

Working Until Dropping: Labor Supply and Retirement of the Elderly in Rural China

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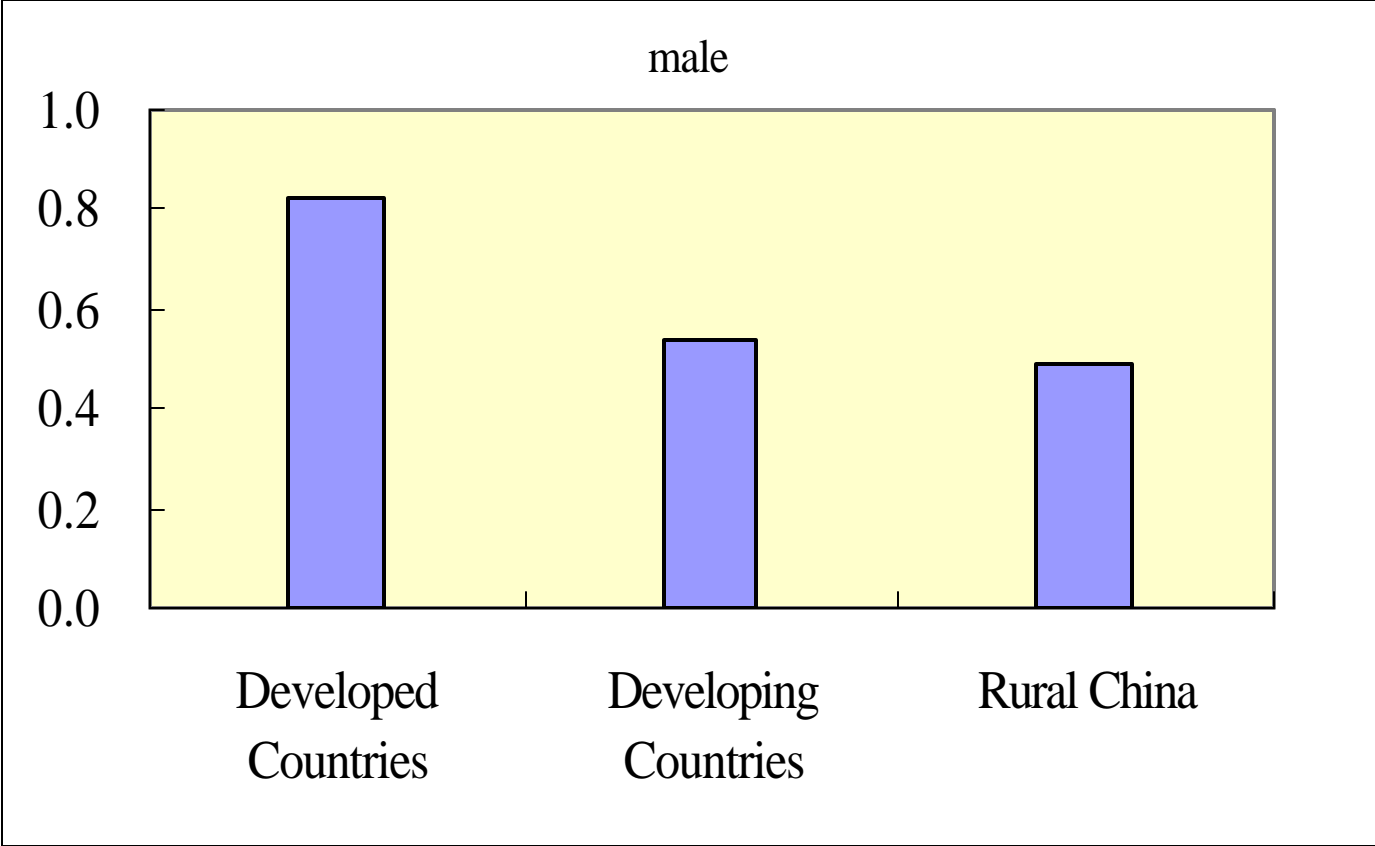
Motivation

- As people age and their income earning abilities fall, although they still are motivated by income and the consumption goods that it brings, they also begin to give more weight to leisure
- It is at this time that many people, give up work and choose *retirement*
- For many it is the “golden years”

Determinants of Retirement

- In **developed countries**, most of the literature examines the effects of formal pension systems, government-sponsored retirement programs, and old age and health-related insurance schemes on the propensity of the elderly to stop working
- In this literature: most formal pension and insurance systems *help* the elderly stop working and support their income at higher levels than they would otherwise experience
- Other factors also affect the decision to retire. For example, as the elderly age and when their spouse works, there is a tendency to retire; the more educated and wealthier they are, the higher the opportunity cost of retiring, the later they tend to opt for retirement

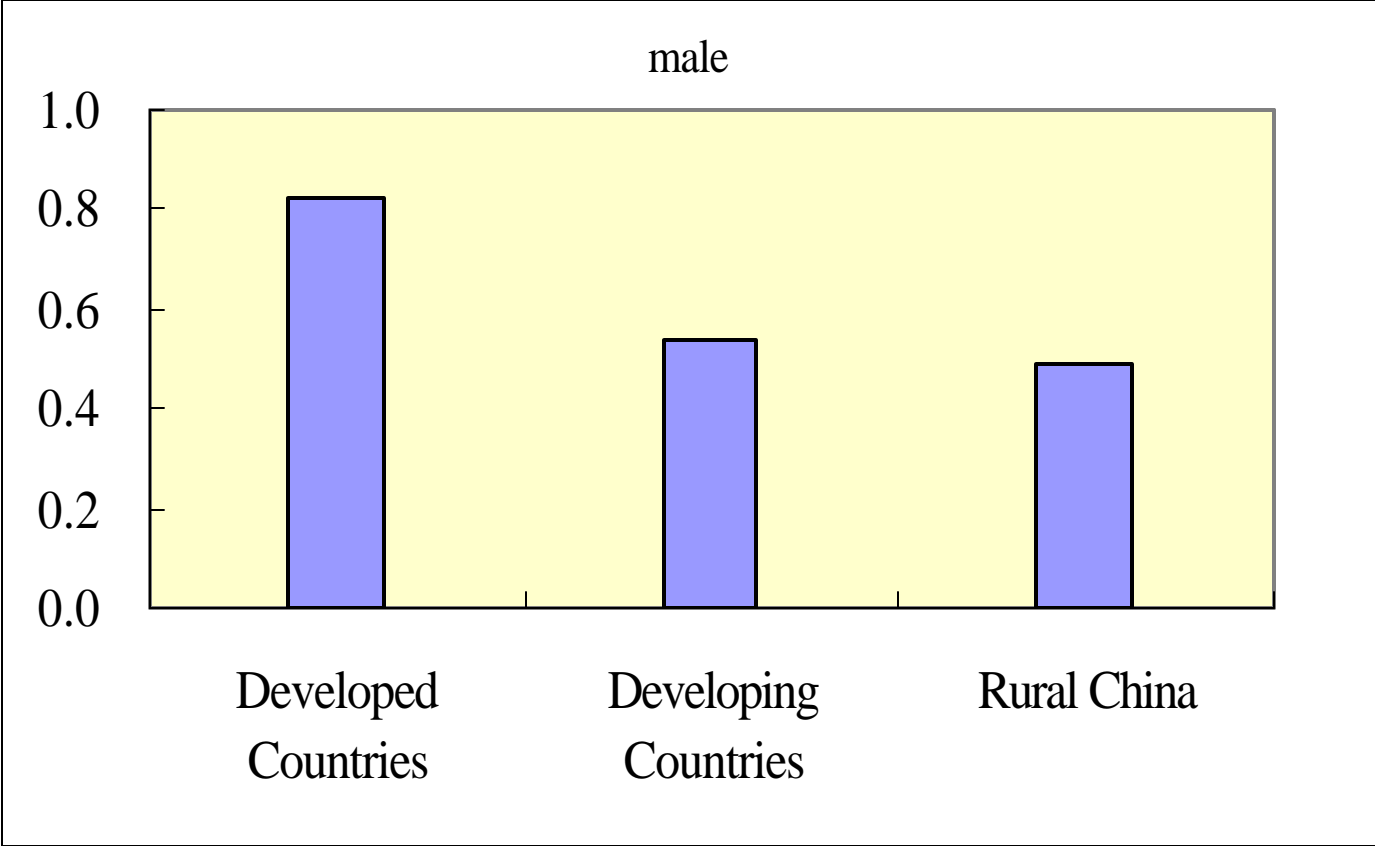
Retirement of Men Who are 65 Years and over in Developed and Developing Countries.



Retirement in Developing Countries

- While elderly certainly have the same expectations
- Much lower levels of retirement
- Fewer formal pension and insurance schemes
- Poorly developed health insurance systems

Retirement of Men Who are 65 Years and over in Developed and Developing Countries.



In Developing Countries Greater Reliance on Informal Retirement Plans

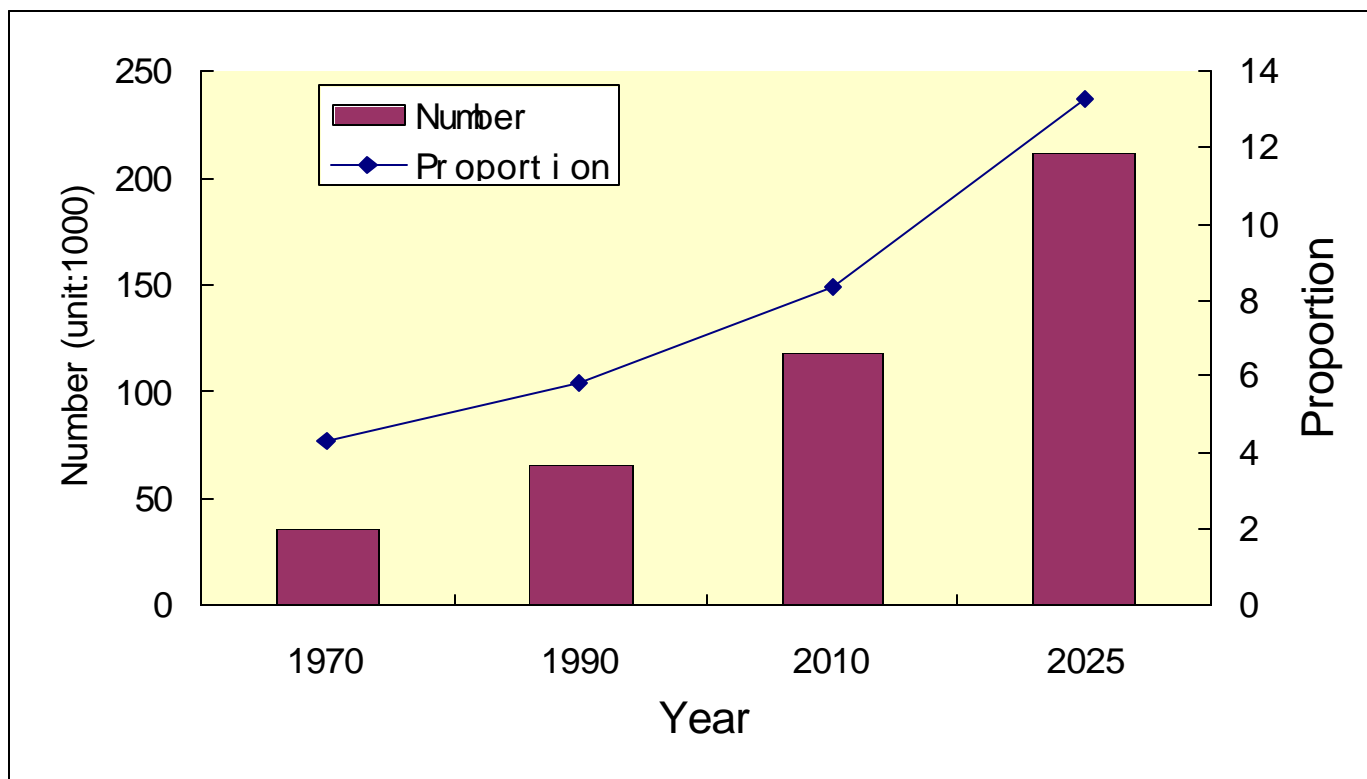
- Three main ways that elderly insure themselves in their old age:
 - Accumulate wealth (insure themselves)
 - Depend on their children (mutual insurance plans)
 - Continue to work (as pay-as-you-go “retirement” plan ... or not)

Our Case Study:

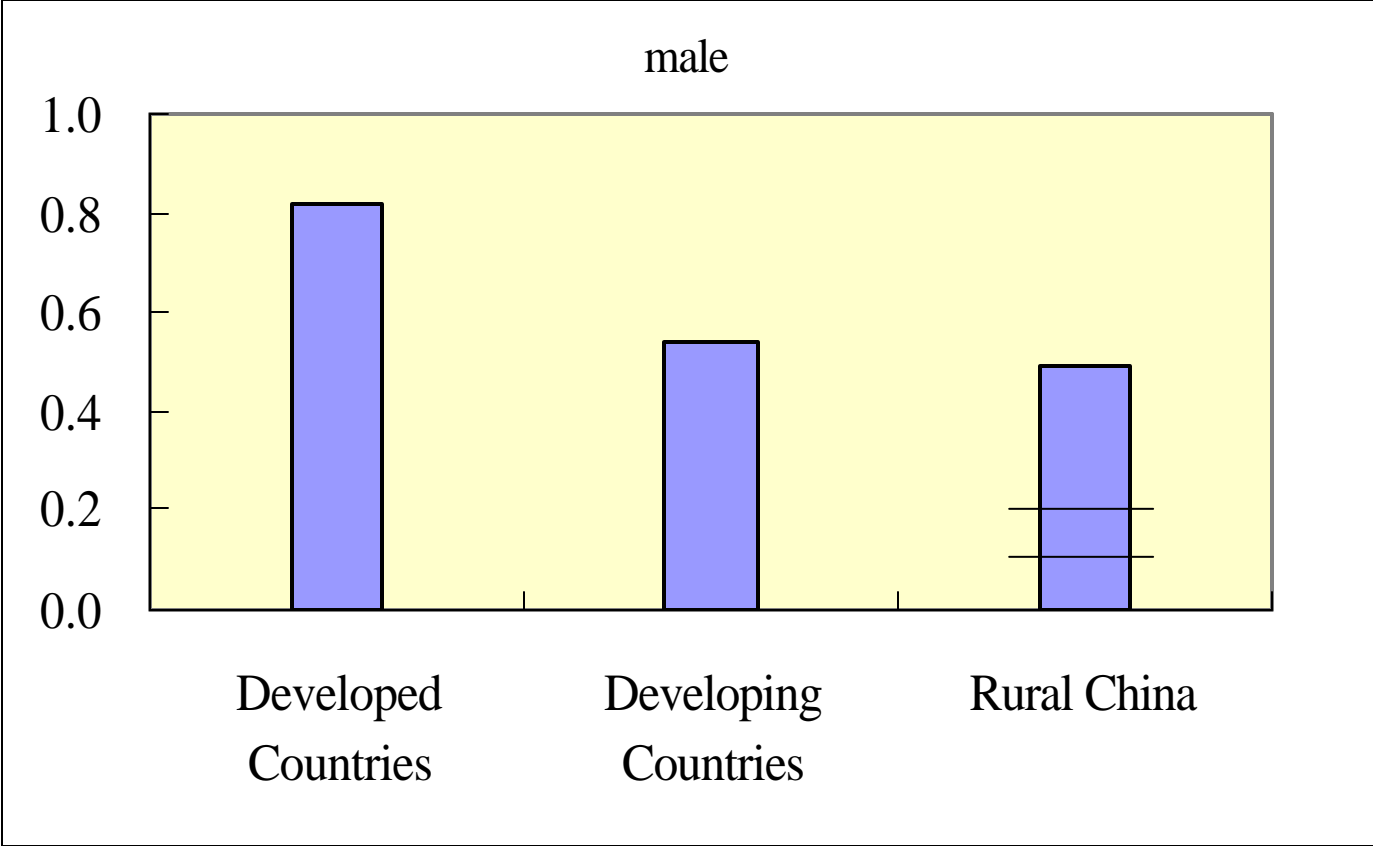
The Elderly in Rural China

- Overall in China, the population is beginning to age
- In rural China, health and aging trends are creating *millions* of new elderly each year.
- Yet, there is almost no formal pension or social security system: In our sample from rural China, of the 964 people who are older than 50 years old, only 34 (or 4%) receive a pension (in the US, in contrast, over 50 percent do)

Number of the Elderly over 65 Years and the Proportion in China, 1970 to 2025



Retirement of Men Who are 65 Years and over in Developed and Developing Countries.



Lack of Research on Retirement in Rural China

- Only a small and fairly non-empirical literature on social security in rural areas (in fact, most schemes have never been implemented)
- Hard to get firm numbers of how many retirees, even less is known about who they are and how they live before and after they retire
- There is almost no understanding of the labor force participation, even though the elderly are playing a large role in some communities (an issue that obviously affects retirement decisions)

Objectives

- Estimate the **levels of retirement** (and labor participation in both formal sector and household sector) in rural China
- Describe the **patterns of “work and play”** of the elderly – who works; what do they do; and how long do they do it for; etc.
- Analyze the **determinants of retirement** (and labor force participation decisions and wage of the elderly)
- Examine if the retirement “scheme” that the elderly adopt affects their “standard of living” –

The outline of rest of talk

- Data
- Examine some descriptive statistics
- Multivariate Analysis:
 - participation
 - hours
 - wages
- Examine the relationship between the retirement scheme and per capita income by running “income regressions” ...
- $PCIncome [PCExp—1/2 \text{ of sample}] = f [\text{Wealth} / \text{Education} / \text{Age} / \text{Married} / \text{Ethnicity} / \text{Health}$

Limitations of our Work

- Focus mostly on labor response and the interaction of labor response with other “forms” informal retirement insurance (do less on the role of wealth and family)
- Only examine rural economy (ignore issues of urban retirement)
- So far, we have not measured the welfare effects of various retirement schemes (i.e., what is impact on per capita income; health; etc.)

Data

Data Characteristics

- Data were collected in a randomly selected, nearly nationally representative sample of 1199 household in 60 villages in 6 provinces (Hebei, Liaoning, Shannxi, Zhejiang, Hubei, and Sichuan).
- Survey gathered information on household demographic characteristics, wealth, agricultural production, non-farm activities, and investment, etc.
- There are 964 elderly (aged 50 and over) among the 4829 individuals in the 1199 households.

Location of Survey in Rural China, 2000

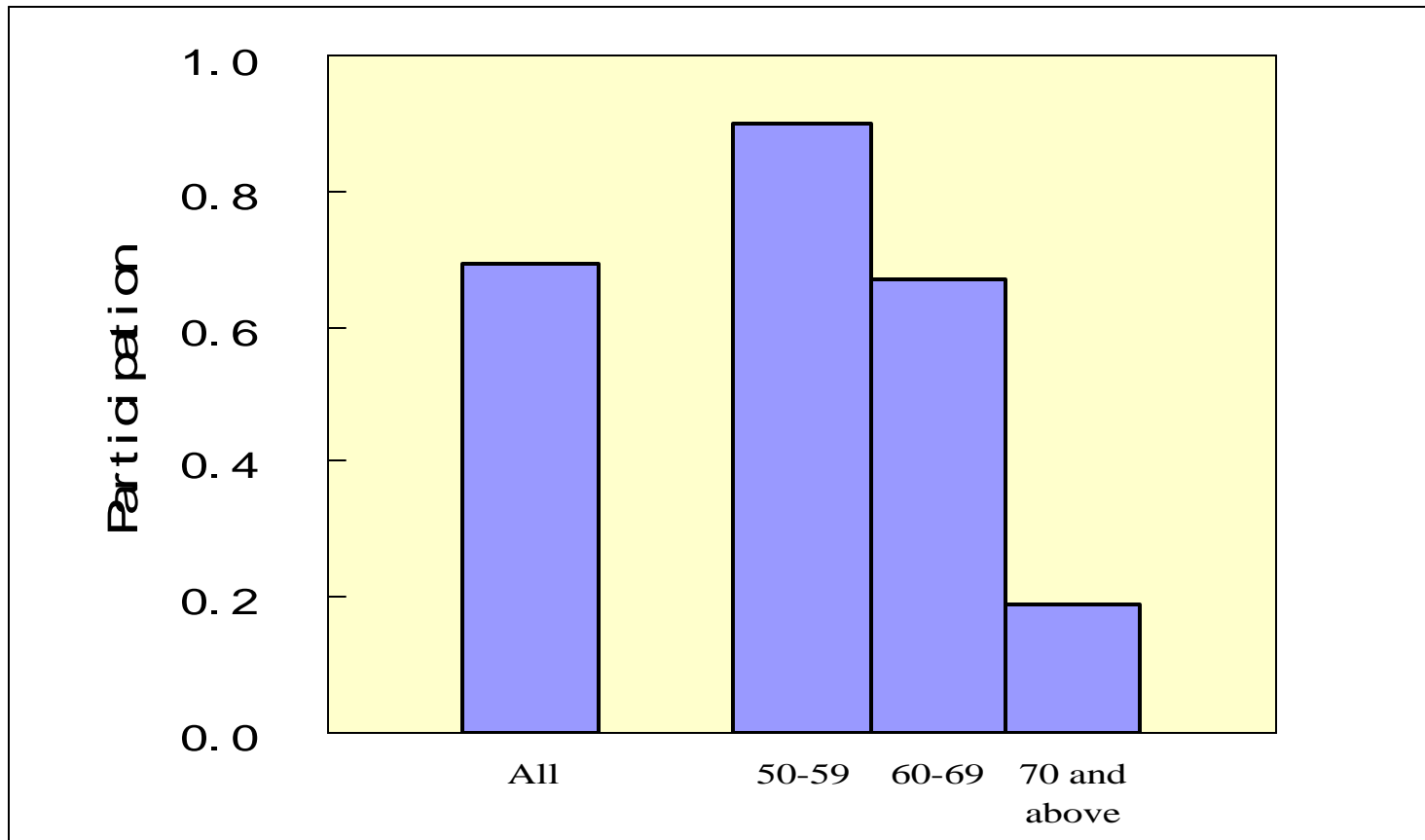


Information on the elderly

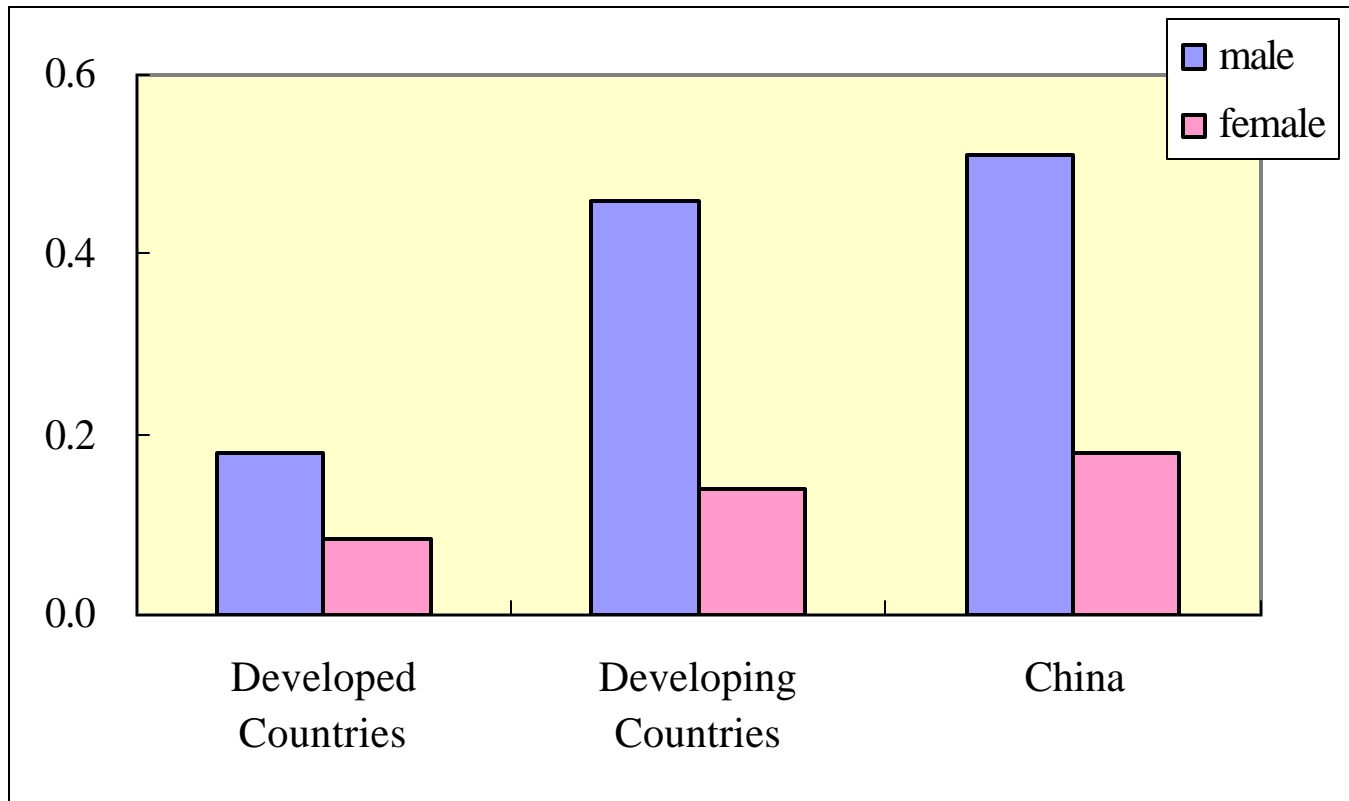
- Individual demographic information
- Work or Retirement information: work or retirement, reason of retirement, type of work, number of hours worked, and hours on housework, and number of hours that watch grandchildren (when they lived outside of the immediate household), etc.
- Household information: living arrangement, children's information (age, migration status), etc.
- A special section on the health status of individuals over 50 was included

The Facts on Retirement in Rural China

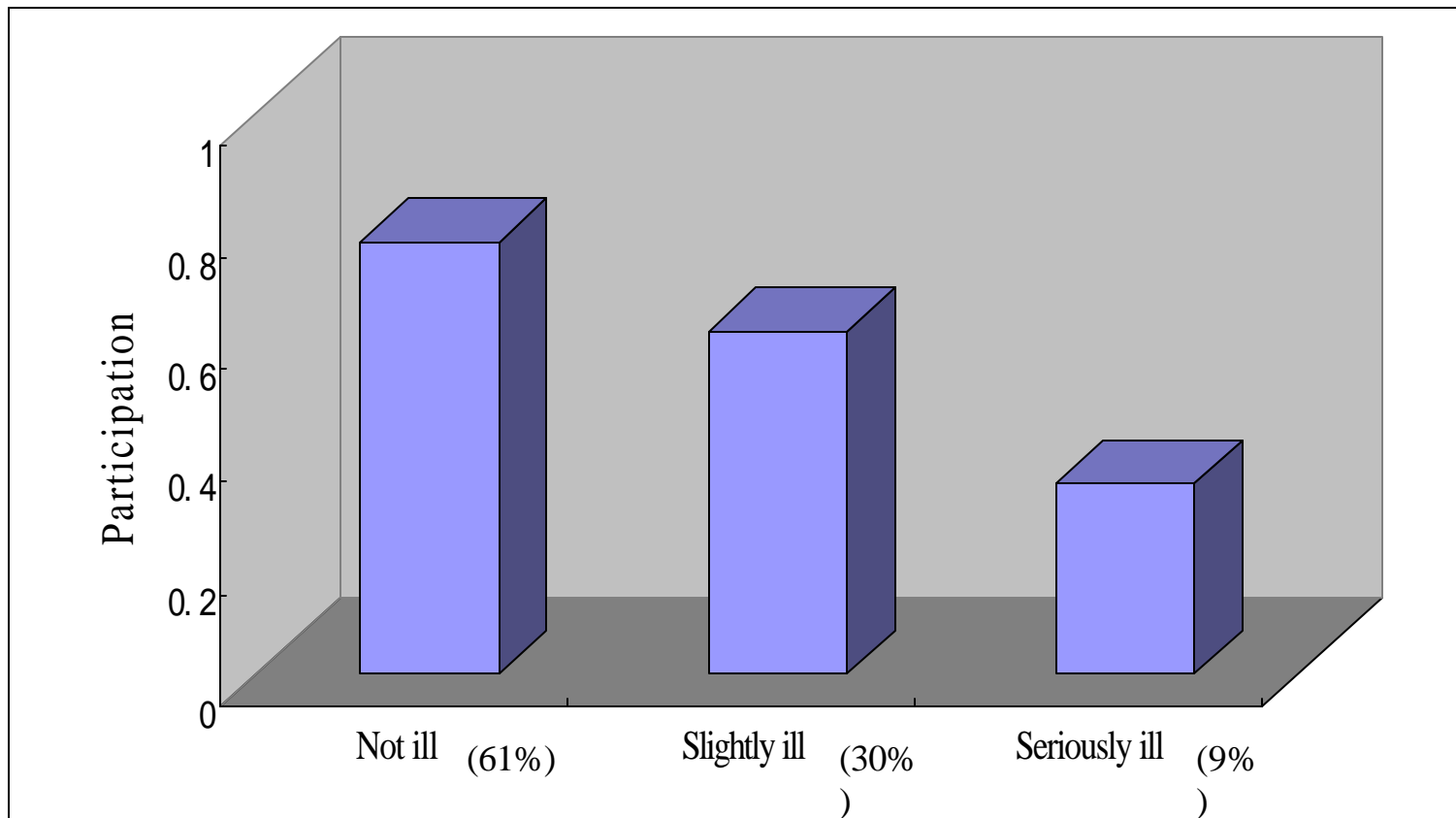
Labor Force Participation of the Elderly (age 50 and over) by Age in Rural China, 2000



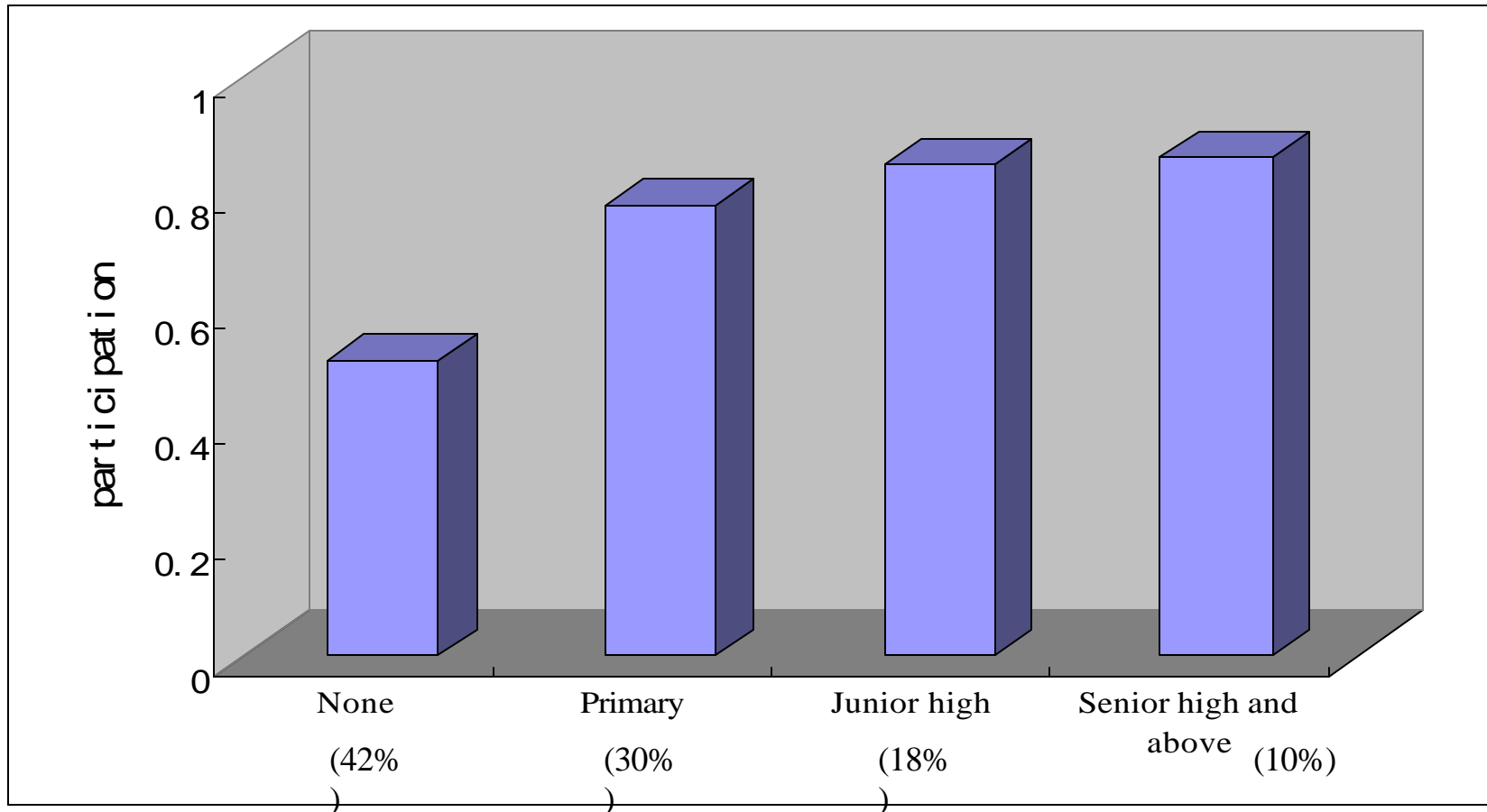
Labor Force Participation of the Elderly Men and Women who are 65 Years and over in Developed and Developing Countries.



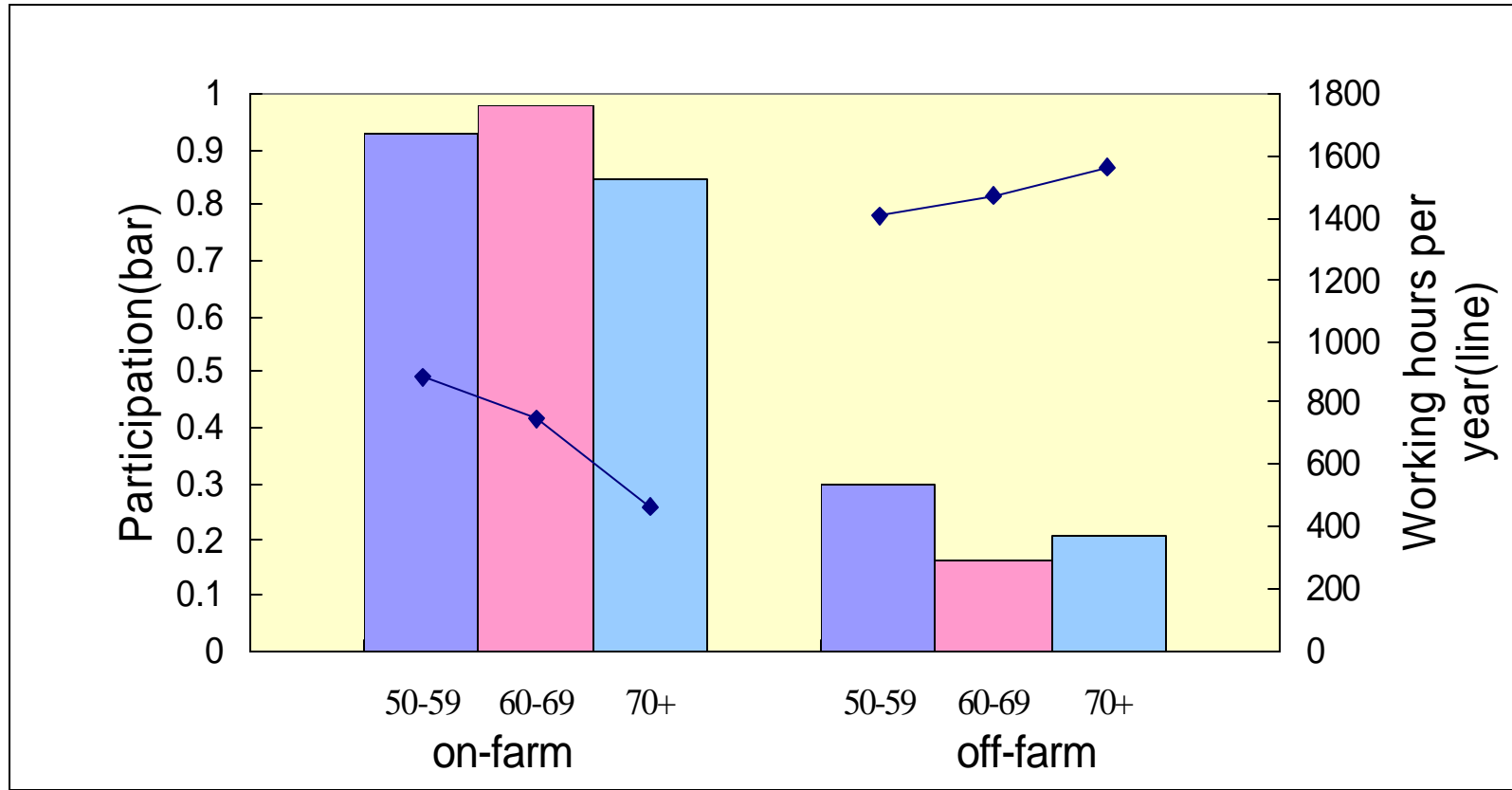
Labor Force Participation of the Elderly (age 50 and over) by Health Status in Rural China, 2000



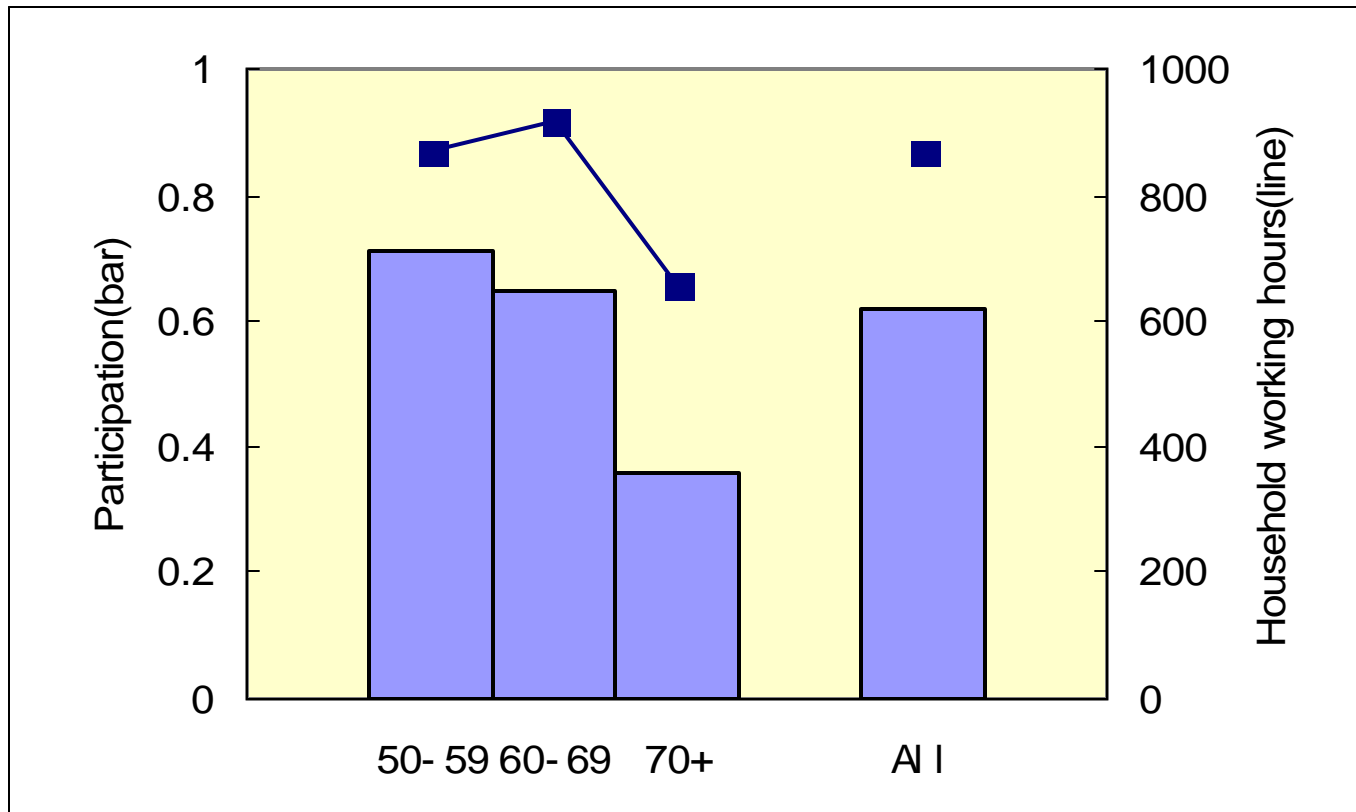
Labor Force Participation of the Elderly (age 50 and over) by Education in Rural China, 2000



On-farm and Off-farm Labor Force Participation and Working Hours per Year of the Elderly (age 50 and over—conditional on those who are working) in Rural China, 2000



On-farm and Off-farm Labor Force Participation and working Hours per Year of the Elderly (age 50 and over—conditional on those who are working) in Rural China, 2000



Proportion of the Elderly who are in Different of Categories of Working/Retirement in Rural China, 2000

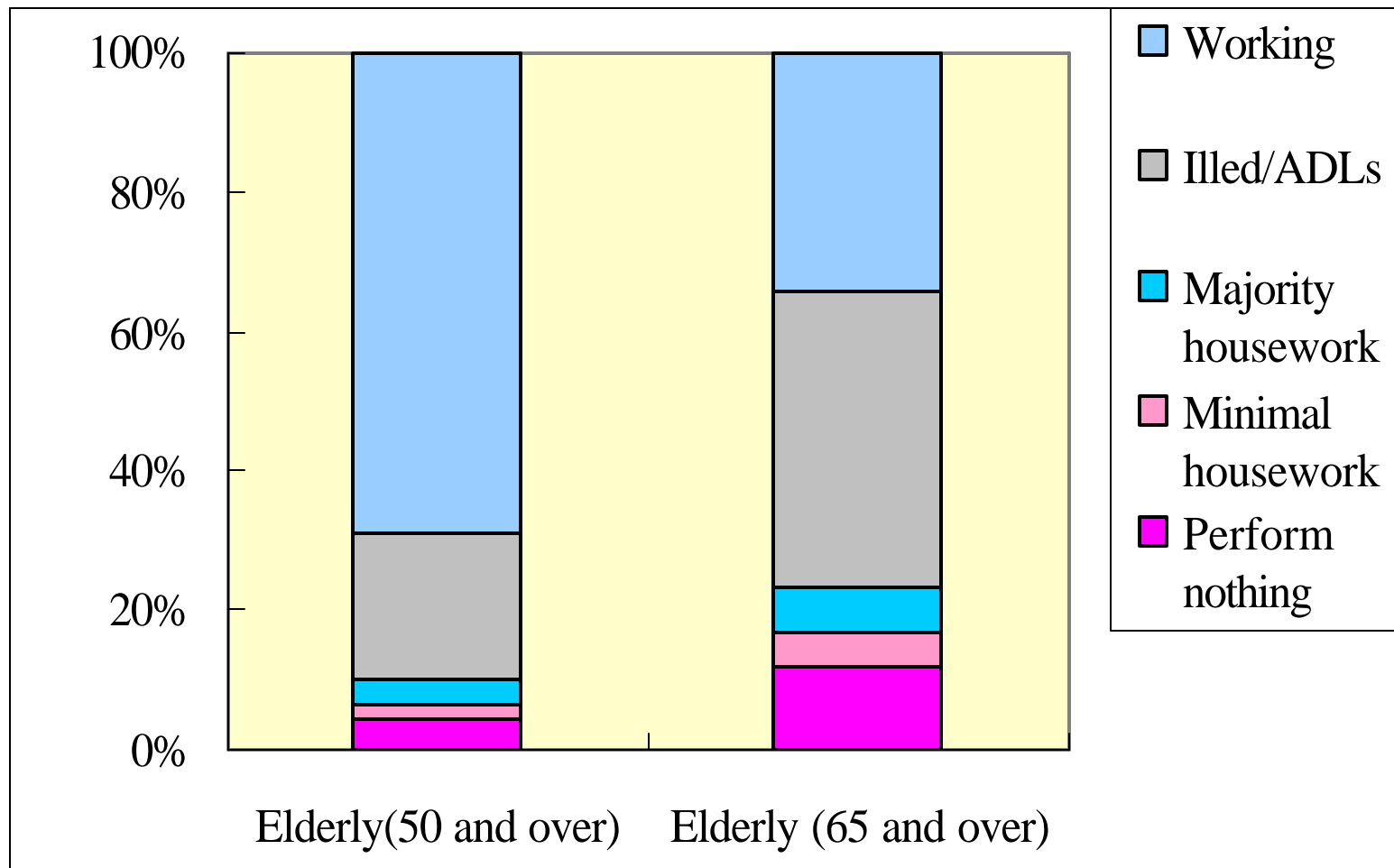


Table XX. Number and Proportion of the Elderly Who are in Different Categories of Retirement in Rural China, 2000.

	(1)	(2)	(3)	(4)	(5)
	All of elderly who did not have a “formal” off- or on-farm job	All of elderly who are capable of working but do not have a formal job	Those who are capable of working and do not have formal job and only perform minimal housework	Those who are capable of working but do not do any work	Those who are capable of working, but do not do any work because being too old (> age 70)
Total Number of Retirees – over 50	299	98	61	43	12
Percent of all elderly who are retired	100%	33%	21%	14%	4%
Percent of all elderly	31%	10%	6%	4%	1%
Total number of retirees – over 65	201	71	52	36	5
Percent of all elderly over 65 who are retired	100%	35%	26%	18%	2.5%
Percent of all elderly over 65	66%	23%	17%	12%	1.6%
Those who report being ill or have at least one disability hindering daily living performance	201				
Engaged in child care (with grandchildren outside of household)	7	7			
Those doing housework in households with grandchildren under 16	23	23			
Those living in households with children who do a majority of the housework or more than 1500 hours of housework per year	6	6			
Those living alone but adjacent to their children’s homes who work more than 1500 hours of housework per year	1	1			
Those living with children who do minimal amounts of housework	7	7	7		
Those living alone who do normal amounts of housework	11	11	11		
Those who are completely healthy and do not do any work – “retiring during golden years”	43	43	43	43	12

Summary of Descriptive Findings

- The high level of labor force participation of elderly in rural China shows the importance of the “pay as you go” retirement strategy
- Most are working in agriculture (90 percent of those who work) / about 10 to 20 percent still work off the farm
- Failing health is the number one reason (by far) that the elderly drop out of the work force (or retire)
- The highest rates of retirement are for those older than 70 ... and though they are not ill ... the reason that they stop working is “I am just too old”

Summary of Descriptive Findings

- Even when elderly stop working in the formal labor force, they still “work”
- High level of housework, especially when they live with their children and with or around their grandchildren mean that elderly are still not fully retired once they stop doing wage, self-employed and ag work
- Clearly support for: “Working until Dropping”

Multivariate Analysis

Regression Modeling Approach

- Probit regression analysis of **labor force participation** by elderly (age 50 and above) in rural China.
- Probit regression analysis of **on-farm and off-farm labor** force participation by elderly (age 50 and above) in rural China.
- Probit regression analysis of **housework and retirement** by elderly (age 50 and above) in rural China.
- Regression Analysis of **working hours** and **wages** of Elderly (age 50 and above) in Rural China.
- All the model fixed the village effects. One set with household fixed effects to see robustness of individual effects. Wage equations by Heckman 2-stage method.

Table 8. Probit Regression Analysis of Labor Force Participation by Elderly (age 50 and above) in Rural China, 2000.

Explanatory Variables	Dependent Variable: Labor Force Participation			
	Model 1	Model 2	Model 3	Model 4
<i>Individual Characteristics</i>				
Age	-0.03*** (11.03)	-0.05*** (4.65)	-0.02*** (5.48)	-0.03*** (5.59)
Gender	0.09** (1.97)	0.61*** (3.47)	0.07 (1.44)	0.12** (2.34)
Head of Household	0.24*** (4.86)	0.31* (1.65)	0.24*** (4.86)	0.17*** (2.95)
Education Year	0.004 (0.57)	-0.02 (0.55)	-0.01 (1.02)	-0.01 (1.00)
Health status	-0.22*** (8.07)	-0.59*** (4.66)	-0.23*** (8.10)	-0.23*** (8.25)
Pension (yes/no)	0.09 (0.96)	0.47 (0.02)	0.11 (1.31)	0.09 (1.07)
Married	0.14*** (2.59)	0.67 (1.54)	0.14*** (2.57)	0.09 (1.57)
Ethnicity	-0.13* (1.68)	-0.48** (2.42)	-0.14* (1.80)	-0.13 (1.62)
<i>Household Characteristics</i>				
Per capita income			0.004 (0.64)	0.004 (0.72)
Land size			0.03*** (2.70)	0.03** (2.33)
Average age of children			-0.01 (1.09)	0.002 (0.32)
Children's migration status				0.04 (0.61)
Living with married son				-0.15*** (2.60)
Fixed effects	Village	Household	Village	Village
No. of Observations	954	253	938	935
Log Likelihood	-298.6	-50.0	-287.6	-281.0

Notes: All coefficients are marginal probabilities (dF/dX). Z-values in parentheses. ***, **, * indicate statistical significance at the 1, 5, and 10 percent levels, respectively.

Results of Multivariate Analysis

- Most of multivariate findings support the descriptive data
- People are working until they can not work any more ... old age forces them out of work force or deteriorating health status
- Living arrangement matters ... in some cases: when they are significant, the results tend to say that when rural residents have older kids or live with a son, they are able to retire earlier or work less ... *mutual insurance is a substitute for working until dropping*
- In some cases, we find that when the elderly have a child who migrates to the city, they have to continue working longer ... this is because one source of old age insurance has disappeared (this is especially strong in the determinants for working on-farm) ... probably will become even more important in the future as the pace of migration accelerates

Results of Multivariate Analysis

- Wealth is not a substitute form of old age insurance ...
specifically what we find is: richer people do not retire (or work) any more or less than poor ones ... actually there may be offsetting effects: rich can retire earlier / but do not because the opportunity cost is higher
- Pensions do NOT matter
- Human capital: education is *not* a determinant for working or not, on the farm; but it is a determinant for off-farm work participation ... also affects the number of hours worked on off-farm work.
- There actually is a fairly high rate of return to education when we look at its affect on the wage.

Conclusions

- If China's elderly are working until they are dropping, there is clearly role for expanding formal systems of old age and health insurance
- Effective social security and health insurance needed not only for welfare of elderly, but also since the nation benefits from their on- and off-farm labor
- With China's growing elderly population and the rise of migration, there will be increased pressure on existing informal systems (i.e., working / family networks / own wealth)
- The elderly are at risk ... it would appear, but further work (like Benjamin et al., 2000) is needed ... we need to see the impact of various informal systems on the welfare of elderly ... i.e., the impact on income per capita

Put in three figures in the next
two page that has something
about household work /
watching grandchildren ..

And living arrangements ...

The three variables that we use

And then the final retirement
table ... retirement is more
complicate