those who are literate but did not complete elementary school were 1.6 times (9.3 ppts) more likely to be poor, and the illiterate were 2.22 times (12.9 ppts) more likely to be in poverty. Clearly, human capital has become a dominant factor in poverty profiling. One education level higher, from middle school to high school, dominates all the regional differences three times over. This confirms that China's poverty profile has shifted from regional concentration to demographics (Datt and Chaudhuri, 2009).

The largest within-region factor explaining poverty is rural-urban differences. Compared to urban older adults (9.9% poor), the poverty rate of rural people is 1.4 times (13.9 ppts) higher. This is much smaller than the unconditional differences (Table 3) but still very significant, more than the difference between completing elementary school and high school or higher.

[8] The National Bureau of Statistics of China (2000) reported that in 1999, the poverty rates in the Central (Western) region were 3.0 (5.6) times of the Eastern region.

The time trend of poverty declines is very impressive. Compared to 2011 (poverty rate=35.3%), poverty rates declined by 25.2% (8.9 ppts) by 2013, 34.3% (12.1 ppts) by 2015, 47.3% (16.7 ppts) by 2018, and 59.2% (20.9 ppts) by 2020. These numbers are smaller than the raw numbers because some of the declines were accounted for by improvements in explanatory variables, such as education.

Coming back to other demographics, we first notice that women have lower poverty rates, but the difference is very small. Patterns of marital status are similar to those in the consumption regressions. The widowed are less likely to be poor by 1.81 percentage points. As the weighted sample mean of the poverty rate of the married group is 20.9%, this represents an 8.7% reduction in the poverty rate. Divorce and never-marriedness are both negatively related to poverty, but the coefficients are not statistically significant.

Column (2) reports differences by sex. There is no apparent gender difference in the association between never marriedness and poverty, but differences exist for widowhood and divorce to disadvantage women. Widowers are 26.8% (5.61 ppts) less likely to be poor than their married counterparts (20.9% poor). The difference becomes very small, 0.15 percentage points (0.7%) more likely, for widows than married women (21.5% poor). Compared with widowers, whose poverty rate is 22.7%, widows are 24% (5.46 ppts) more likely to be poor. Divorce paints an alarming picture for women. While male divorcees are 27.6% (5.64 ppts) less likely to be poor than married men (poverty rate=20.4%), divorced women are 22.6% (4.86 ppts) more likely to be poor than married women (poverty rate =21.5%). Compared with divorced men (poverty rate = 14.6%), divorced women are 71.9% (10.5 ppts) more likely to be poor. Column (3) interacts three marital status dummies with female and rural dummies to identify the most vulnerable group.

Since the triple interaction model coefficients are hard to decipher, we summarize them in Table 8, displaying the percentage points differences relative to the base group of married men, separately for urban and rural areas. Percent effects are reported in the parentheses. As shown, among urban people, compared with married men (poverty rate = 8.9%), married women have lower poverty (by 19.1%), and so do divorced men and women (by 43.8% and 11.2%). Widowers also have lower poverty (by 60.7%), but widows have highevr poverty (by 7.9%). If we compare widows with married women (poverty rate = 8.3%), the former are 28.9% more likely to be poor. The significantly smaller pension entitlement accruing to women likely explains the gender difference in widowhood (Zhao and Zhao, 2018). Unlike in developed countries where wives

inherit some of the husband's social security, such a system does not exist in China. Finally, never-married people are the most disadvantaged among urban people: never-married men (women) are 62.9% (71.1%) more likely to be poor in comparison with married men (women).

Among rural people who are generally more disadvantaged than their urban counterparts, differences also exist. Compared with married men (poverty rate = 26.6%), all other groups have lower poverty rates, except for divorced women. Married women, widowers, widows, and divorced men are 6.4%, 21.8%, 10.2%, and 24.4% less likely to be poor, respectively.

Interestingly, never-married rural men and women are 6.4% and 57.5% less likely to be poor than married men, and never-married women are even less likely to be poor than married women. As was discussed earlier, the reverse is true among urban people. The urban-rural difference favoring the never-married rural people is likely due to the societal-wide assistance offered to poor rural childless elders named "Five Guarantees"[9] (Lei, Zhang, and Zhao, 2015). No such scheme exists in urban areas, unfortunately. China is undergoing a familial transition where more and more people do not marry, and many couples decide not to have children.[10] How to protect the livelihood of these people will be a major challenge.

The situation with divorce is different, and the gender difference is stark. While divorced men are 24.4% less likely to be poor than married men, divorced women are 36.8% more likely to be poor than married women (poverty rate = 26.9%). Divorced women are even 120.5% more likely to be poor than never-married women (poverty rate = 19.5%). There is numerous anecdotal evidence of the plight of divorce for rural women. Women often lose land rights and fail to receive assets from their husband's families upon divorce (Sun and Zhao (2016)). Because most divorces are initiated by women, often due to domestic violence, children, who are most likely raised by their fathers, may resent their mothers and refuse to support them at old age. Rural divorced older women are thus the most vulnerable group in China; they have fallen through the cracks of both familiar support and government assistance.

Given the substantial reductions in poverty between 2011 and 2020, we are interested in learning which demographic groups enjoyed the largest reductions. For this purpose, based on the Column (1) specification in Tables 6 and 7, we add interaction terms for the demographic variables

[9] The five guarantees are guarantees of food, clothing, housing, fuel, and burial.

[10] Growing number of non-marriage is also due to biased sex ratio.

with all wave dummies. Table 9 shows the interactive coefficients with the 2020 wave dummy, also plotted with 95% confidence intervals in Figures A2 and A3.

For consumption results in Column (1), the only significant change is a rise for rural people by 20.8%. However, for poverty in Column (2), although there are no significant changes with respect to sex, marital status or regions, some changes stand out. Rural people in 2020 had a larger reduction than urban, by 12.9 percentage points. Urban people enjoyed a reduction of 72.5% from 2011 to 2022; thus, the rural reduction was 17.8% more than that of urban.

People with lower levels of education experienced more reductions in poverty. Compared to high school graduates, who experienced 50% poverty reduction, reductions by those who finished middle school education, finished elementary school education, did not finish elementary school but can read, and the illiterate are higher by 17.4% (8.7 ppts), 18% (9 ppts), 21.4% (10.7 ppts), and 22.8% (11.4 ppts). The poverty reductions by age were also uneven, with older groups enjoying more reductions. Compared to those aged 60-64, whose reduction was 72.3%, the aged 65-69, 70-74, and 75 or above were higher by 1.7% (1.2 ppts), 4.1% (3 ppts), and 8.4% (6.1 ppts). These results indicate that the fruits of poverty reduction in the past decade have disproportionally benefited the least privileged older, less educated, and rural people.

6. Summary and Conclusions

This paper uses fives waves of nationally representative survey data from the China Health and Retirement Longitudinal Study (CHARLS), 2011 to 2020, to study living standards and poverty among older Chinese. Following the literature, we measure living standards by household per capita consumption, excluding medical expenditure, and apply official poverty lines to determine the poverty status. Consumption comes mainly from an expenditure module with more than twenty items, including consumption of self-grown food.

Because many households have missing values in some consumption items, and omitting these households would cause the data to lose national representation, our first step was to impute total consumption for households with a modest number of missing values. We documented the procedure of imputation and recalculated weights to account for the loss of some (4.13%) of households whose consumption could not be imputed.

We show that China has made tremendous progress in raising living standards and reducing poverty among older people. From 2011 to 2020, consumption grew by 107%, and the poverty rate declined by 63%, from 35.1% in 2011 to 13.1% in 2020. The improvements were universal in urban and rural areas, across age groups, and in each region. Moreover, the extent of poverty and inequality among the poor also experienced significant declines.

Our results indicate that by our data period, China's poverty profile among older people has decidedly shifted from one characterized by regional concentration of poverty in the first decades following the economic reform to one dispersed across all regions and varies mainly by demographics.

The largest within-region factor explaining poverty is rural-urban differences. When pooling all waves of data, the urban consumption level is 93.2% higher and the poverty rate 63.8% lower than rural levels, despite much higher employment rates among rural older people (Giles et al., 2021). Older age is strongly associated with poverty. Compared to those 60-64, those aged 75 and older are 67.7% more likely to be poor.

Our regression analyses revealed that regional differences in living standards or poverty are very small compared to differences in demographics. Of demographics, the largest are rural-urban differences, with rural poverty higher by 1.4 times than urban. Education differences are also large. Compared to those with a high school education or more, the illiterate are 2.2 times more likely to be poor. Age also matters. Compared to those aged 60-64, 75 or older have a 64.5% higher poverty rate.

After controlling for demographics, consumption grew by 72.9%, and the poverty rate declined by 59.2% from 2011 to 2020. These are remarkable progress. Future research should study various government programs' contributions to such an achievement.

By examining poverty by interacting marital status with sex and urban/rural residence, we identify gaps in older people's economic support. While rural never-married older people had lower poverty rates than their married counterparts, the reverse is true for urban never-married, likely due to the Chinese government's social welfare program targeting the childless elders in rural areas. In urban areas, widowed women also have higher poverty, probably due to losing their husbands' higher social security incomes. In rural areas, older widowed people's poverty levels are either higher or not much lower than those of married people, suggesting a role played by the

family. However, while divorced urban people and rural men do not show higher poverty than married, older divorced rural women are significantly poorer.

Our research can provide directions for future poverty alleviation in China. While regional development has been the focus in fighting poverty in the past, more precise targeting is necessary for the future. In the past decade, although older, less educated and rural people enjoyed substantially more reductions in poverty, these characteristics remain as chief predictors of poverty. Therefore, more resources should be directed toward these groups.

Additionally, the traditional family or government support network has left holes, namely the widowed and divorced women and never-married urban people, who tend to be in poverty. With urbanization and modernization, most of the next generation will become urban residents, and many people will be left without a spouse or children, either by choice or force. How to provide alternative economic security to these people will be the key challenge in decades to come.

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Table 1. Median consumption of those 60 and older in China, 2011-2020

	Whole		Urban		Rural	
	Consumption (yuan)	Annual growth rate relative to 2011	Consumption (yuan)	Annual growth rate relative to 2011	Consumption (yuan)	Annual growth rate relative to 2011
2011	4045	-	7,362	-	3,135	-
2013	5218	13.6%	8,265	6.0%	4,300	17.1%
2015	6224	11.4%	10,126	8.3%	4,912	11.9%
2018	7086	8.3%	12,083	7.3%	5,703	8.9%
2020	8963	9.2%	14,156	7.5%	7,297	9.8%

Notes: Calculated from CHARLS data. Missing consumption values are imputed following the method in section 3.2. Consumption levels are weighted medians of individual consumption in 2011 prices.

Table 2. Consumption Inequality: Percentile Ratios and Gini Coefficients, 2011-2020

	Whole			Urban			Rural		
	p90/p10	p75/p25	Gini	p90/p10	p75/p25	Gini	p90/p10	p75/p25	Gini
2011	10.59	3.33	0.48	6.68	2.56	0.43	8.77	3.00	0.43
2013	10.07	3.15	0.47	6.54	2.74	0.42	9.80	3.00	0.46
2015	11.60	3.52	0.49	8.02	2.81	0.44	11.04	3.26	0.48
2018	10.76	3.33	0.48	8.15	2.73	0.42	9.65	3.10	0.47
2020	9.70	3.06	0.45	5.83	2.46	0.38	8.57	2.99	0.45

Notes: Calculated from CHARLS data. All numbers are weighted.

Table 3. Poverty among those 60 and older in China, 2011-2020

	Whole sample			Urban			Rural		
	FGT_0	FGT_1	FGT_2	FGT_0	FGT_1	FGT_2	FGT_0	FGT_1	FGT_2
	headcount	gap	depth	headcount	gap	depth	headcount	gap	depth
2011	35.2%	0.131	0.082	15.8%	0.065	0.038	43.6%	0.160	0.102
2013	25.9%	0.091	0.059	15.0%	0.050	0.026	31.0%	0.109	0.075
2015	22.4%	0.082	0.054	9.8%	0.037	0.021	28.0%	0.102	0.068
2018	17.9%	0.059	0.038	6.9%	0.024	0.012	22.6%	0.075	0.049
2020	13.1%	0.038	0.025	4.3%	0.014	0.007	16.9%	0.048	0.033

Notes: Calculated from CHARLS data. Poverty is measured by comparing per capita consumption at current prices with poverty lines in Table A5. Medical expenses are excluded from consumption. The FGT index was developed by Foster, Greer, and Thorbecke (1984). FGT_0 is the poverty rate, FGT_1 is the poverty gap index, and FGT_2 is the poverty depth (also called the squared poverty gap) index. All numbers are weighted.

Table 4. Poverty rates by hukou, age, and region, 2011-2020 (%)

		2011	2013	2015	2018	2020
Whole	60-64	30.2	21.2	16.4	13.1	8.3
	65-74	35.1	24.4	22.2	18.6	14.5
	75+	41.7	34.8	31.4	23.6	16.7
Urban hukou	60-64	12.0	10.1	7.3	4.9	2.7
	60-74	13.9	13.6	8.0	6.3	4.2
	75+	23.6	22.5	16.0	10.5	6.6
Rural hukou	60-64	37.1	25.4	20.3	16.5	10.7
	65-74	45.3	29.6	28.7	23.7	18.7
	75+	49.9	42.2	39.1	30.0	21.5
Eastern region		31.2	26.0	20.8	15.8	11.8
Central region		38.1	27.2	24.1	19.1	13.4
Western region		36.9	24.5	22.5	19.3	14.7

Notes: Calculated from CHARLS data. Poverty is measured by comparing per capita consumption at current prices with poverty lines in Table A5. Medical expenses are excluded from consumption. All calculations are weighted.

Table 5. Summary statistics for the regression sample

	2011	2013	2015	2018	2020	2011-2020	
	Mean	Mean	Mean	Mean	Mean	Mean	Std. Dev.
Female	0.511	0.512	0.515	0.517	0.520	0.515	0.50
Rural hukou	0.693	0.679	0.687	0.700	0.698	0.692	0.46
Marital Status							
Married	0.740	0.771	0.788	0.781	0.803	0.779	0.42
Widowed	0.235	0.212	0.197	0.201	0.175	0.202	0.40
Divorce	0.014	0.008	0.007	0.010	0.016	0.011	0.11
Never married	0.011	0.009	0.008	0.007	0.006	0.008	0.09
Region							
Western region	0.325	0.312	0.309	0.304	0.284	0.305	0.46
Central region	0.310	0.311	0.312	0.317	0.305	0.311	0.46
Eastern region	0.365	0.377	0.379	0.379	0.412	0.384	0.49
Age							
Age Group: 60-64	0.336	0.350	0.352	0.332	0.306	0.334	0.47
Age Group: 65-69	0.230	0.236	0.247	0.268	0.279	0.254	0.44
Age Group: 70-74	0.183	0.168	0.164	0.170	0.180	0.173	0.38
Age Group: 75+	0.250	0.246	0.237	0.230	0.235	0.239	0.43
Education							
Illiterate	0.373	0.353	0.365	0.334	0.290	0.340	0.47
Literate but did not finished elementary school	0.189	0.195	0.093	0.172	0.158	0.160	0.37
Finished elementary school	0.234	0.227	0.262	0.203	0.191	0.222	0.42
Finished middle school	0.119	0.134	0.162	0.170	0.196	0.160	0.37
Finished high school or above	0.087	0.091	0.117	0.120	0.166	0.119	0.32
Household size	3.435	3.330	2.525	2.672	2.864	2.933	1.67
Observations	7,168	7,658	8,952	10,262	11,163	45,203	

Notes: from CHARLS data. Consumption levels are in 2011 prices. All statistics are weighted.

Table 6. Consumption regressions for older Chinese, 2011-2020

Dependent variable: log(Consumption)	(1)	(2)	(3)
Female	0.0470***	0.0854***	0.0862***
	(0.0109)	(0.0105)	(0.0105)
Marital status (Base: Married)			
Widowed	0.0691***	0.222***	0.234***
	(0.0199)	(0.0305)	(0.0636)
Widowed * Female		-0.220***	-0.290***
		(0.0353)	(0.0707)
Widowed * Rural			-0.0142
			(0.0707)
Widowed *Female * Rural			0.0942
			(0.0802)
Divorced	0.0331	0.185***	0.254**
	(0.0569)	(0.0695)	(0.108)
Divorced * Female		-0.363***	-0.324*
		(0.115)	(0.167)
Divorced * Rural			-0.107
			(0.141)
Divorced *Female * Rural			-0.132
			(0.231)
Never married	0.0275	-0.00718	-0.148
	(0.0805)	(0.0847)	(0.233)
Never married * Female		0.301	0.370
		(0.206)	(0.285)
Never married * Rural			0.158
			(0.250)
Never married *Female * Rural			-0.0687
			(0.373)
Rural hukou	-0.602***	-0.605***	-0.614***
	(0.0195)	(0.0194)	(0.0217)
Region (Base: East region)			
West region	-0.0902***	-0.0900***	-0.0896***
	(0.0206)	(0.0206)	(0.0206)
Central region	-0.177***	-0.177***	-0.176***
	(0.0203)	(0.0203)	(0.0203)
Age (Base: 60-64)			
Age (65-69)	-0.0984***	-0.0975***	-0.0977***
	(0.0156)	(0.0156)	(0.0156)
Age (70-74)	-0.197***	-0.194***	-0.194***
	(0.0195)	(0.0195)	(0.0195)
Age (75+)	-0.292***	-0.288***	-0.289***
	(0.0234)	(0.0233)	(0.0233)
Education (Base: finished high school or above)			
Illiterate	-0.576***	-0.578***	-0.576***
	(0.0308)	(0.0308)	(0.0307)
Literate but did not finish elementary school	-0.453***	-0.457***	-0.452***
	(0.0308)	(0.0307)	(0.0306)
Finished elementary school	-0.357***	-0.359***	-0.355***
	(0.0316)	(0.0316)	(0.0314)
Finished middle School	-0.267***	-0.268***	-0.265***
	(0.0319)	(0.0319)	(0.0317)

Household size	-0.0101**	-0.00994**	-0.0101**
	(0.00485)	(0.00483)	(0.00484)
Wave dummy (base=2011)			
Wave 2013	0.240***	0.240***	0.240***
	(0.0246)	(0.0246)	(0.0246)
Wave 2015	0.372***	0.372***	0.371***
	(0.0248)	(0.0248)	(0.0248)
Wave 2018	0.535***	0.534***	0.534***
	(0.0216)	(0.0216)	(0.0216)
Wave 2020	0.729***	0.728***	0.728***
	(0.0224)	(0.0224)	(0.0224)
Constant	9.286***	9.271***	9.275***
	(0.0420)	(0.0419)	(0.0428)
Observations	45,203	45,203	45,203
R-squared	0.229	0.231	0.231

Notes: Estimated from CHARLS data by weighted least squares. *, **, *** denote significance levels at 10, 5, and 1 percent. Standard errors in parenthesis are clustered at the household level.

Table 7. Poverty regression for older Chinese, 2011-2020

Binary dependent variable: in poverty	(1)	(2)	(3)
Female	-0.00673*	-0.0164***	-0.0167***
	(0.00360)	(0.00320)	(0.00324)
Marital status (Base: Married)			
Widowed	-0.0181**	-0.0561***	-0.0535**
	(0.00843)	(0.0124)	(0.0216)
Widowed * Female		0.0546***	0.0767***
		(0.0138)	(0.0242)
Widowed * Rural			-0.00401
			(0.0252)
Widowed *Female * Rural			-0.0298
			(0.0288)
Divorced	-0.0127	-0.0564**	-0.0388
	(0.0185)	(0.0235)	(0.0242)
Divorced * Female		0.105***	0.0459
		(0.0368)	(0.0368)
Divorced * Rural			-0.0266
			(0.0414)
Divorced *Female * Rural			0.118*
			(0.0713)
Never married	-0.0205	-0.00922	0.0563
	(0.0290)	(0.0299)	(0.0926)
Never married * Female		-0.0921	0.00263
		(0.0833)	(0.0961)
Never married * Rural			-0.0735
			(0.0969)
Never married *Female * Rural			-0.122
			(0.131)
Rural hukou	0.139***	0.140***	0.145***
	(0.00842)	(0.00841)	(0.00963)
Region (Base: East region)			
West region	0.0124	0.0124	0.0123
	(0.00829)	(0.00830)	(0.00832)
Central region	0.0393***	0.0394***	0.0390***
	(0.00808)	(0.00808)	(0.00807)
Age (Base: 60-64)			
Age (65-69)	0.0310***	0.0308***	0.0309***
	(0.00641)	(0.00642)	(0.00641)
Age (70-74)	0.0738***	0.0729***	0.0732***
	(0.00856)	(0.00856)	(0.00856)
Age (75+)	0.111***	0.110***	0.110***
	(0.00957)	(0.00959)	(0.00958)
Education (Base: finished high school or above)			
Illiterate	0.129***	0.130***	0.129***
	(0.00965)	(0.00967)	(0.00968)
Literate but did not finish elementary school	0.0927***	0.0938***	0.0918***
	(0.00995)	(0.00995)	(0.0100)
Finished elementary school	0.0637***	0.0643***	0.0626***
	(0.00907)	(0.00910)	(0.00924)
Finished middle School	0.0403***	0.0404***	0.0391***
	(0.00933)	(0.00936)	(0.00956)

Household size	-0.000932	-0.000962	-0.000864
	(0.00215)	(0.00215)	(0.00215)
Wave dummy (base=2011)			
Wave 2013	-0.0887***	-0.0888***	-0.0889***
	(0.0133)	(0.0133)	(0.0133)
Wave 2015	-0.121***	-0.120***	-0.120***
	(0.0106)	(0.0106)	(0.0106)
Wave 2018	-0.167***	-0.167***	-0.167***
	(0.00972)	(0.00972)	(0.00971)
Wave 2020	-0.209***	-0.209***	-0.209***
	(0.00985)	(0.00985)	(0.00984)
Constant	0.117***	0.121***	0.118***
	(0.0127)	(0.0126)	(0.0129)
Observations	45,203	45,203	45,203
R-squared	0.093	0.094	0.094

Notes: Estimated from CHARLS data by weighted least squares. *, **, *** denote significance levels at 10, 5, and 1 percent. Standard errors in parenthesis are clustered at the household level.

Table 8. Poverty coefficients and percentage change relative to married men

	Urban		Rural	
	Men	Women	Men	Women
Married	base for urban	-0.017 (-19.1%)	base for rural	-0.017 (-6.4%)
Widowed	-0.054 (-60.7%)	0.007 (7.9%)	-0.058 (-21.8%)	-0.027 (-10.2%)
Divorced	-0.039 (-43.8%)	-0.010 (-11.2%)	-0.065 (-24.4%)	0.082 (30.8%)
Never married	0.056 (62.9%)	0.042 (47.2%)	-0.017 (-6.4%)	-0.153 (-57.5%)

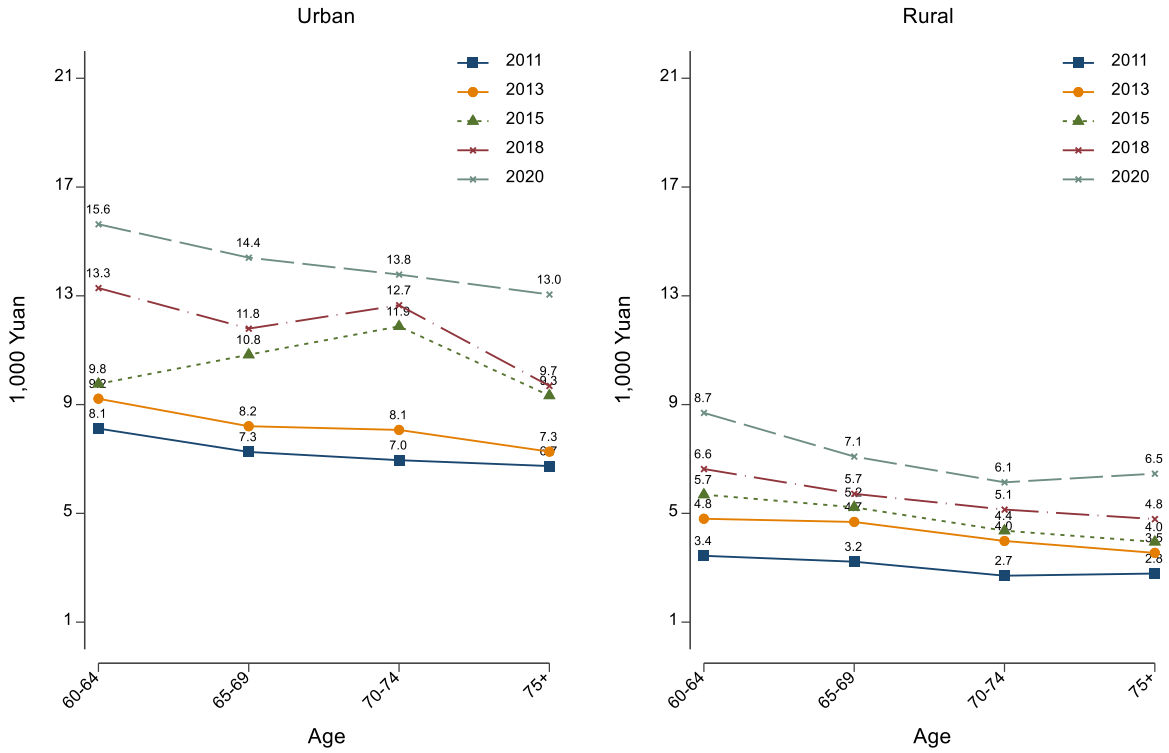
Notes: Estimated from CHARLS data by weighted least squares. Coefficients are collected and summed up from Column (3) of Table 7 and represent percentage points differences in poverty rates compared to the base group. Numbers in parentheses represent the percent effects compared with the base group. The weighted poverty rate for married urban men is 8.9%, and for married rural men, 26.6%.

Table 9. Regressions with coefficients varying across years, the 2020 coefficients

	(1)	(2)	(3)	(4)
	Dependent variables			
Independent variables*Wave 2020 dummy (Base: independent variable for 2011)	Log(consumption)		In poverty	
Female	-0.001	(0.0320)	0.001	(0.0113)
Rural hukou	0.208***	(0.0582)	-0.129***	(0.0227)
Marital status (Base: Married)				
Widowed	-0.040	(0.0503)	0.039	(0.0237)
Divorced	0.063	(0.169)	0.046	(0.0586)
Never married	-0.164	(0.225)	0.077	(0.0952)
Region (Base: East region)				
West region	-0.043	(0.0538)	-0.028	(0.0240)
Central region	0.008	(0.0531)	-0.059***	(0.0227)
Age (Base: 60-64)				
Age (65-69)	0.025	(0.0514)	-0.012	(0.0201)
Age (70-74)	0.062	(0.0585)	-0.030	(0.0281)
Age (75+)	0.051	(0.0638)	-0.061**	(0.0278)
Education (Base: finished high school or above)				
Education: Illiterate	0.053	(0.0805)	-0.114***	(0.0279)
Education: Literate but did not finish elementary school	0.094	(0.0755)	-0.107***	(0.0318)
Education: Finished elementary school	0.075	(0.0811)	-0.090***	(0.0264)
Education: Finished middle School	0.134*	(0.0757)	-0.087***	(0.0249)
Household size	0.009	(0.0125)	-0.010*	(0.00567)

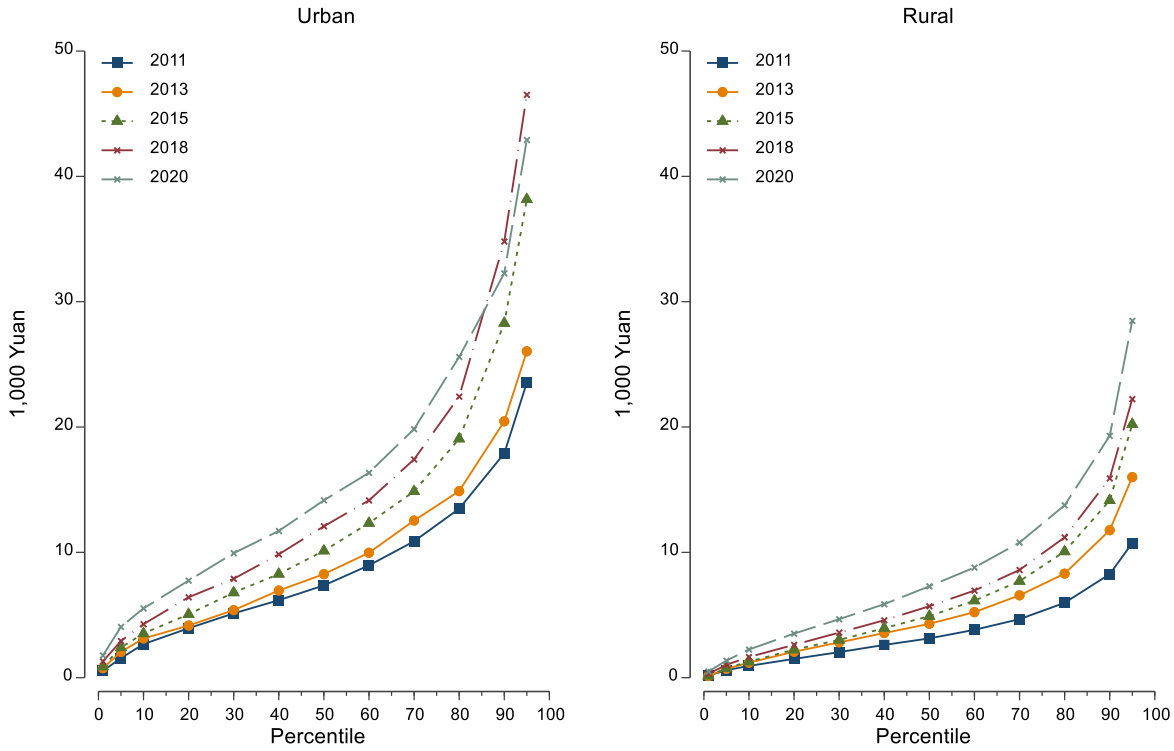
Notes: Estimated from CHARLS data by weighted least squares. *, **, *** denote significance levels at 10, 5, and 1 percent. Standard errors in parenthesis are clustered at the household level. Each independent variable shown represents its interaction with the dummy variable of 2020. The same set of independent variables used in Table 6 and Table 7 as well as their interactions with wave dummies 2013, 2015, and 2018 are also controlled for, but their coefficients are omitted for this table.

Figure 1. Consumption levels by age, 2011-2020



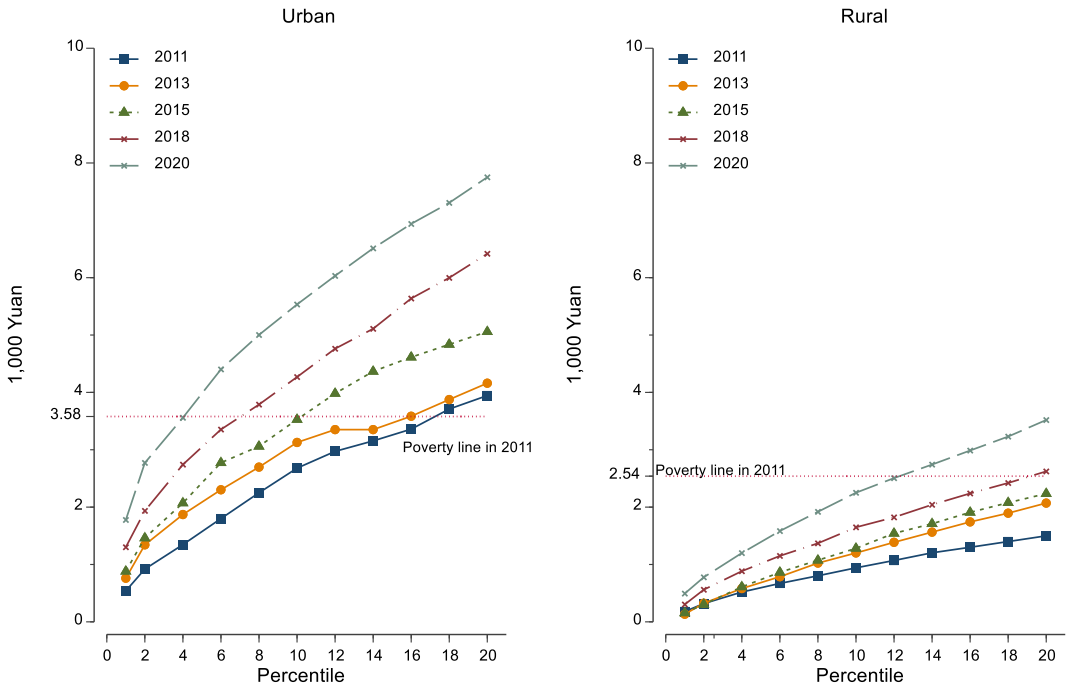
Notes: Calculated from CHARLS data. Consumption levels are weighted medians of individual consumption in 2011 prices.

Figure 2. Consumption levels by quantiles, 2011-2020



Notes: Calculated from CHARLS data. Consumption levels are weighted medians of individual consumption in 2011 prices. The highest consumption plotted is topped at the 95th percentile.

Figure 3. Consumption levels by quantiles below the 20th percentile, 2011-2020



Notes: Calculated from CHARLS data. Consumption levels are weighted medians of individual consumption in 2011 prices. The lowest consumption plotted is capped at the 1st percentile.

Appendix

Table A1. Expenditure items in CHARLS questionnaires, 2011-2020

	Defined items in the questionnaire (in Chinese)	Defined items in the questionnaire (in English)	2011	2013	2015	2018	2020
1	购买食品，包括自家生产和消费的农产品，不包括外出就餐、购买香烟、酒水等	Purchase of food, including agricultural products produced and consumed by the family, excluding restaurants, cigarettes, alcoholic beverages, etc.	Y				
	购买食品，不包括外出就餐、购买香烟、酒水等	Purchase of food, excluding restaurants, cigarettes, alcoholic beverages, etc.		Y	Y		
	购买食品，不包括摆酒、办酒席、外出就餐、购买香烟、酒水等	Purchase of food, excluding banquets, restaurants, cigarettes, alcoholic beverages, etc.				Y	Y
	消费的自家生产的农产品	Home-grown agricultural products		Y	Y	Y	Y
	外出就餐	Restaurants	Y	Y	Y		
	外出就餐，不包括摆酒和办酒席	Restaurants, excluding banquets				Y	Y
	摆酒和办酒席的支出	Banquets				Y	Y
2	香烟、酒水	Cigarettes and alcoholic beverages	Y	Y	Y	Y	Y
3	邮电、通讯支出（包括电话、手机、上网、邮寄等）	Expenditure on post and telecommunications (including telephone, cell phone, Internet, mail, etc.)	Y	Y	Y	Y	Y
4	水费、电费	Water and electricity expenses	Y	Y	Y	Y	Y
5	燃料费（包括煤炭、煤制品、柴草、木炭、液化气等）	Fuel expenses (including coal, coal products, firewood, charcoal, liquefied petroleum gas, etc.)	Y				
	燃料费（包括煤炭、煤制品、柴草、木炭、天然气、液化气等）	Fuel expenses (including coal, coal products, firewood, charcoal, natural gas, liquefied petroleum gas, etc.)		Y	Y	Y	Y
6	保姆、小时工、佣人等的支出	Expenses for domestic helpers, hourly helpers, maids, etc.	Y	Y	Y	Y	Y
7	在当地的交通费	Transportation expenses in the local area	Y	Y	Y	Y	Y
8	日用品包括美容化妆品（如洗衣粉、香皂、肥皂、牙膏、牙刷、美容化妆品等）	Household essentials including beauty cosmetics (such as laundry detergent, soap, toothpaste, toothbrush, beauty cosmetics, etc.)	Y				
	日用品（包括洗漱用品、家居用品、厨卫用品、装饰用品等）	Household essentials (including toiletries, household items, kitchen and bathroom items, decorative items, etc.)		Y	Y	Y	Y
	防疫支出，包括购买口罩，防护服和消毒液	Epidemic prevention expenditures, including the purchase of masks, protective clothing and disinfectant solution					Y
9	美容支出（包括化妆品、美容护理、按摩等）	Beauty (including cosmetics, beauty care, massage, etc.)	Y	Y	Y	Y	Y
10	文化娱乐支出（包括书报杂志、光盘、影剧票、歌舞厅和网吧等）	Cultural and entertainment expenses (including books, newspapers, magazines, CDs, movie and theater tickets, pubs and Internet cafes, etc.)	Y	Y	Y	Y	Y
11	衣着消费	Clothing and footwear	Y	Y	Y	Y	Y
12	家庭的旅游支出（包括旅行时坐火车、汽车、飞机、轮船的费用）	Household's travel expenses (including the cost of train, bus, airplane, and ship)	Y				
	家庭的旅游支出	Household's travel expenses		Y	Y	Y	
	家庭的旅行支出，包括在外地工作往返老家的费用，旅游的车费和旅馆费等	Household travel expenses, including the cost of traveling between hometown and the current residence, transport, and hotels, etc.					Y
13	家庭的取暖费支出(指集中供暖)	Household's heating expenses (refers to central heating)	Y	Y	Y	Y	Y
14	教育和培训支出（包括学杂费、培训费等）	Education and training expenses (including tuition and fees, training fees, etc.)	Y	Y	Y	Y	Y
15	保健费用（包括健身锻炼及产品器械、保健品等）	Health maintenance expenses (including gym, equipment, nutrition products, etc.)	Y	Y	Y	Y	Y

16	各种交通通讯工具的购买（如自行车、电动自行车和手机）、维修及配件费用	Transportation vehicles and communication tools (such as bicycles, electric bicycles and cell phones), maintenance and accessories costs	Y				
	各种交通工具（如自行车、电动自行车等，不包括汽车）、通讯工具（如电话、手机等）的购买、维修及配件费用	Transportation vehicles (such as bicycles, electric bicycles, etc., excluding automobiles), communication tools (such as telephones, cell phones, etc.), maintenance and accessories costs		Y	Y	Y	Y
17	物业费（包括车位费）	HOA fees (including parking)	Y	Y	Y	Y	Y
18	社会捐助支出（包括现金，食品、衣服等）	Donations (including cash, food, clothes, etc.)	Y	Y	Y	Y	Y
19	房子或者床位的租金, 包括家户成员在外的住宿费, 如住校宿舍费, 不包括旅游的宾馆费	House or bed rental, including the accommodation cost of household members away from home, such as dormitory fees, excluding hotel expenses when traveling				Y	Y
20	家具和耐用消费品的支出，包括电冰箱、洗衣机、电视和钢琴等高档乐器	Furniture and durable goods, including refrigerators, washing machines, TVs and high-end musical instruments such as pianos	Y				
	家具、耐用消费品及电器的支出（包括电冰箱、洗衣机、电视、电脑和高档乐器如钢琴等）	Furniture, durable goods and electric appliances (including refrigerators, washing machines, TVs, computers and high-end musical instruments such as pianos, etc.)		Y	Y	Y	
	家具、耐用消费品及电器的购买、维修及配件费用。家具、耐用消费品及电器包括电冰箱、洗衣机、电视、电脑和高档乐器如钢琴等	Purchase, repair, and accessories of furniture, durable goods and electric appliances (including refrigerators, washing machines, TVs, computers and high-end musical instruments such as pianos, etc.)					Y
	电器（包括笔记本电脑、台式电脑和配件等）	Electric appliances (including laptops, desktop computers and accessories, etc.)	Y				
21	购买汽车	Purchase of automobiles	Y	Y	Y	Y	
	汽车的购买、维修及配件费用	Purchase, maintenance and parts of automobiles					Y
22	上交给政府相关部门的税费和杂费（不包括所得税）	Taxes and miscellaneous fees paid to the government (excluding income tax)	Y	Y	Y	Y	Y
23	医疗支出（包括直接或间接）	Medical expenses (including direct or indirect payment)	Y	Y	Y	Y	Y

Notes: Definitions framed together are for the same item that changed at some wave. "Y" denotes the existence of an item in a wave's questionnaire.

Table A2. Household shares with missings by consumption item, 2011-2020

	2011		2013		2015		2018		2020	
Number of missings	%	cum. %	%	cum. %	%	cum. %	%	cum. %	%	cum. %
0	82.6%	82.6%	62.4%	62.4%	64.1%	64.1%	82.2%	82.2%	76.2%	76.2%
1	8.0%	90.6%	13.5%	76.0%	14.0%	78.1%	8.3%	90.5%	11.2%	87.4%
2	2.7%	93.3%	5.9%	81.9%	6.6%	84.8%	3.2%	93.6%	5.0%	92.4%
3	1.3%	94.6%	3.2%	85.1%	3.0%	87.8%	2.1%	95.7%	2.7%	95.2%
4	0.4%	95.0%	1.9%	87.0%	1.7%	89.4%	1.2%	97.0%	1.8%	97.0%
5	0.3%	95.3%	0.9%	87.8%	1.1%	90.6%	0.6%	97.5%	0.8%	97.8%
6	0.2%	95.5%	0.5%	88.3%	0.7%	91.3%	0.3%	97.9%	0.5%	98.3%
7	0.1%	95.7%	0.4%	88.8%	0.5%	91.8%	0.3%	98.1%	0.4%	98.7%
8	0.1%	95.8%	0.3%	89.0%	0.4%	92.2%	0.1%	98.2%	0.2%	98.9%
9	0.4%	96.2%	0.4%	89.4%	0.3%	92.5%	0.1%	98.3%	0.2%	99.1%
10	0.1%	96.3%	0.3%	89.7%	0.2%	92.7%	0.1%	98.3%	0.1%	99.2%
11	0.0%	96.3%	0.2%	89.9%	0.1%	92.8%	0.0%	98.4%	0.0%	99.2%
12	0.1%	96.4%	0.0%	89.9%	0.1%	92.9%	0.0%	98.4%	0.0%	99.3%
13	0.0%	96.4%	0.1%	90.0%	0.1%	93.0%	0.0%	98.4%	0.1%	99.4%
14	0.2%	96.6%	0.1%	90.1%	0.0%	93.0%	0.0%	98.5%	0.0%	99.4%
15	0.0%	96.6%	0.0%	90.2%	0.0%	93.0%	0.0%	98.5%	0.0%	99.4%
16	0.2%	96.8%	0.3%	90.5%	0.1%	93.2%	0.0%	98.5%	0.0%	99.4%
17	0.0%	96.9%	0.1%	90.6%	0.1%	93.3%	0.0%	98.5%	0.0%	99.4%
18	0.0%	96.9%	0.1%	90.7%	0.1%	93.3%	0.0%	98.5%	0.0%	99.5%
19	0.0%	96.9%	0.0%	90.7%	0.0%	93.4%	0.0%	98.5%	0.0%	99.5%
20	3.1%	100.0%	0.0%	90.7%	0.0%	93.4%	0.0%	98.5%	0.0%	99.5%
21			9.3%	100.0%	6.6%	100.0%	0.0%	98.5%	0.0%	99.5%
22							1.5%	100.0%	0.0%	99.5%
23									0.5%	100.0%
Total sample households	10,257		11,000		11,797		10,524		10,204	

Notes: Calculated from CHARLS data. Each column reports the household shares by the number of missing consumption items. All items are from the expenditure submodule of the questionnaire except for rental payment. Rental payment before 2018 is from the housing module. Medical expenses are excluded. Cumulative percentages are shown in the second column for each wave.

Table A3. Linear Regression of Consumption Non-Response

	1 if food consumption is missing	1 if beauty consumption is missing
	(1)	(2)
Mean of the outcome variable	0.0522	0.0176
Female	0.00290*	-6.45e-05
	(0.00159)	(0.000951)
Marital Status (Base: Married)		
Widowed	0.0182***	0.0125***
	(0.00358)	(0.00205)
Divorced	0.0138	0.0175**
	(0.00979)	(0.00733)
Never married	0.000853	0.0107**
	(0.0117)	(0.00534)
Hukou Rural	0.0115***	0.00332
	(0.00386)	(0.00270)
Age Group (Base: 60-64)		
Age Group (65-69)	0.00932***	-0.000674
	(0.00292)	(0.00178)
Age Group (70-74)	0.0138***	0.00159
	(0.00347)	(0.00208)
Age Group (75+)	0.0300***	0.000707
	(0.00402)	(0.00234)
Illiterate	0.00593	-0.00411
	(0.00454)	(0.00317)
Literate but did not finish elementary school	0.0106**	-0.00383
	(0.00456)	(0.00321)
Finished elementary school	0.00323	-0.00257
	(0.00428)	(0.00307)
Finished middle School	-0.000336	-0.000222
	(0.00417)	(0.00328)
Household size	0.00255***	0.0105***
	(0.000946)	(0.000762)
Wave dummy (base=2011)		
Wave 2013	0.0544***	0.00748***
	(0.00543)	(0.00269)
Wave 2015	0.0630***	0.0117***
	(0.00536)	(0.00250)
Wave 2018	-0.0273***	0.00528**
	(0.00383)	(0.00231)
Wave 2020	-0.0511***	0.0141***
	(0.00347)	(0.00257)
Community FE	Yes	Yes
Observations	45,203	45,203
R-squared	0.070	0.048

Notes: Estimated from CHARLS data by OLS. *, **, *** denote significance levels at 10, 5, and 1 percent. Standard errors in parenthesis are clustered at the household level.

Table A4. Probit Regression of Household Inclusion

	(1) 2011	(2) 2013	(3) 2015	(4) 2018	(5) 2020
Female	-0.237***	-0.209***	-0.219***	-0.154**	-0.227***
	(0.060)	(0.039)	(0.041)	(0.061)	(0.083)
Age Group (Base: 60-64)					
Age Group 65-69	-0.113	-0.032	-0.137**	-0.129	0.117
	(0.090)	(0.067)	(0.069)	(0.104)	(0.172)
Age Group 70-74	-0.122	-0.371***	-0.325***	-0.232**	0.504**
	(0.100)	(0.070)	(0.073)	(0.118)	(0.207)
Age Group 75-79	-0.557***	-1.082***	-1.168***	-0.618***	-0.327**
	(0.089)	(0.065)	(0.061)	(0.099)	(0.140)
Education (Base: finished high school or above)					
Illiterate	0.380***	-0.167	-0.450***	-0.043	-0.162
	(0.127)	(0.102)	(0.108)	(0.133)	(0.230)
Literate but not having finished elementary school	0.339***	-0.006	-0.419***	0.134	-0.192
	(0.126)	(0.103)	(0.116)	(0.146)	(0.245)
Finished elementary school	0.154	0.089	-0.100	0.126	-0.182
	(0.121)	(0.100)	(0.107)	(0.139)	(0.223)
Finished middle School	0.095	0.118	-0.164	0.176	-0.117
	(0.132)	(0.104)	(0.114)	(0.152)	(0.237)
Education Missing	-1.079***	-0.742	-0.559		
	(0.300)	(0.729)	(0.528)		
Constant	2.289***	2.223***	2.322***	2.403***	3.296***
	(0.296)	(0.507)	(0.287)	(0.233)	(0.355)
Community FE#	Yes	Yes	Yes	Yes	Yes
Observations	7,412	8,433	9,734	10,413	11,246

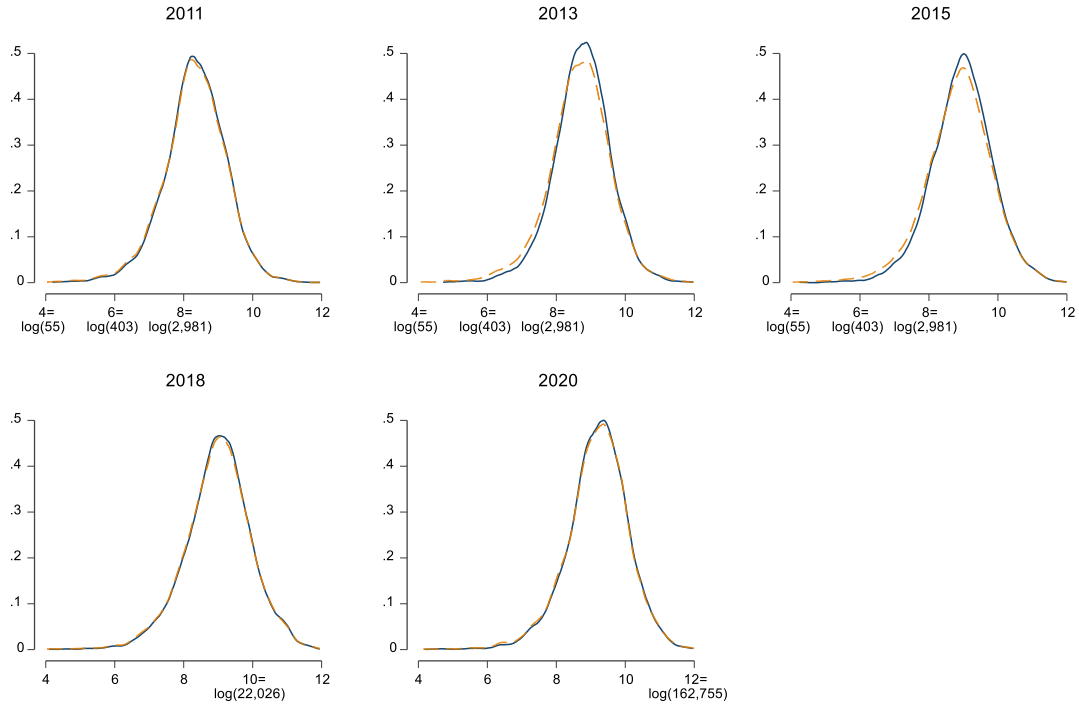
Notes: Estimated from CHARLS data by probit separately for each wave. *, **, *** denote significance levels at 10, 5, and 1 percent. Standard errors in parenthesis are clustered at the household level. #: In some cases where no variations exist in a community, we used county fixed effects.

Table A5. China's official poverty lines

	2011	2013	2015	2018	2020
Rural poverty line	2,536	2,736	2,855	2,995	3,315
Urban poverty line (by approximation)	3,581	3,863	4,031	4,229	4,681

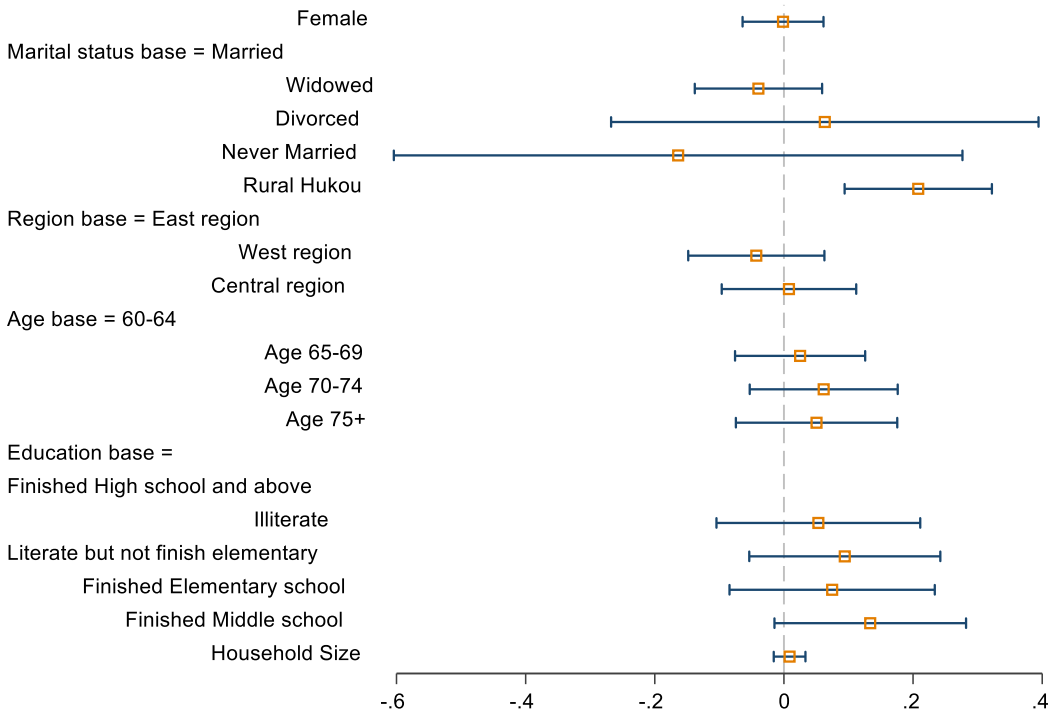
Notes: All poverty lines are in current prices. Rural poverty lines are from the National Bureau of Statistics. Urban poverty lines are rural poverty lines multiplied with a constant of 1.412.

Figure A1. Log(Consumption) distributions before and after imputations



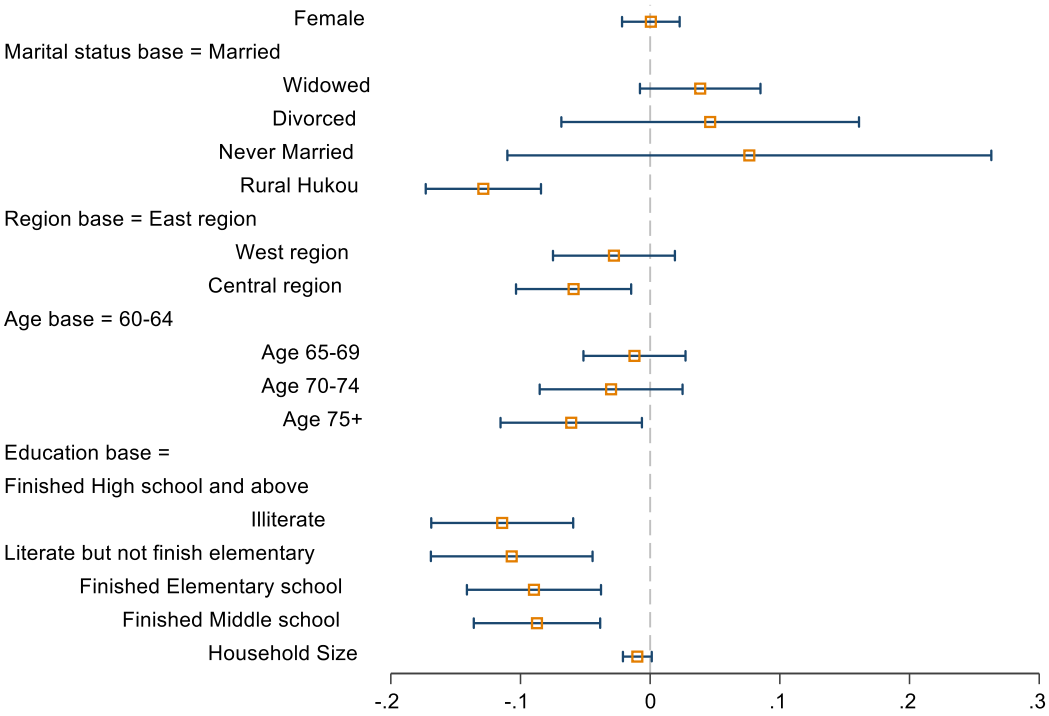
Note: Blue lines are densities for log(consumption) among households with no missing items. Orange lines are densities for log(consumption) after imputations.

Figure A2. Coefficient plot for demographic variables in the consumption regression, 2011 vs. 2020



Notes: These coefficients are estimated from a weighted pooled regression based on the sample of CHARLS 2011–2020, aged 60 and over. Each point estimate corresponds to the coefficient of a demographic variable interacted with the 2020 wave dummy and thereby measures the change from 2011 to 2020. The segment of each line represents a confidence interval at the level of 95 percent, while the yellow square in the middle indicates the coefficient estimate. Standard errors are clustered at the household level.

Figure A3. Coefficient plot for demographic variables in the poverty regression, 2011 vs. 2020



These coefficients are estimated from a weighted pooled regression based on the sample of CHARLS 2011–2020, aged 60 and over. Each point estimate corresponds to the coefficient of a demographic variable interacted with the 2020 wave dummy and thereby measures the change from 2011 to 2020. The segment of each line represents a confidence interval at the level of 95 percent, while the yellow square in the middle indicates the coefficient estimate. Standard errors are clustered at the household level.