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## Informal Long Term Care in China and Population Ageing: Evidence and Policy Implications

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#### Abstract

Long-term care (LTC) policy in China is in its infancy, and it is highly decentralised. Where policy structures exist, they are poorly resourced. Although China's demography is still young by developed country standards, it is ageing very rapidly, and by mid-century will have "caught up" with many countries in the developed world with respect to population ageing. LTC policy development, therefore, is becoming a priority in China. We argue that it should be formulated with population ageing as a framework.

Policy designs, which take account of and encourage, informal care provision, will be critical to the fiscally sustainable delivery of LTC. In China, informal care is sometimes seen as very scarce because of the one child policy. With only one child, it is argued, there will be less informal care offered than in societies with larger families.

This paper uses the recently developed China Health and Retirement Longitudinal Study (CHARLS) dataset to analyse the current patterns of disability and informal care availability. In particular, and contrary to expectation, we find that fertility change is not the main driver for reducing informal care. Education levels, living standards, urbanization and co-residency are much more important. This suggests that current policy, which targets those with one child families, may be misguided, and also that mechanical extrapolations of future demand for care may be misleading.

#### Keywords

Population ageing; China, long-term care, disability, informal care

**JEL codes**: I10, I15, I18, I38, J1

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#### Introduction

The new frontier of policy reform in response to an ageing demographic is long-term care (LTC). In developed countries, LTC is delivered through a range of models. For example, Germany emphasises family obligation and provides limited resources from the public sector (the "informal care-led model"). At the other extreme, Sweden's "service-led" model started with a very high coverage to the elderly with government public support acting as a substitute for more traditional informal care. The choice of funding model has implications for fiscal impact and reliance on informal care, both issues which are especially critical in the context of population ageing.

In this paper, we consider the development of LTC policy in China. This is especially challenging for two reasons. First, China is one of a group of emerging economies which is ageing rapidly at a relatively low level of per capita income. Although China's demography is still young by developed country standards, it is ageing very rapidly, and by mid-century will have "caught up" with many countries in the developed world with respect to population ageing. These countries, which will "get old before they get rich", face particularly acute fiscal challenges because of the high proportion of government outlays associated with the later stages of the life span. Second, China's "one-child policy" is seen as a particular issue for China. With only one child, it is argued, there will be less informal care offered than in societies with larger families.

LTC policy in China, which is highly decentralised, is in its infancy. Where policy structures exist, they are poorly resourced. They tend to target families who have only one child, or who have had a child who has died. By contrast, central policy guidelines, informed by perceptions of informal care scarcity driven by the one-child policy, envisage a full care model with relatively little reliance on informal care. Policy developments consistent with this vision have not been costed, but it can be anticipated that this will be a major, perhaps unsustainable, fiscal burden for China as its population ages. Critical to the fiscally sustainable delivery of LTC will be policy designs which take account of and encourage informal care provision, contrary to current policy guidelines.

This paper uses the recently developed China Health and Retirement Longitudinal Study (CHARLS) dataset and demographic projections drawn from Lu et al (2014) to analyse the current and future projected patterns of informal care availability. In particular, and contrary to expectation, we find that fertility change is not the main driver for reducing informal care. Education levels, living standards, urbanisation, and co-residency are much more important. Current unmet LTC requirements are limited, but will grow with an ageing demographic.

We begin in section 1 with a brief overview of the current status of LTC policy and practice in China. Section 2 summarises alternative approaches to and trends in LTC policies in the developed world. Section 3 analyses the relationship between disability and informal care in China, and section 4 examines the role of family structure, education and economic development in greater detail. Finally, section 5 draws on the information in the paper to offer some suggestions for future policy directions for Chinese LTC policy.

#### **Current situation**

China is rapidly ageing. The population over age 60 reached 200 million in 2013, increasing from 97 million in 1990. By 2050, this is projected to reach 450 million. Of these, nearly one third will be over 80 (Lu et al., 2014). This large group of older Chinese residents will bring serious challenges to aged care services, both formal and informal (Zeng and George, 2000). In China, the issue is sometimes seen as uniquely serious because of the one-child policy. With only one child, it is argued, there will be less informal care offered than in societies with larger families.

While some policy structures around LTC do exist in China, they are poorly resourced, and have not been subject to serious scrutiny with an eye to population ageing. Policy priorities have not been worked through. This is partly due to a lack of systematic data to provide an evidence base for policy

formulation. The guidelines for the future that have been developed envisage widespread government provision, which may not be the mode of delivery preferred by the oldest old, and will be increasingly expensive as the numbers of very old rise.

In China, social policy as it relates to LTC is sharply differentiated between the rural and urban sectors. In rural areas, it traditionally refers to the "Wubaohu (Five Guarantee)" program (food, clothing, housing, medical care and funeral costs), which covers people with no financial resources, no family support and no ability to work. Currently China has about 5 million "Wubaohu" with one third living in public housing. About 20% of these are disabled.<sup>1</sup>

In urban areas, care for the elderly traditionally refers to publicly run nursing homes which provide both low and high care services, and where eligibility is rationed by both need and long waiting lists. In recent years, the government has been encouraging private investment in nursing homes. Some estimates put the total number of beds at above 5 million.<sup>2</sup> According to the 2013 Annual Report of Ministry of Civil Affairs, about 2.3 million beds are vacant, showing a mismatch of the market demand and supply in the private sector.<sup>3</sup> It is common to hear discussion of the "9073" or "9064" models in China. These indicate an expectation that 90% of elders (60+) shall age at home by themselves or with family support, and with 7% or 6% receiving home care packages and 3% or 4% institutional care. It is hard to find the basis for these numbers; a simple explanation would be that they are in line with the ratios in developed countries where LTC policies are mature. Such an ambition is consistent with the service-led model.

Accordingly, in State Council document No.35 (2013), the government calls for 35-40 beds per 1000 elders over the age of 60 by 2020; <sup>4</sup> this will mean more than 8.5 million beds (including private and public nursing homes and hospital beds) and a labour force of some 10 million in the LTC sector. If realised, this would provide institutional care for all the country's disabled elderly.

#### LTC policy: approaches and trends

LTC usually refers to services to those with disabilities in activities of daily living (ADLs) or instrumental activities of daily living (IADLs), designed to compensate for those disabilities. Most of these people are aged, and the term is often used as synonymous with "aged care". The services can be home based, community based or institutional.

Informal LTC can be defined as unpaid care given by friends and relatives to a person in need of support in their activities of daily living (in most cases, an elderly person). It can range from occasional help with shopping to continuing support with bathing, eating and mobility. It is the most important type of care delivery in all countries, regardless of the stage of economic development or demographic maturity. It is now widely recognised that the most important resource frail elders can have is a caring family (Bowers, 1987; Clark, 1990; Anderson and Bury, 1988). Informal care (IFC) reduces the probability and intensity of formal and hospital care of elders (Charles and Sevak, 2005; Houtven and Norton, 2004), thus reducing fiscal impact. It must therefore be seen as an important productive resource, especially in emerging economies whose public resources are stretched, to be accommodated and relied upon in the formulation of formal LTC policy.

http://www.mca.gov.cn/article/zwgk/jd/201309/20130900518508.shtml, translated by authors.

<sup>&</sup>lt;sup>1</sup> Official data for disabled "Wubaohu" in public housing are difficult to get. One local government research report indicates that in Jilin province, the disabled in public elder homes represents 21% of the total. Translated from the website: http://www.google.com.au/url?sa=t&rct=j&q=&esrc=s&frm=1&source=web&cd=5&ved=0CEAQFjAE&url=http%3A%2F%2Fmzt.jl.gov.cn%2Fllyj%2F201501%2FP020150121383805492867.docx&ei=1psQVZ6aJ4f88QWgtoLwBw&usg=AFQjCNEDeoOXa6Zz9dKDTkNaBoSToM58NQ&bvm=bv.88528373,d.dGc

<sup>&</sup>lt;sup>2</sup> Source from China Statistic Bureau website:

http://data.stats.gov.cn/workspace/index; jsessionid=98F81C162FE6ACAE209D842C93AD9B2C? m=hgnd-http://data.stats.gov.cn/workspace/index; jsessionid=98F81C162FE6ACAE209D842C93AD9B2C? m=hgnd-http://data.stats.gov.cn/workspace/index; jsessionid=98F81C162FE6ACAE209D842C93AD9B2C? m=hgnd-http://data.stats.gov.cn/workspace/index; jsessionid=98F81C162FE6ACAE209D842C93AD9B2C? m=hgnd-http://data.stats.gov.cn/workspace/index; jsessionid=98F81C162FE6ACAE209D842C93AD9B2C? m=hgnd-http://data.stats.gov.cn/workspace/index; jsessionid=98F81C162FE6ACAE209D842C93AD9B2C? m=hgnd-http://data.stats.gov.cn/workspace/index; jsessionid=98F81C162FE6ACAE209D842C93AD9B2C? m=hgnd-http://data.stats.gov.cn/workspace/index.gov.gov.cn/workspace/index.gov.cn/workspace/index.gov.cn/

<sup>&</sup>lt;sup>3</sup> Information from website: http://www.mca.gov.cn/.

<sup>&</sup>lt;sup>4</sup> Information from website:

<sup>&</sup>lt;sup>5</sup> Our estimates of IFC include a very small allocation of paid time, purchased with out-of-pocket funds. Less than 1% of our sample of disabled received such care.

Demographic ageing impacts aged care services in many ways and also interacts with technological innovation and dissemination. A higher proportion of people get old, and although their healthy life spans increase, in many cases the timespan of senescence also rises. Chronic illness which previously led to death is now controlled through medical intervention, but it leaves these new survivors with aged care needs. Overall, these care requirements are more diverse than in previous eras, precisely because medical interventions leave those treated alive, but with a wider array of needs.

These developments affect both formal and informal modes of delivery, as well as aggregate cost. In developed countries, LTC is delivered through a range of models. For example, Germany emphasises family obligation and provides limited resources from the public sector (the "informal care-led model"). At the other extreme, Sweden's service-led model started with a very high coverage to the elderly, 21% in the 1990s (see Sundstrom, 2006), and government public support acted as a substitute for informal care (Pavolini and Ranci, 2008, p.247). But the full service models of publicly provided care are now being modified and are converging towards the more mixed systems, such as Germany's. Still other countries provide public support for certain types of care (e.g. residential care) but do not provide or fund other care modalities (e.g. home-based care services). In all cases, at least some risk pooling is implicitly or explicitly introduced through the tax system via support from general revenue.

Another important trend is a move away from an emphasis on residential care to care based in the community and home. "Ageing in place" not only accords with the preferences of most recipients of aged-care services, it also contains costs by using home rather than institutional accommodation and by making it easier for informal care givers to take a more effective role in overall care provision. Many Organisation for Economic Co-operation and Development (OECD) countries have reorganised the delivery of LTC services over the past decade (OECD, 2011 and 2013), with the aim of moving away from long and costly stays in hospitals to the development of residential care where needed and, more generally, to providing better support for home-based care options (OECD, 2007, p.64).

While LTC policies aim at providing adequate and quality service for the frail elderly, they are subject to financial constraints and a restricted labour supply. Informal care is an important resource for the elderly everywhere; ignoring policy impacts on informal care provision risks the evolution of unsustainable policies and fiscal burden. In Japan, after LTC insurance implementation in 2000, physical support, which the reform targeted, declined significantly among daughters and daughters-in-law (Tsutsui et al., 2013). Brandt et al (2009) analysed European SHARE data and found that "Public and private sector services stimulate familial help activities ('crowding in') but tend to displace intensive care activities ('crowding out')" (p 11).

When thinking about informal care or family support for the elderly, it is natural to think of children as the main informal care providers. The best single predictor of placement in a nursing home is the unavailability of adult children (Finch and Mason, 1993; Holroyd, 2001). In China, the one child policy and the presumed reduced support from children has led many to call for comprehensive long-term care support from the government (Ma et al., 2012; Shi, 1993; Zhang and Goza, 2006; Gu and Vlosky, 2008; Zhang and Montgomery, 2003).

A major and necessary research focus, therefore, is to determine the relationship between family structure and informal care provision. What are the key patterns and behaviours which determine the availability of informal care? In the following section, we examine the relationship between health, disability and informal care in China, using the 2011 wave of the CHARLS survey.

#### Disability and informal care in China

In this section we describe current patterns of disability and care provision in China. The data were

drawn exclusively from the CHARLS survey, which conducted its first full wave in 2011. We targeted elders aged 60 or more, which provided a sample of about 7,500 individuals. About 1,700 are disabled using criteria of ADLs and IADLs. Informal care receipt was reported by 1,446 elders. This provided the basis for our statistical analysis. Annex 1 lists the sample's characteristics.

Conditional on receiving informal care, the average informal care monthly hours elders receive is 153 hours per month (135 hours in the rural sector and 187 hours in the urban sector). The probability of not receiving IFC is about 13% (15% in the rural sector and 11% in the urban sector).

ADLs and IADLs in CHARLS data accord with international definitions. There are many ways of defining impairment functions using ADLs or IADLs indexes. For example, scores can be weighted to give a combined index. The Australian Aged Care Assessment Act of 1997 integrates ADLs and IADLs scores with a qualitative assessment.<sup>7</sup>

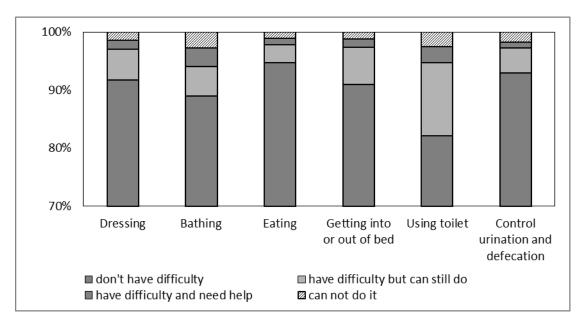


Chart 1: ADLs distributions of individuals ages 60 and above

Source: CHARLS, 2011 wave.

The ADLs 2 and ADLs 3 groups are considered to require institutional support. The IADLs and ADLS 1 groups require non-institutional support, either informal care or home and community care if they do not have adequate informal care support.

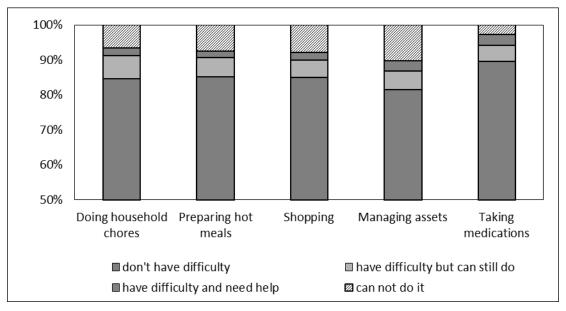
The distribution of each ADLs function is depicted in Chart 1. Less than 3% of the sample reported having difficulty in three or more ADLs items; about 7% reported difficulty with one or two ADLs.

A higher proportion of the sample reported difficulty with IADLs, as reported in Chart 2. We assume IADLs indicate minor frailty requiring only limited home or community based help.

<sup>&</sup>lt;sup>6</sup>The survey used probability proportional to size (PPS) methodology and covered 150 counties of 28 provinces in China, about 10,000 households (about 17,000 individuals more than 45 years old).

<sup>&</sup>lt;sup>7</sup>The Aged Care Assessment Team (ACAT) defined applicants as follows: (a) the person has physical, medical, social or psychological needs that require the provision of care; and (b) those needs cannot be met more appropriately through non-residential care services; and (c) the person meets the criteria (if any) specified in the Approval of Care Recipient Principles as the criteria that a person must meet in order to be eligible to be approved as a recipient of residential care (ACAPG, p. 30).

Chart 2. IADLs distributions of individuals ages 60 and above



Source: CHARLS, 2011 wave.

For our analysis, we create a 4 tier system of frailty, ranging from mild to profound impairment:

IADLs group: IADLs but not ADLS

ADLs 1 group: 1 or 2 ADLs reporting "having difficulty and need help, or can't do it"

ADLs 2 group: 3 or 4 ADLs reporting "having difficulty and need help, or can't do it"

ADLs 3 group: 5 or 6 ADLs reporting "having difficulty and need help, or can't do it"

Table 1 reports the distribution of the sample by this categorisation of disability.

Table 1: The frequency of each health status and the distribution of all disability levels from CHARLS

	Ratios (%)	Disab	led ratios (%)	
Healthy	77.4	Total	Urban	Rural
IADLs only	12.5	55.2	50.6	57.6
ADLs1	7.0	32.0	34.1	30.9
ADLs2	1.5	6.7	6.6	6.8
ADLs3	1.4	6.1	8.7	4.7
Total	100	100	100	100

About 23% of the sample reports some IADLs or ADLs impairment. About 3% of the sample falls into the ADLs 2 and 3 categories, indicating high care requirements.

The data also provide insight into informal care provision. Weighted by urban and rural population proportions, 13.6% of those over the age of 60 who report some impairment receive no informal care (table 2). This appears to be a significant shortfall. However, most of the zero-care recipients are in the mild categories of disability. Average hours of informal care per month for people with ADLs2 and ADLs3 impairment are quite high, suggesting that informal care is not only provided to those with more serious impairment, but also that they are likely to receive adequate care. The average

hours of care reported by impairment category is higher than hours provided in developed countries, such as Germany. <sup>8</sup>

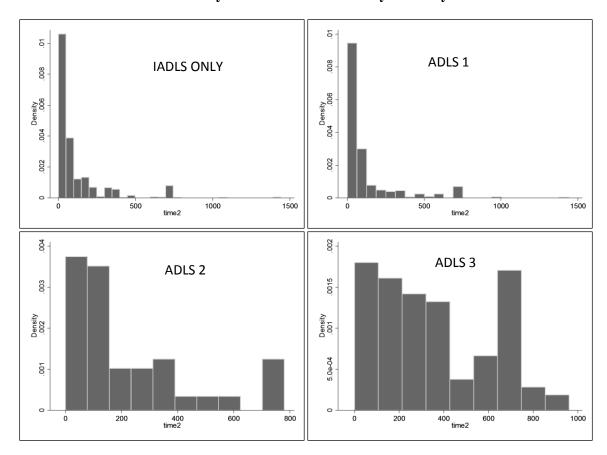
Table 2: Probability of not receiving IFC and average hours of IFC per month by ADLs and IADLs status

Without IFC			Monthly hours with IFC (n)						
			Total		Urban		Rural		
			Hours	Samples	Hours	Samples	Hours	Samples	
IADLs	145	(15.5%)	108	(921)	132	(287)	98	(634)	
ADLs1	82	(15.1%)	121	(532)	155	(194)	101	(338)	
ADLs2	3	(2.6%)	221	(113)	225	(38)	219	(75)	
ADLs3	1	(1.0%)	361	(99)	426	(48)	300	(51)	
Total	231	(13.6%)	135	(1665)	171	(567)	116	(1098)	

When the distributions of hours of care provided per month for each impairment category are analysed, we find that intensity of care increases with disability severity (Chart 3).

These data do not tell us about the quality of care. Family care is of course not rated for quality anywhere. But these data include care services purchased with out-of-pocket funds. This type of care is also not quality rated, which is an "unknown" that can only be determined through future research.

Chart 3: Distribution of monthly hours of informal care by disability tier



<sup>&</sup>lt;sup>8</sup> Schulz et al. (2004) reported the hours needed to assist those with ADLs and IADLs disabilities range from 90 minutes to 5 hours a day, roughly 45 to 150 hours per month.

Overall, informal care is currently adequately provided in China. Most of the seriously disabled are taken care of by families, either directly or by hiring assistants. One reason might be that China's current retirement age is very low: retirement age for women office workers is 55; for women blue collar workers the age is 50. Retirement age for men is 60, regardless of their occupation. This raises the question as to the impact of later retirement on informal care provision. Pension reform in China is moving in the direction of increasing the retirement age, and this is likely to have an impact on the informal care pattern in the future. This may especially true for women.

In what follows, we analyse the determinants of informal care provision from a family and demographic perspective. We focus on family size, education and economic status. This may provide some initial guidance as to whether informal care will be reduced in the future, and to what extent the one child policy impacts informal care provision.

#### The role of family structure, education and economic status

Until recently, there has been little guidance in China on the need for care by the disabled population, and the patterns of provision of informal care have not been documented. The CHARLS survey provides comprehensive, nationally representative data on these aspects of LTC for the first time. In this section we analyse current patterns of informal care in China and show how they relate to reported needs.

We focus on two very basic areas in order to better inform the policy debate in China around the role of informal care: 1) family structure, and 2) education and economic status. Family structure provides information about the relationship between family size, including the number of children and marital status, the probability of receiving informal care and its intensity. Education and economic status offer guidance about the future trends of these probabilities and levels. We analyse these using CHARLS data. Major questions are:

- 1: Family structure: Who are the main providers of informal care in current Chinese society, without a proper public supporting system? Are more children in a family associated with a higher probability of receiving informal care and a higher time allocation? Are daughters more likely to supply informal care than sons? What is the role of the co-resident spouse?
- 2: Education and economic status: What are the propensity and level of informal care for older cohorts with a disability? How many have no care and how many can't get adequate care? Which groups are in need of public support, both currently and in the future? Does a high level of education and better living standard lead to less demand for LTC?

#### Family Structure

Family structure is important in determining the probability of receiving IFC and its level. Coresidency with a spouse is an important predictor of receiving IFC. For those with a disability, the hours of informal care provided per month is 65 hours more for those with a co-resident spouse in the rural sector, and 35 hours more in the urban sector.

More surprising are the results relating to number of children. They indicate that as long as a disabled elder has at least one child, there is a weak link between number of children and the probability of receiving care. In the rural sector, those with one child are somewhat more likely to receive no care than those with two or more children. In the urban sector, the rates are less stable with family size, but there is still no clear relationship between number of children and the probability of receiving care. Table 3 shows the probability of not having IFC by number of children in both rural and urban areas.

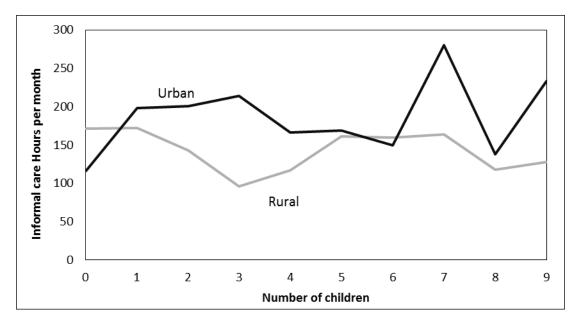
When the elders do receive informal care, the intensity, measured in hours per month, is not related with the number of children (see Chart 4).

Table 3: The probability of not having IFC by number of children (rural and urban)

No. of Children	0	1	2	3	>3	>=1	Total	Sample Size
Urban	11.7%	7.4%	5.1%	16.4%	11.2%	10.9%	10.9%	577
Rural	25.0%	18.3%	13.8%	14.0%	14.8%	14.8%	15.0%	1122
Total	19.3%	13.6%	10.1%	13.4%	13.3%	13.1%	13.2%	1699

The level of support for the rural elderly by their children is lowest with a three child family, while an only child provides better care than two. In the urban sector the pattern is more evenly distributed but does not indicate increasing care intensity with more children. This is an important finding with strong policy implications. Thus far, policy has tended to target families with only one child, or families whose only child has died. This result strongly indicates that such targeting is misguided.

Chart 4: Average hours of IFC per month elders by number of children and sector



A related question is whether sons provide more support to elders than daughters. It is hard to generate overall gender difference in IFC probability and levels from the general CHARLS sample. We examined one child families – this leaves a small sample, of only 246 observations. Of those who reported receiving care, urban daughters supply 69 hours and sons 203 hours; rural daughters supply 117 hours and sons 127 hours. It seems, with only one child, sons are supplying more care to parents. However, this result should be read with caution.

The chance of receiving either no informal care, or low intensity informal care, is significantly higher in the rural sector. About 15% of the disabled in the rural sector report receiving no informal support, compared with 11% in the urban sector. The majority of the elderly reside in the rural sector, suggesting that this is a target for public support.

#### Education and living standard status

Education appears to be a critical predictor for receiving informal care. Poverty-stricken rural disabled elderly who are illiterate have a much higher probability of having no informal care than those with

education and a higher living standard (see table 4). Overall, about 9% of educated elders receive no IFC, compared with 13-15% no high school education.

As revealed in annex 1, about 36% of those with disability reported their subjective living standard as being "very poor", compared to the general population of only 20%. With regard to education, in rural China, 58% of disabled elders have no education, compared with 42% in the urban sector. These numbers suggest that increasing education and living standards not only will reduce the prevalence of disability, but will also reduce the probability of having no family support when disabled.

Table 4: The probabilities of not receiving IFC education and living standards (%)

	Levels of education	Region	Weight		
	and living standards	Urban	Rural	National Average (%)	
	Illiteracy	12.4	14.2	13.4	
Education	Primary school	10.0	17.9	14.5	
	Middle school	9.5	7.7	8.5	
	Poor	21.7	22.7	22.3	
Standard of living	Relatively poor	8.5	18.6	14.2	
Standard of living	Average	12.5	13.1	12.8	
	High		4.8	4.7	

#### Concluding comments: policy directions for LTC in China

The analysis of informal care patterns and behaviour is important for the development of LTC formal care policy. This includes especially the identification of priorities and targeted groups for receiving formal care. Our analysis leads to the following findings, which will be helpful in policy development.

At the aggregate level, there are 13.6% of disabled elderly (60+) who do not receive any informal care support which is about 3% of the elders aged 60 and above. But they are largely from disability categories with minor difficulties for instrumental activities of daily living. The CHARLS survey reports that about 20% of those aged 60 and above have disabilities in the IADLs and ADLs 1-2 categories. These estimates are broadly in line with other national survey data. About 30% of the minor disabled report having no informal support. In terms of policy development, this group may be supported through targeted support for home and community programs, either from private provision or public transfers. Only about 3% of the total elderly population have difficulties that fall into category ADLs 3+ and among them very few (0.05% of the total population age 60 and above) claim they do not have informal care.

It is possible to calculate implied population numbers who need public LTC support because they do not have access to IFC. About 6 million mild, frail elders (with IADLs and ADLs 1-2) need some packages of home or community care; about 100,000 severely disabled elders need high care assistance from the public sector.

Provision of some IFC does not necessarily imply that the amount of care provided is adequate. About 30% of the severely disabled informal care receivers have caring time of less than 60 hours per month. If we categorise these as receiving inadequate informal care, then about 1% of the severely disabled

<sup>&</sup>lt;sup>9</sup> The Sixth National Census 2010 reports about 20% of the elderly population as having difficulties in dealing with their daily activities. (See webpage: <a href="http://www.stats.gov.cn/tjsj/pcsj/rkpc/6rp/indexch.htm">http://www.stats.gov.cn/tjsj/pcsj/rkpc/6rp/indexch.htm</a>, ratio is calculated by the authors using the numbers.)

(ADLs 3+), or about 2 million people, need some high care support. Similar analysis shows about 20% of those 60 and over with minor disabilities do not have adequate informal care, suggesting that another 8 million people need some public LTC support.

Given the MCA estimates of 5 million beds in nursing homes in China reported above, and the associated high vacancy rate, policy imperatives should not focus on investment in new capacity but rather on funding mechanisms to allow those in need access to these existing facilities, and to match the current bed supply with real demand effectively and efficiently. In addition, it is critical to focus on developing public support mechanisms that can facilitate a more effective use of informal care.

Our analysis indicates that public support is most needed in the rural sector. The most vulnerable group are those over the age of 60 who are sole residents, with either no children or only one child (often a migrant), especially those who are poor and with low education. More generally, our analysis suggests that multiple children do not reduce the probability of not receiving needed informal care. Focusing on those with zero children or one child only will probably miss many in need.

Moving forward, the next step is to design a budget mechanism for LTC policy. Currently China has no central or provincial budgets for LTC services. At the level of local government, lottery revenue is allocated to LTC. But this will likely not be sufficient to meet the burgeoning demand for public support that will come with a rapidly ageing demographic. It is not entirely clear how these needs will develop. For example, we find that education protects against being in need of IFC and not receiving it. So if more advanced education becomes widespread in China, the need for formal LTC may not increase by as much as mechanical extrapolations may suggest. This will also be true for increases in general living standards, especially if these are enjoyed by both the rural and urban sectors.

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Annex. CHARLS 2011 data description-informal care (IFC) and disability related status

Items	Variables	Total	Urban	Rural	Disabled	
					Urban	Rural
IFC Status	Monthly IFC hours	156	190	137	236	161
	(Sample N)	1446	510	936	250	411
	Age	68	69	68	74	72
Demographics	Male	50%	49%	51%	46%	44%
	Urban	40%	60%	-	-	-
	Co-residence with spouse	74%	76%	73%	68%	70%
Family	Widow	20%	19%	20%	31%	25%
	Co-residence with children	1.58	1.54	1.6	1.66	1.71
Education	Primary	44%	42%	45%	36%	34%
	High school+	19%	32%	11%	22%	8%
Living Standard	Poor	27%	27%	27%	25%	23%
	Medium	50%	53%	47%	36%	38%
	High	3%	4%	3%	3%	3%
Health	ADLs	0.22	0.22	0.22	2.28	2.08
Sample Size		7500	2966	4534	285	476

*Note*: For education, the unreported percentage is the illiterate rate. For living standards, the unreported rates are those in poverty (e.g. for disabled rural elders, the percentage in poverty is 36%).

IFC Time (Hrs)	IADLS only	ADL1-2	ADLS3-4	ADLS5+
0	53%	34%	20%	13%
10	7%	9%	3%	2%
10-30	12%	17%	12%	2%
30-60	9%	13%	9%	6%
60-120	3%	6%	10%	8%
120-180	5%	5%	10%	8%
180+	12%	16%	37%	60%
total	100%	100%	100%	100%