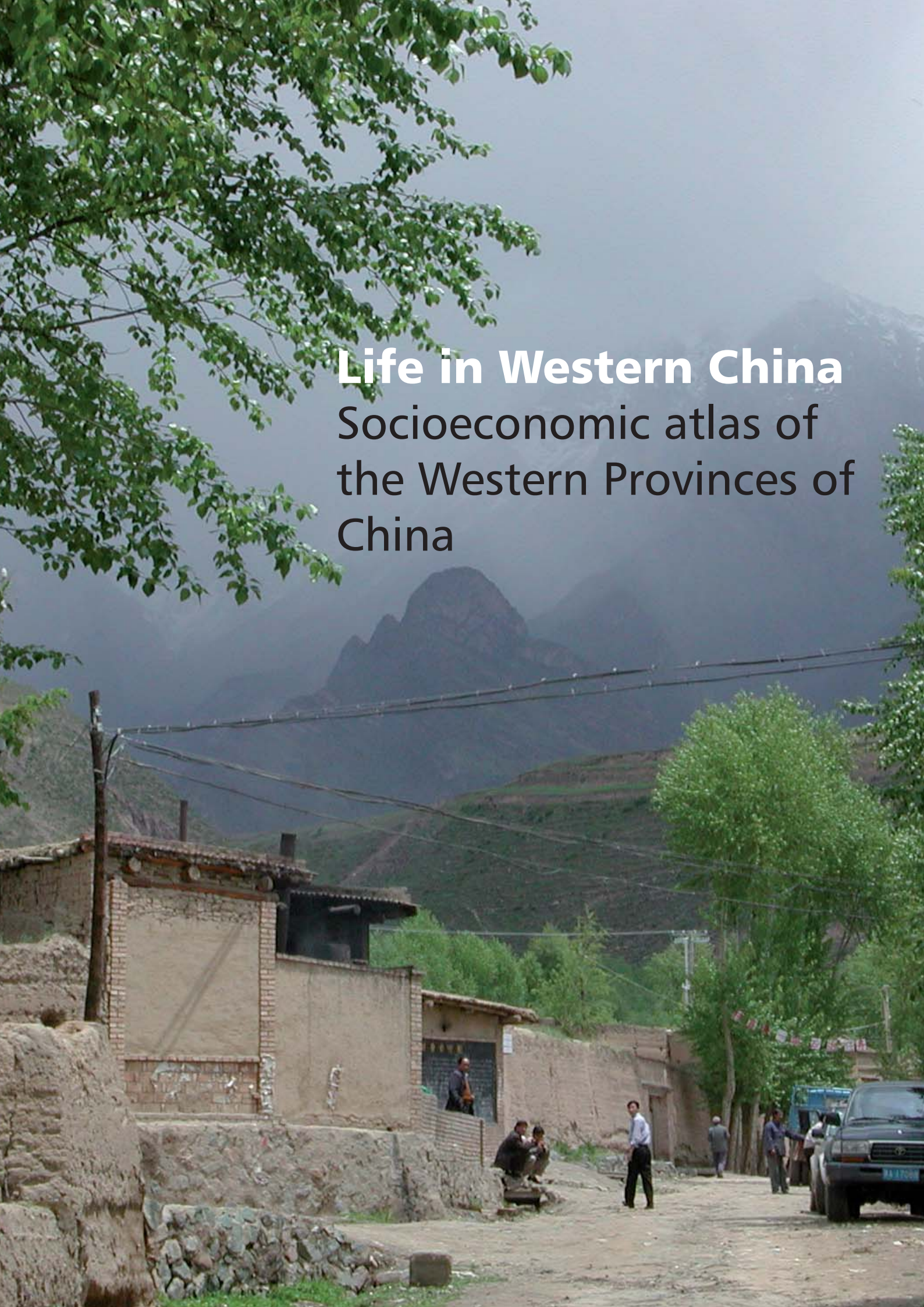

Life in Western China

Socioeconomic atlas of the Western Provinces of China

Socioeconomic Atlas of the Western Regions of China

Zhang Huafeng and Jon Pedersen

National research Center for Science and Technology for Development
Fafo Institute for Applied International Studies

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NRCSTD and Fafo would like to extend our gratitude to all the staff and students of universities in the Western Regions that have collaborated on this project; to our respondents; to local, regional and central administrative authorities of the Peoples Republic of China that helped facilitate the project; and to the Norwegian Ministry of Foreign Affairs that provided funding.

Contents

Introduction

This volume presents maps and graphs of a wide range of indicators derived from the MEDOW survey. The survey, a part of the project Monitoring Economic Development in the Western Regions of China, is a cooperation between the National Research Center for Science and Technology for Development of Beijing, China, and Fafo – Institute for Applied International Studies in Oslo, Norway. The project has been financed by the Norwegian Ministry of Foreign Affairs.

The 11 provinces and autonomous regions included in the survey are Guangxi (Zhuang autonomous region), Chongqing, Sichuan, Guizhou, and Yunnan in the south-west and Inner Mongolia (autonomous region), Shaanxi, Gansu, Qinghai, Ningxia (Hui autonomous region) and Xinjiang (Uighur autonomous region) in the northwest. Chongqing is formally a municipality with the same administrative rank as a province. The provinces cover a total area of 5.6 million square kilometers and harbor a population of 368 million people.

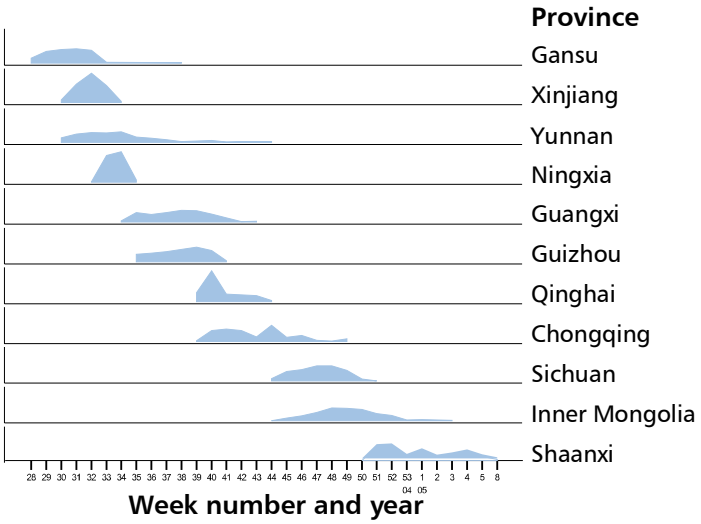
The Western Regions of China have long been considered as lagging behind in the otherwise rapid development of China. In 2000 the government launched the Western Region Development Strategy, which attempts to address many of the challenges facing the population in the area. These challenges range from environmental deterioration, especially related to pollution, water supply and land degradation; to economic hardship because of restructuring and closing down of public industry, to the need for making agriculture more profitable; and to the need for establishing a social security system for the population.

The Survey

The survey attempts to contribute to the knowledge needed to be able to engage with some of the challenges of the Western Regions, through establishing baseline indicators of social and economic conditions for the Western Regions at the last half of 2004. The study is a comprehensive multi-topic survey, and collects data on population, infrastructure, education, health, the labor market, household economy, agriculture and environment as well as a number of other issues.

The actual interviewing took place from the July 10, 2004 to February 28, 2005. For

Figure 1: Distribution of interviews



practical reasons the various provinces were not interviewed at the same time, rather the start of interviewing was staggered across approximately half a year (Figure 1).

The Questionnaires

Before the interviewing started, the survey instrument had gone through extensive development. Although based on a general living conditions survey model developed by Fafo during the past 15 years (see Hanssen-Bauer, Pedersen and Tiltnes 1997), the survey went through a complete adaptation to Chinese conditions. This process started in 2001; when researchers from NRCSTD and Fafo carried out qualitative field work in the Western Regions in order to determine important topics to cover in the survey and understand the conditions under which people live in the Western regions.

In addition, a large number of Chinese and international institutions and professionals were consulted for their input, during the development of the questionnaires and other aspects of the design.

The design process resulted in a complex survey instrument that consists of four main parts:

- a main household questionnaire
- a questionnaire for adult female respondents
- a questionnaire for randomly selected individuals within the households
- a community questionnaire

The main household questionnaire

The respondent for the main household questionnaire was any "responsible adult person in the household". Such a person should have good knowledge of the household in question. In most cases the responsible adult is one of the spouses in the household.

The household questionnaire has two main parts; one part deals with the household's characteristics, and another deals with the household members' individual characteristics. Household characteristics include housing conditions, infrastructure, household economy, agriculture, exposure to natural hazards and return of land.

The part of the household questionnaire that deals with individual characteristics focuses on basic demographic measures (gender, age, marital status, migration etc.), education, health, and labor force participation. It also includes a section on anthropometric data used to calculate nutritional status.

Woman questionnaire

The questionnaire for adult female respondents was administered directly to the women between the ages of 15 and 54 in each household. It was also given to other caretakers of children under 5 years if their mother was not living in the household. Thus, it dealt with both women and children in the household. As regards women; it focused on reproductive history and health during pregnancy, birth and conditions immediately after delivery. As regards children; it focused on health and vaccination.

The questionnaire for randomly selected individuals

The questionnaire administered to one randomly selected individual in the household covered topics that only that person could answer. Typical of such questions are opinions about personal relations and public issues, as well as descriptions of conditions at the work place and health awareness. However, the questionnaire was also used for questions where it would be too cumbersome to inquire about all members of the household (such as the seasonal distribution of work load). This tabulation report does not contain many tables derived from the randomly selected individual questionnaire.

The community questionnaire

The community questionnaire aims to describe the institutional and physical contexts for the households. It contains questions on physical infrastructure such as roads and electricity, and social infrastructure such as schools and health centers. It also deals with natural conditions, such as exposure to natural hazards, and with natural resource management issues such as land tenure. The questions in the community questionnaire were posed to residence committee or village leaders.

Migrants and residents

A characteristic of the survey, and the questionnaires, is that no distinctions were made between urban and rural areas at the outset. Many surveys in China focus only on urban or only on rural areas. MEDOW, in contrast, poses all relevant questions to all respondents. The implication of this is, among other things, that the survey is able to detect whether urban dwellers have land, or have recently lost it, and

that comparable employment figures can be had for urban and rural areas.

The Sample

The sample for the survey is a relatively standard sample for a modern household survey. It is described in more detail in Appendix 1, but a brief outline will be given here. The sample frame is based on the 2000 Census of the PRC that lists all neighborhood committees and townships in each province with their population. From this list 2,772 selections were made with probability proportionate to size. Within each selected neighborhood committee or township, a residence committee or administrative village was selected. To facilitate fieldwork, these administrative units were occasionally split into smaller geographic areas.

Within each selected geographic area, lists of all households were constructed, either by using existing lists (such as village lists maintained by village leaders), or by constructing complete new ones by sketch mapping the geographic area and visiting all households.

Particular care was taken during the listing operation to include everyone that lived within the geographic area selected, even if a person was a temporary migrant. For example; migrant workers constructing a road through a village, temporarily living in the village during the survey period, *would* be included. During the actual interview, emphasis was put on ensuring that absent household members, for example work migrants to cities, children in boarding schools, or the household members at the place of origin of a migrant worker were included.

A consequence of the emphasis put on obtaining a good sample of migrants is some complexity in the definition of the household.

- First, household members include individuals that do not necessarily usually reside in the household. These may be individuals that go to school or work elsewhere.
- Second, a person may, in principle, be enumerated in two different households. One being where he or she is physically located, the other being the household where he or she originates from.

The way weights for estimation is constructed, and how the tabulation of individuals is done, take account of the household definition. Thus, when tables of individuals are presented, the individuals that contribute to the estimate for a particular province comprise:

- members of households selected in the particular province that are reported to live in the household; as well as
- members of other selected households within or outside the province in question that do not live in the household but who are reported to live in the province of interest

Field work

The field work was independently organized in each province covered. In most cases university departments stood for field work organization in cooperation with the Beijing based staff of NRCSTD. The field work in the South-Western region was coordinated from Kunming in Yunnan by the Yunnan Institute of Nankai University, while the field work in the North-West was coordinated by Lanzhou University in Gansu province. In total, about 20 universities participated, and around 2000 students and staff of those universities participated.

The interviewers went through a three week training course before the fieldwork. The course was taught by NRCSTD staff, and concentrated on developing a good understanding of the questionnaire, field procedures and interviewing techniques.

A survey cluster that had been selected for interview was first visited by a listing team that produced the household listing necessary to sample the individual households. Then, after the households had been sampled, usually, a team of five interviewers and a supervisor visited the cluster, and conducted the interviews in the course of one or two days.

Given the large number of questions asked it is not surprising that the interviews took considerable time. Median interviewing time for responding households was 1 hour and 30 minutes, with a mean of 1 hour and 35 minutes.

In general people responded willingly. Of the 44,738 households selected for interview, interviewers were able to obtain interviews with 41,695; of these 41,222 were completed. Of all the 44,738 households selected, 880 households were classified as ineligible, their dwellings turned out to be vacant or recently demolished.

Ninety-four percent of households that were sampled, and actually existed, responded. Most of the non-response was due to other factors than flat-out refusal, in fact, only 0.96 percent refused. Other reasons why interviewers could not complete the interview were that they could not find the location, that it was impossible to find any household members at home, that the

interview was interrupted (which may be a form of refusal) or that interviewer judged that the information obtained was false or confused.

The Maps

Most of the maps in this atlas have been constructed so that each province represented in the survey has received a particular uniform colour depending on the value of the characteristic being mapped.

Some of the maps have been designed with a range of shades within each province. Such maps have been constructed by calculating the percentage of a characteristic for each survey cluster, and estimating percentage of the characteristic over areas by constructing weighted averages of neighbouring clusters (using inverse distance weighting).

The estimation of shading on the maps works best when the density of survey clusters is high. No useful estimates can be made when there are very few or no clusters. One should note that when characteristics are heavily assoicated with population density (such as in the map of urban vs. rural location on page 11) the estimation for sparsely populated areas may be poor. This pertains especially to western parts of Qinghai, the north of Inner Mongolia and the south-east of Xinjiang.

Indicators and definitions

As noted above considerable efforts was taken in designing the questionnaire so that it accurately reflected conditions in the Western Provinces, while simultaneously taking account of international standards for social indicators and compatibility with the established practices of the National Bureau of Statistics. It is sometimes difficult to reconcile all three aims. Moreover, in many cases there are no international standards or existing reporting by the National Bureau of Statistics.

Some important indicators that are used in the atlas are given below:

Province: The 11 provinces and autonomous regions as used by the National Bureau of Statistics in reporting from the 2000 population census. The boundaries of the maps are derived from the "2000 China County Population Census Data with County Maps" a product produced by All China Marketing Research Co., Ltd., an exclusive agent for non-confidential data collected by the National Bureau of Statistics of China. Boundaries are illustrative only, and NRCSTD and Fafo do not make any claim about the legal status of any boundary or territory shown on the maps.

Location: Location refers to whether a household or individual is located in an urban or rural area. For households the definition is taken from the classification of the community in the sampling lists, adjusted by field observations. The sampling lists reflect the classification made by the National Statistics Bureau at the time of the 2000 Census, while the field observations reflect changes since 2000. For individuals the definition is derived from that of the household, but adjusted for the usual place of residence for households members that do not live in the interviewed household.

Hukou status: The status of the person in terms of the household registration system as reported by the household members. The system requires persons to be registered in a particular place, that is as residents of a particular village, residence committee or other unit. In this atlas only urban and rural residence rights are distinguished.

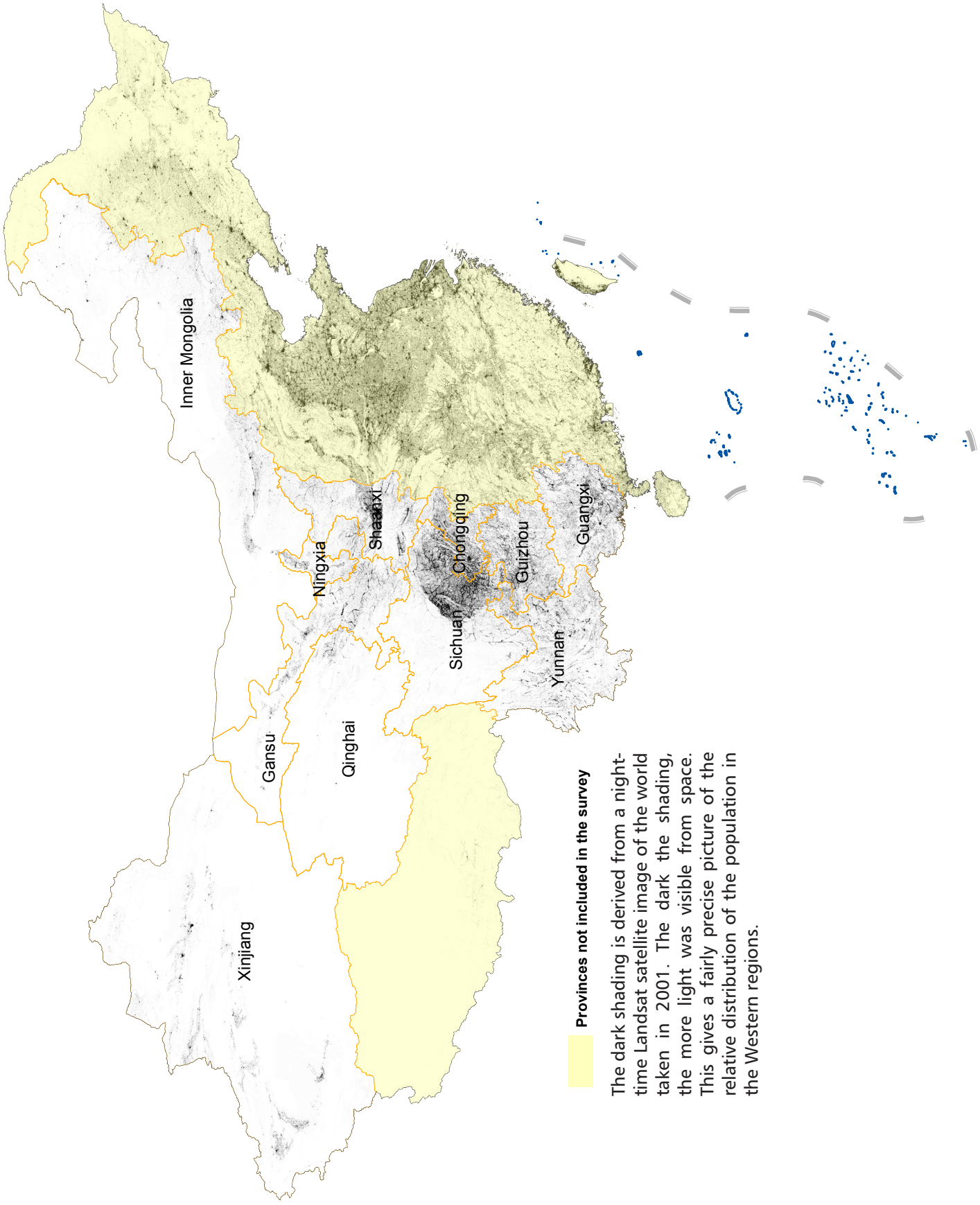
Age: Age my be differently divided into groups, depending on the purpose of the map or chart. In all cases age refers to completed age, that is the age reached at the last birthday of the person. All ages are given in Western (Gregorian) calendar. respondents sometimes provided ages in the Chinese calendar, but such cases were noted on the questionnaires and recalculated into Western style ages.

Ethnic group (minority): Respondents were asked to state membership in ethnic groups. The questionnaire provided 25 different ethnic groups as answer categories, in addittion to "other".

References

Hanssen-Bauer, J., J. Pedersen and A. Tiltnes [eds.] 1997, *Jordanian Society*, Oslo: Fafo.

Population distribution in the Western Regions of China



The dark shading is derived from a night-time Landsat satellite image of the world taken in 2001. The dark the shading, the more light was visible from space. This gives a fairly precise picture of the relative distribution of the population in the Western regions.

Population

Development of the Chinese Population

Year	Total population (1000,000)	Growth rate (‰)	Men (%)	Women (%)	Urban (%)	Rural (%)	Minority (%)
1953*	594.4		51.8	48.2	14.0	86.0	6.1
1964*	694.6		51.3	48.7	18.3	81.7	5.8
1978	962.6	12.0	51.5	48.5	17.9	82.1	
1980	987.1	11.9	51.5	48.6	19.4	80.6	
1982*	1008.2	15.7	51.5	48.5	20.9	79.1	6.7
1985	1058.5	14.3	51.7	48.3	23.7	76.3	
1989	1127.0	15.0	51.6	48.5	26.2	73.8	
1990*	1133.7	14.4	51.6	48.4	26.4	73.6	8.0
1991	1158.2	13.0	51.3	48.7	26.9	73.1	
1992	1171.7	11.6	51.1	49.0	27.5	72.5	
1993	1185.2	11.5	51.0	49.0	28.0	72.0	
1994	1198.5	11.2	51.1	48.9	28.5	71.5	
1995	1211.2	10.6	51.0	49.0	29.0	71.0	
1996	1223.9	10.4	50.8	49.2	30.5	69.5	
1997	1236.3	10.1	51.1	48.9	31.9	68.1	
1998	1247.6	9.1	51.3	48.8	33.4	66.7	
1999	1257.9	8.2	51.4	48.6	34.8	65.2	
2000*	1265.8	7.6	51.8	48.2	36.2	63.8	8.4
2001	1276.3	7.0	51.5	48.5	37.7	62.3	
2002	1284.5	6.5	51.5	48.5	39.1	60.9	
2003	1292.3	6.0	51.5	48.5	40.5	59.5	
2004	1299.9	5.9	51.5	48.5	41.8	58.2	

Source: China statistical yearbook 2005. The table excludes Hong Kong, Macao and Taiwan
*Based on National Population Census in 1953, 1964, 1982, 1990 and 2000

Population in the Western Provinces in 2004

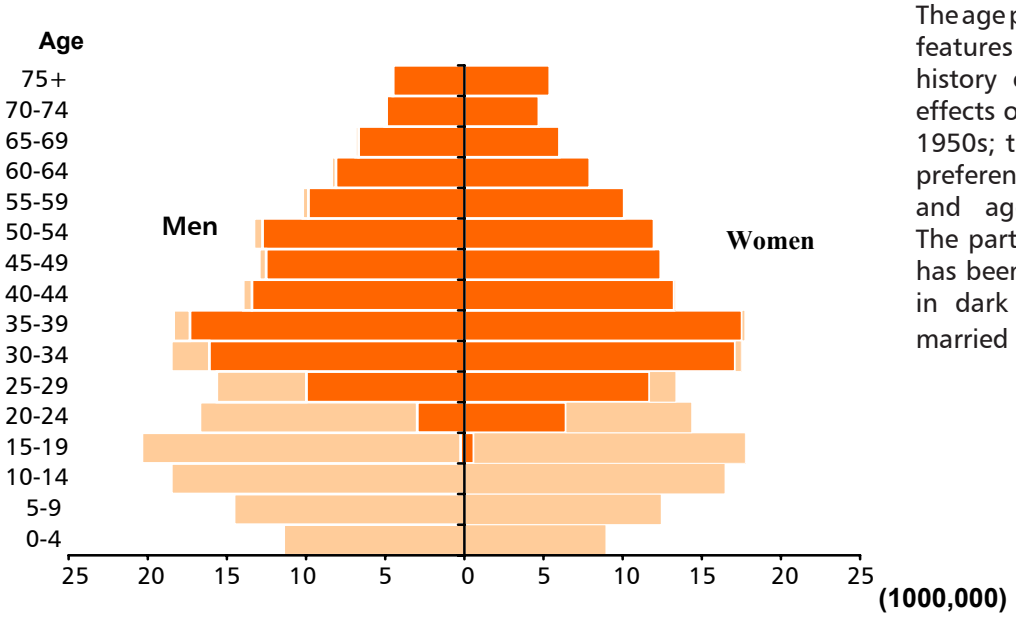
Province	Total population (1000,000)	Natural growth rate (‰)
Guangxi	48.6	7.3
Chongqing	31.3	2.7
Sichuan	87.0	3.1
Guizhou	38.7	9.0
Yunnan	43.8	9.8
Inner Mongolia	23.8	3.1
Shaanxi	36.9	4.3
Gansu	26.0	6.1
Qinghai	5.3	10.9
Ningxia	5.8	11.0
Xinjiang	19.3	10.8

Source: China statistical yearbook 2005.
The table excludes Hong Kong, Macao and Taiwan

The Chinese population growth is decreasing. The minority populations are growing more rapidly than the total population. The proportion of men has always been higher than that of women. Increased urbanization is another important aspect of recent development in China.

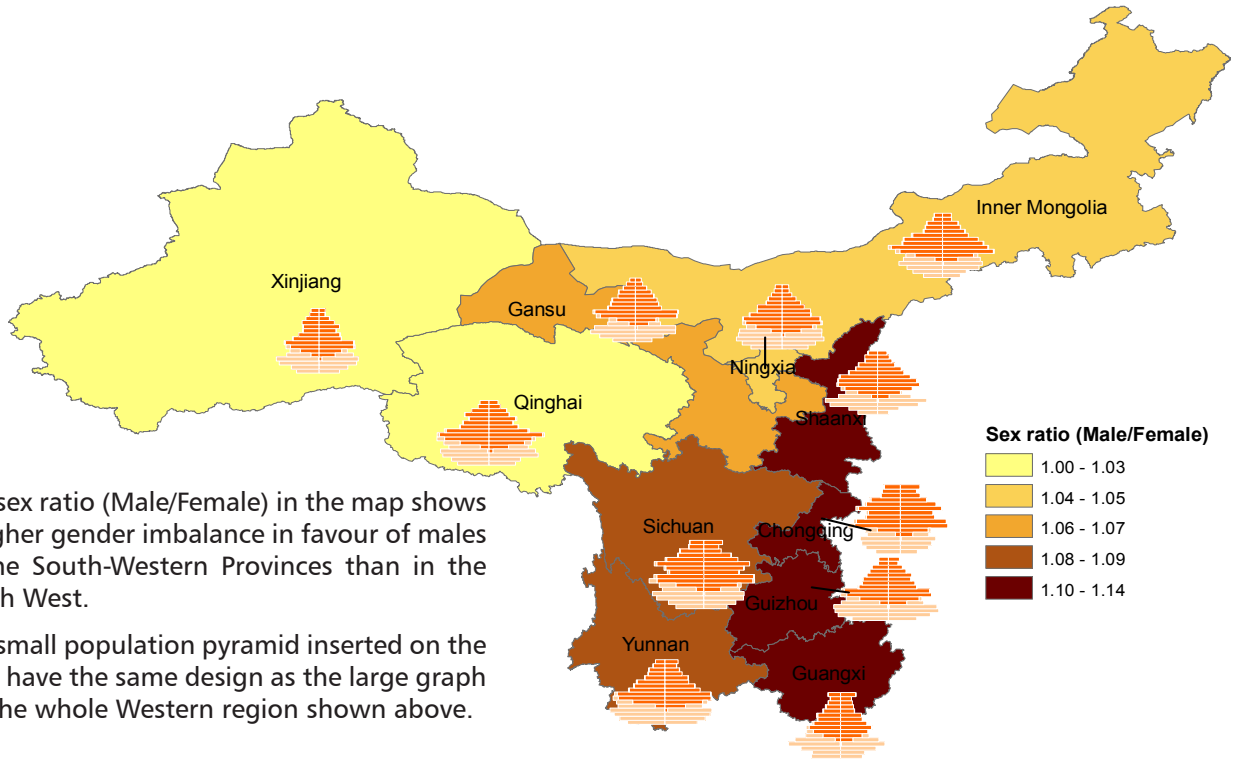
The table on the left indicates that growth rates in most of the Western Provinces are higher than the overall growth rate in China.

Age and gender structure



The age pyramid indicates several features of the demographic history of Western China: The effects of the famine during the 1950s; the one-child policy; the preference for sons; and gender and age selective migration. The part of the population that has been ever married is shown in dark colour and the never married in light colour.

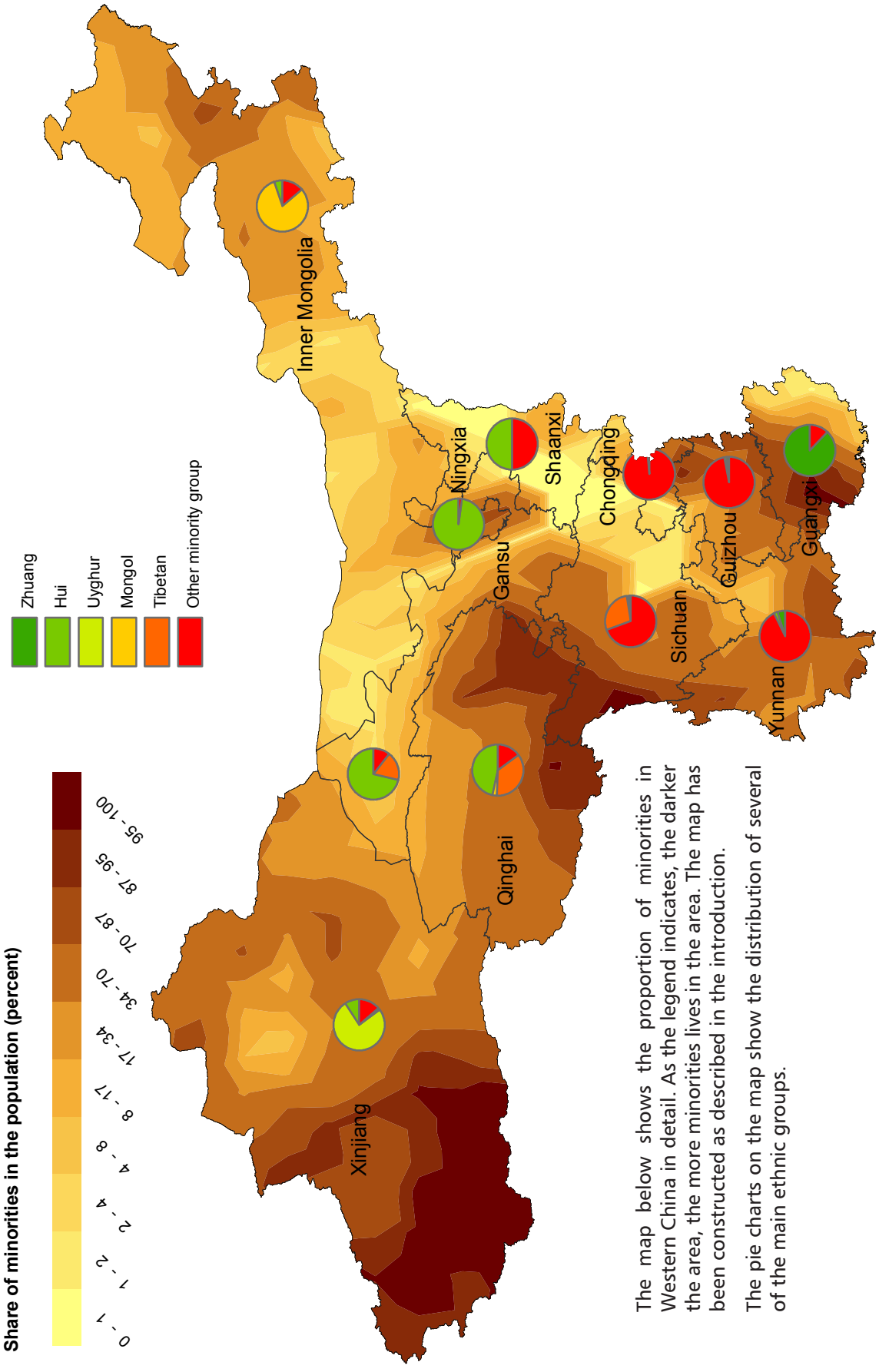
Sex ratio and age-gender structure



The sex ratio (Male/Female) in the map shows a higher gender imbalance in favour of males in the South-Western Provinces than in the North West.

The small population pyramid inserted on the map have the same design as the large graph for the whole Western region shown above.

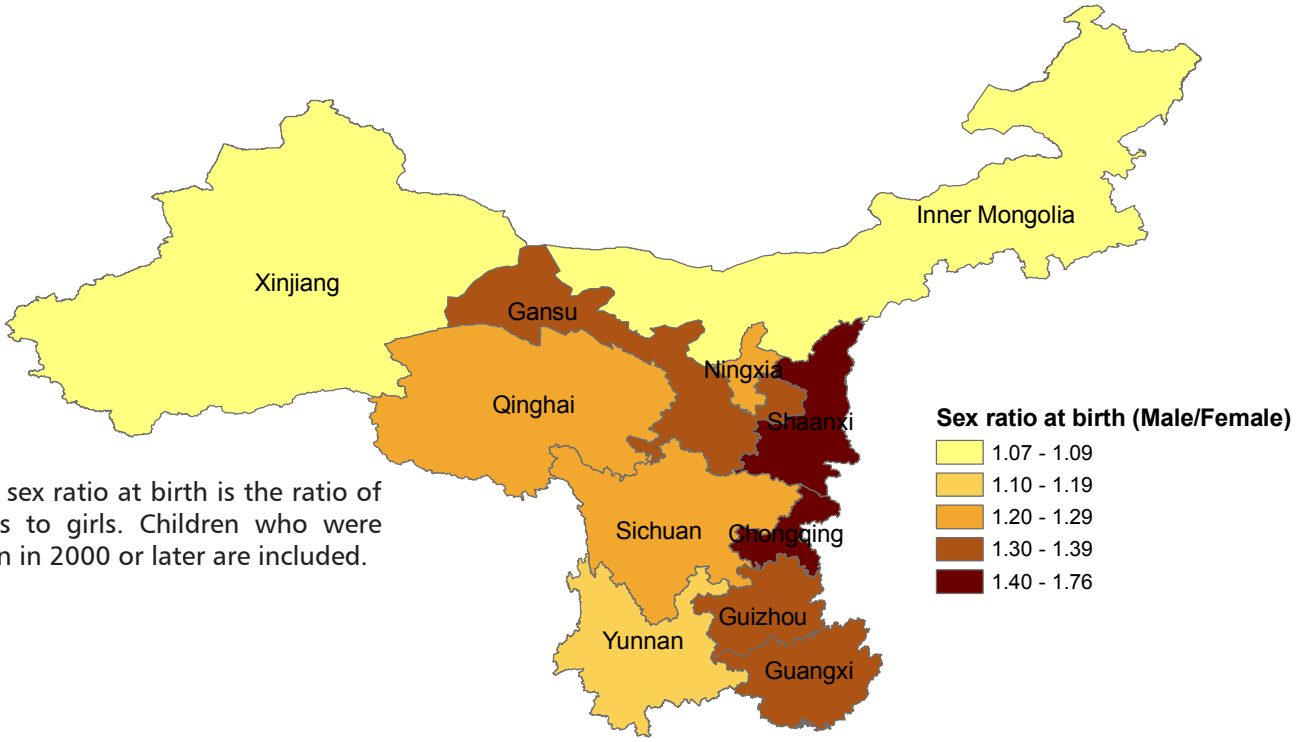
Minorities



The map below shows the proportion of minorities in Western China in detail. As the legend indicates, the darker the area, the more minorities lives in the area. The map has been constructed as described in the introduction.

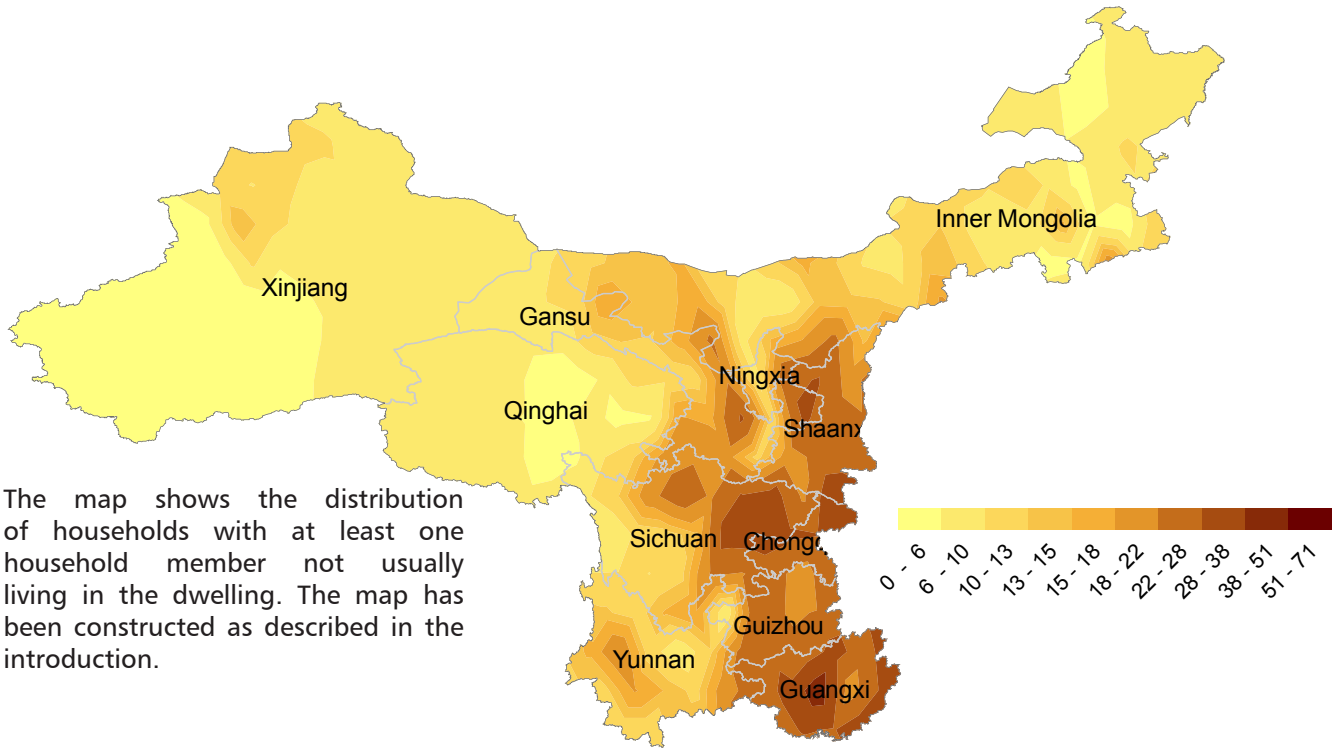
The pie charts on the map show the distribution of several of the main ethnic groups.

Sex ratio at birth



The sex ratio at birth is the ratio of boys to girls. Children who were born in 2000 or later are included.

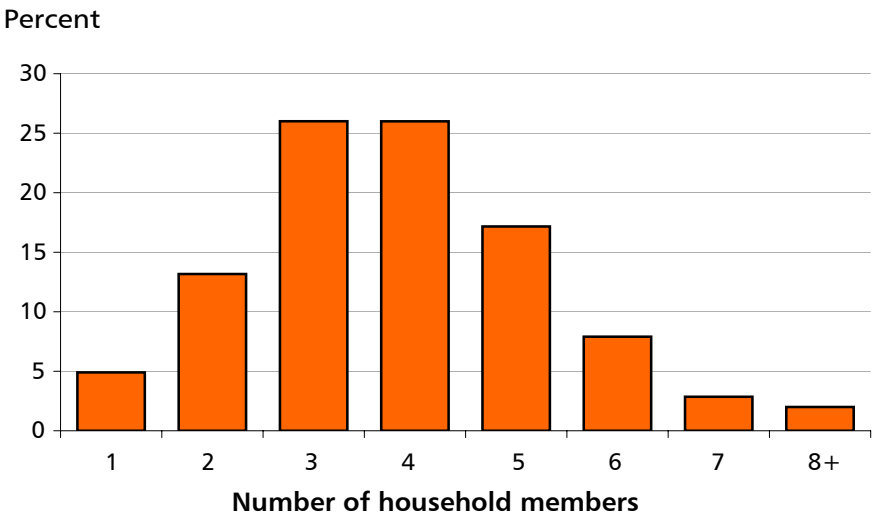
Migration out of household

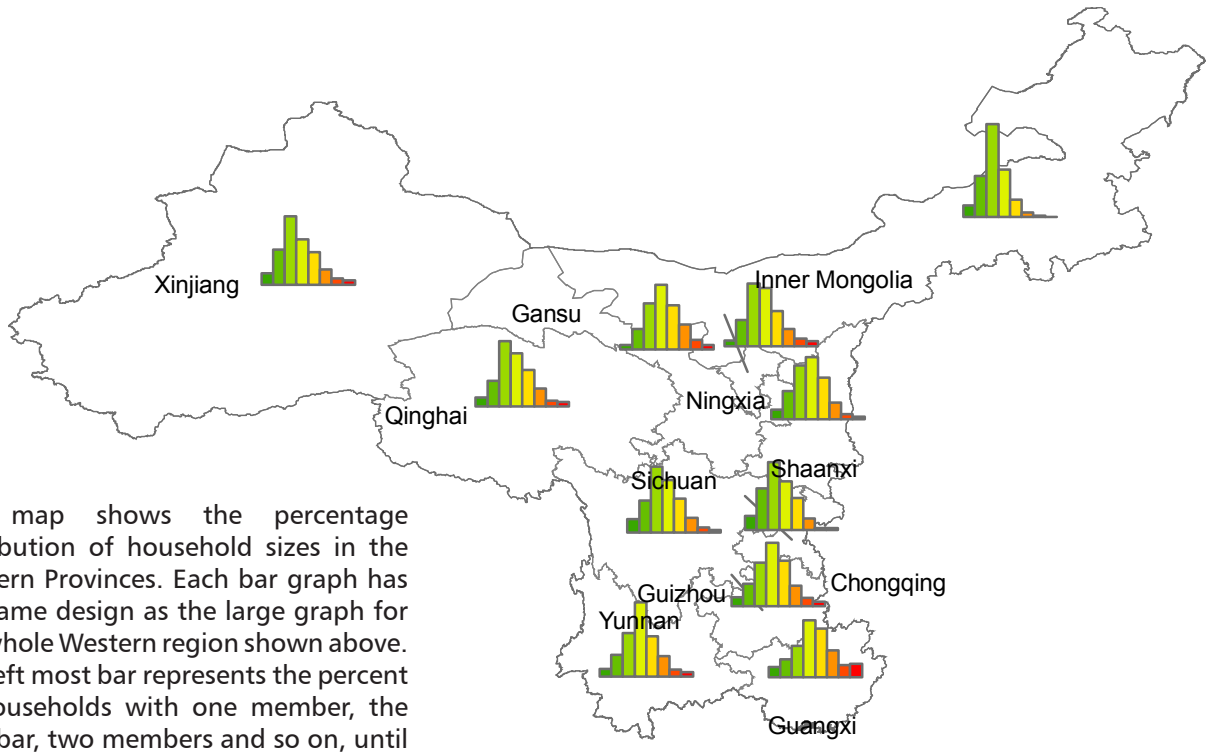


The map shows the distribution of households with at least one household member not usually living in the dwelling. The map has been constructed as described in the introduction.

Household size

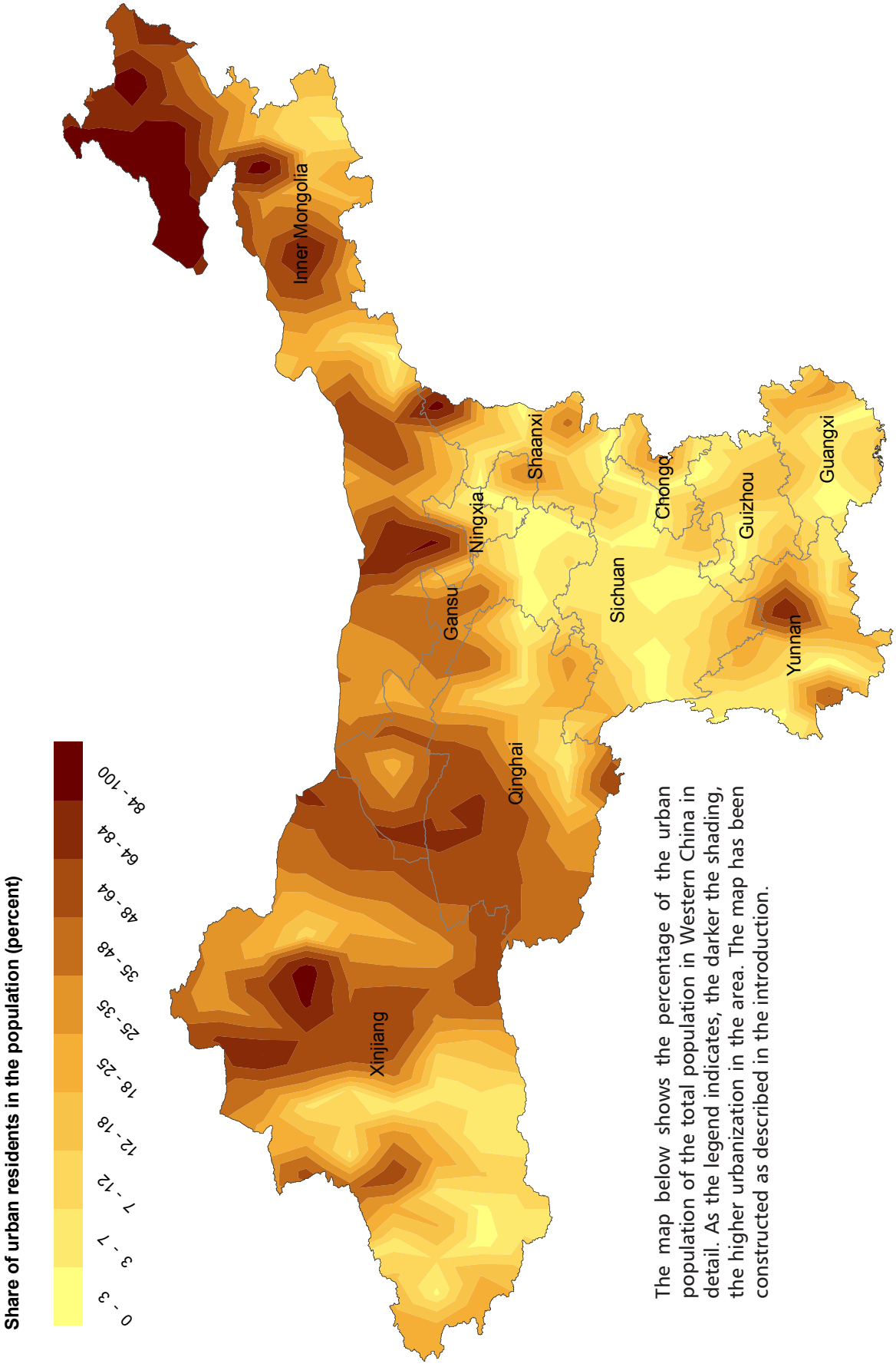
The mean household size is 3.8 members and the median is 4 members. The mean household size includes household members not usually living in the dwelling.





The map shows the percentage distribution of household sizes in the Western Provinces. Each bar graph has the same design as the large graph for the whole Western region shown above. The left most bar represents the percent of households with one member, the next bar, two members and so on, until the right most bar, which represents households with 8 household members and more.

Urbanization



The map below shows the percentage of the urban population of the total population in Western China in detail. As the legend indicates, the darker the shading, the higher urbanization in the area. The map has been constructed as described in the introduction.

Health

Millennium Development Goals

Goal 5: Improve maternal health

Target 6: Reduce by three-quarters, between 1990 and 2015, the maternal mortality ratio

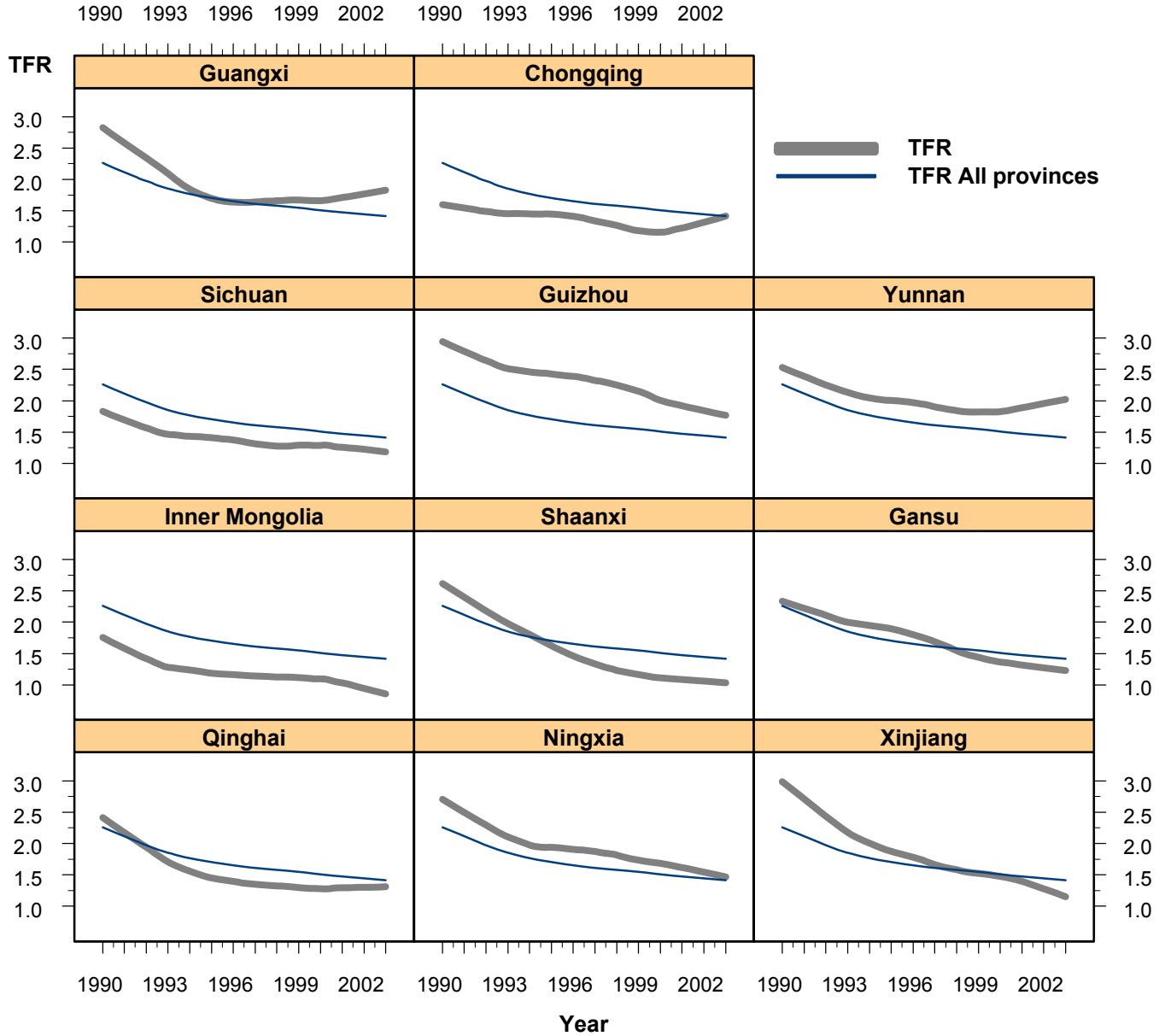
Indicator 17: Proportion of births assisted by skilled health personnel

Births assisted in Western China: 61.8 percent (births during the five years prior to interview)
Urban hukou women: 94.5 percent
Rural hukou women: 55.8 percent

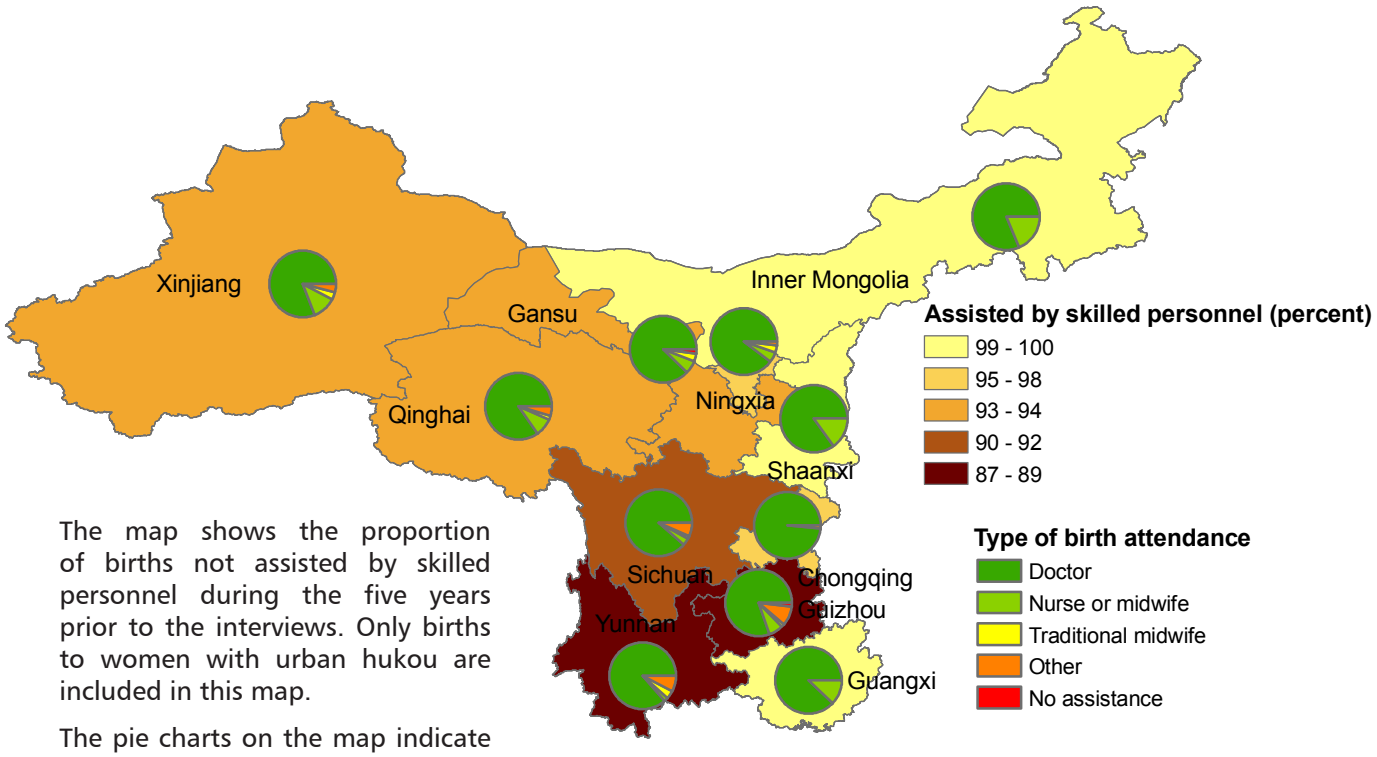
"Births assisted by skilled health personnel" are births attended by a doctor, nurse, or midwife. The traditional midwife in China is not defined as skilled health personnel.

Total fertility Rate

The total fertility rate (TFR) for a period is the number of children a woman would have during her lifetime if she were to experience the fertility rates of the period at each age.



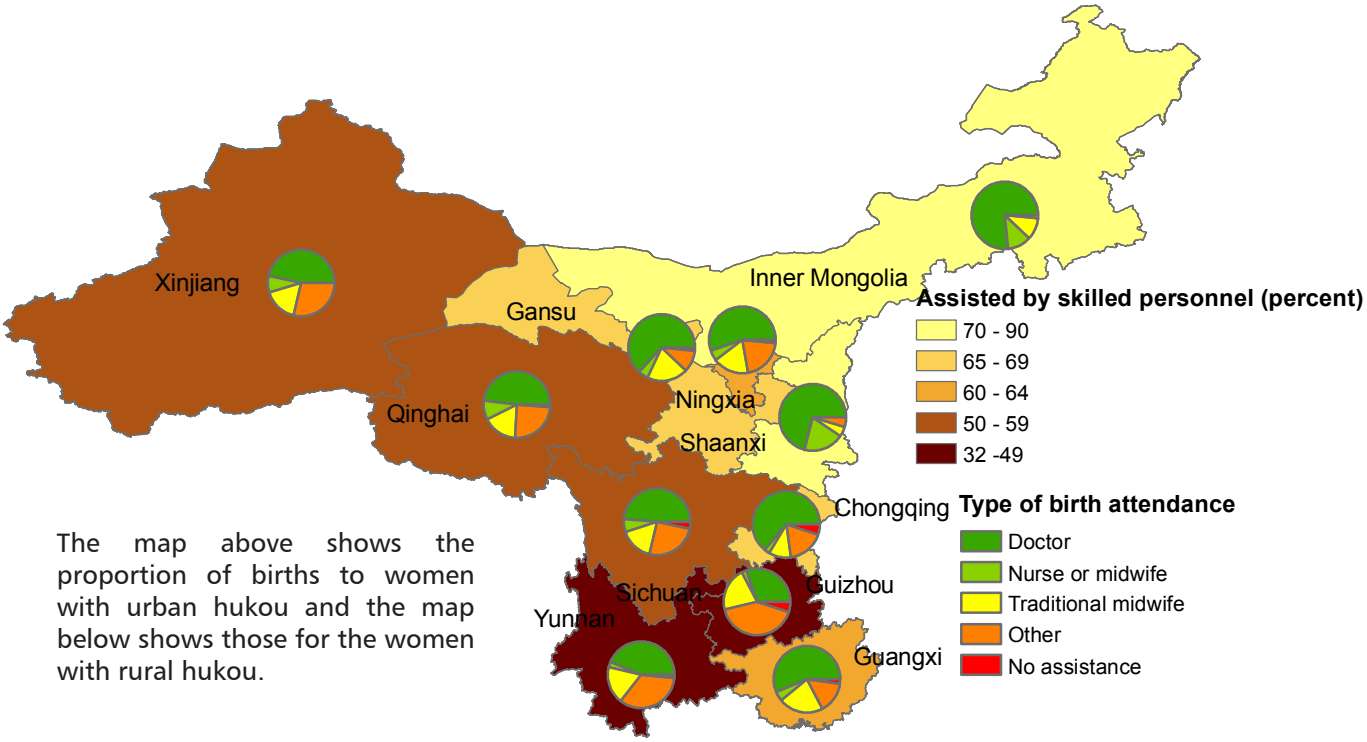
Births assisted by skilled health personnel (Urban hukou)



The map shows the proportion of births not assisted by skilled personnel during the five years prior to the interviews. Only births to women with urban hukou are included in this map.

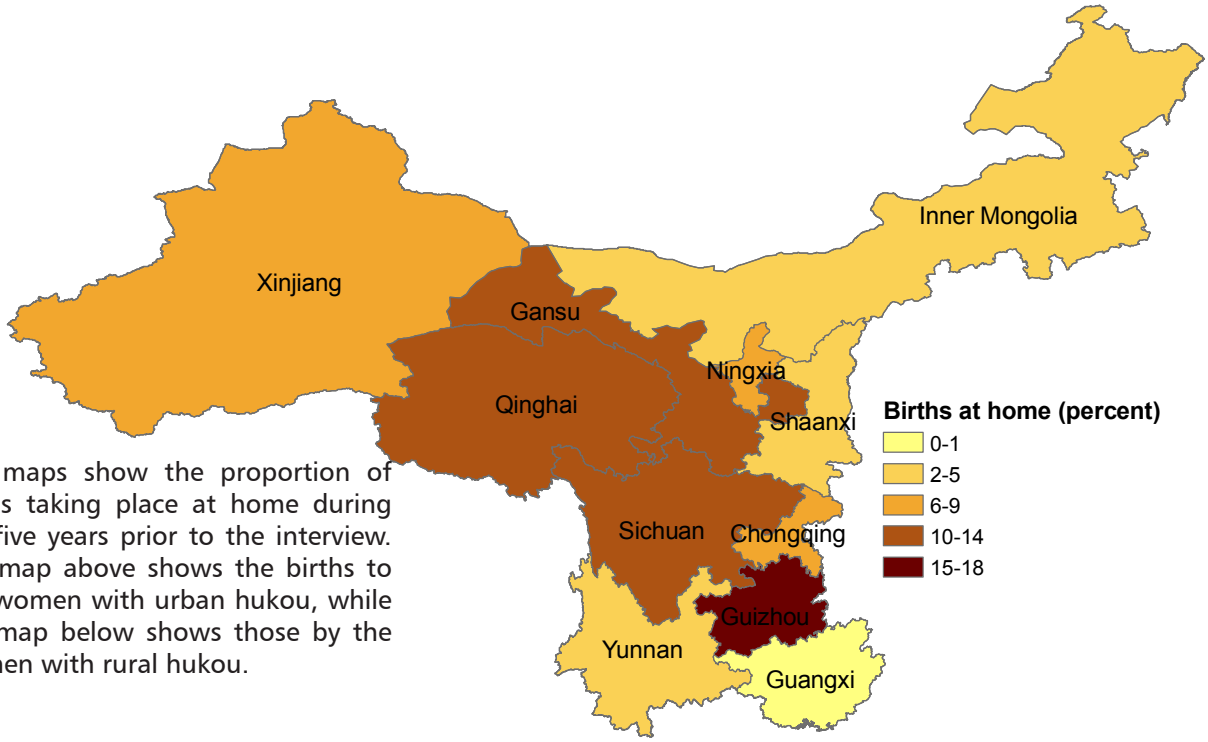
The pie charts on the map indicate the different types of birth assistance received at birth.

Births assisted by skilled health personnel (Rural hukou)



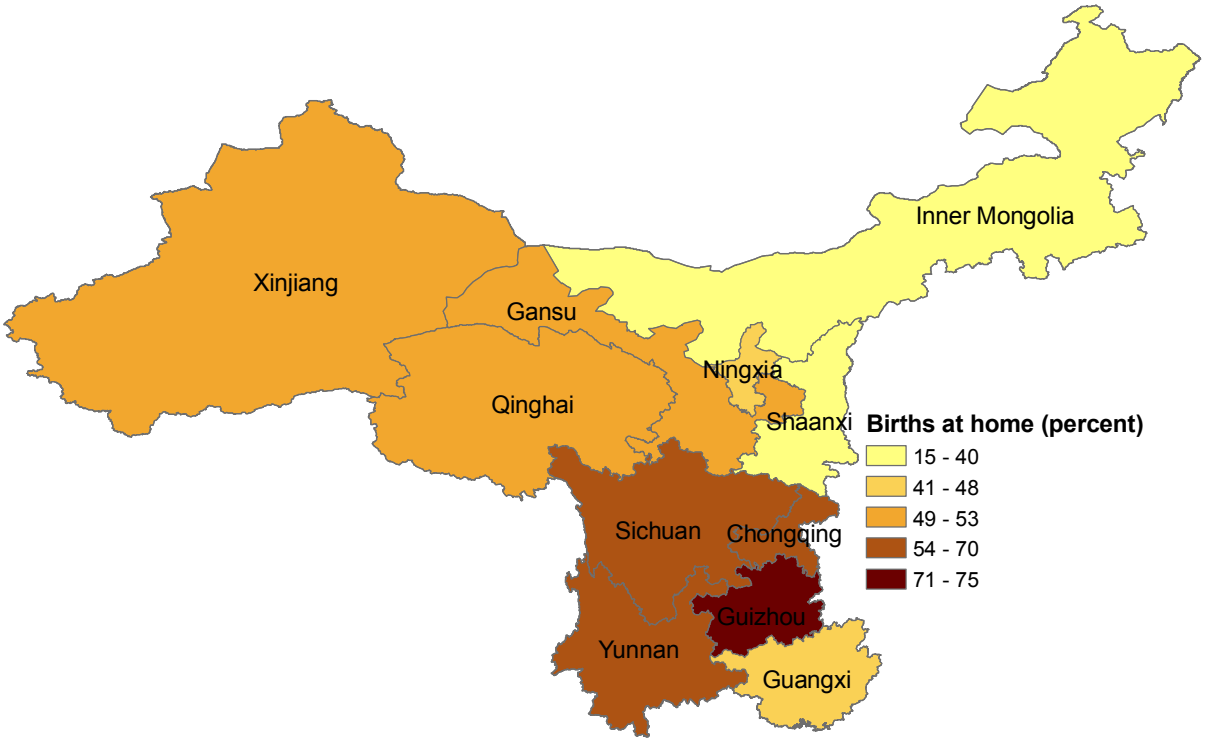
The map above shows the proportion of births to women with urban hukou and the map below shows those for the women with rural hukou.

Births at home (Urban hukou)

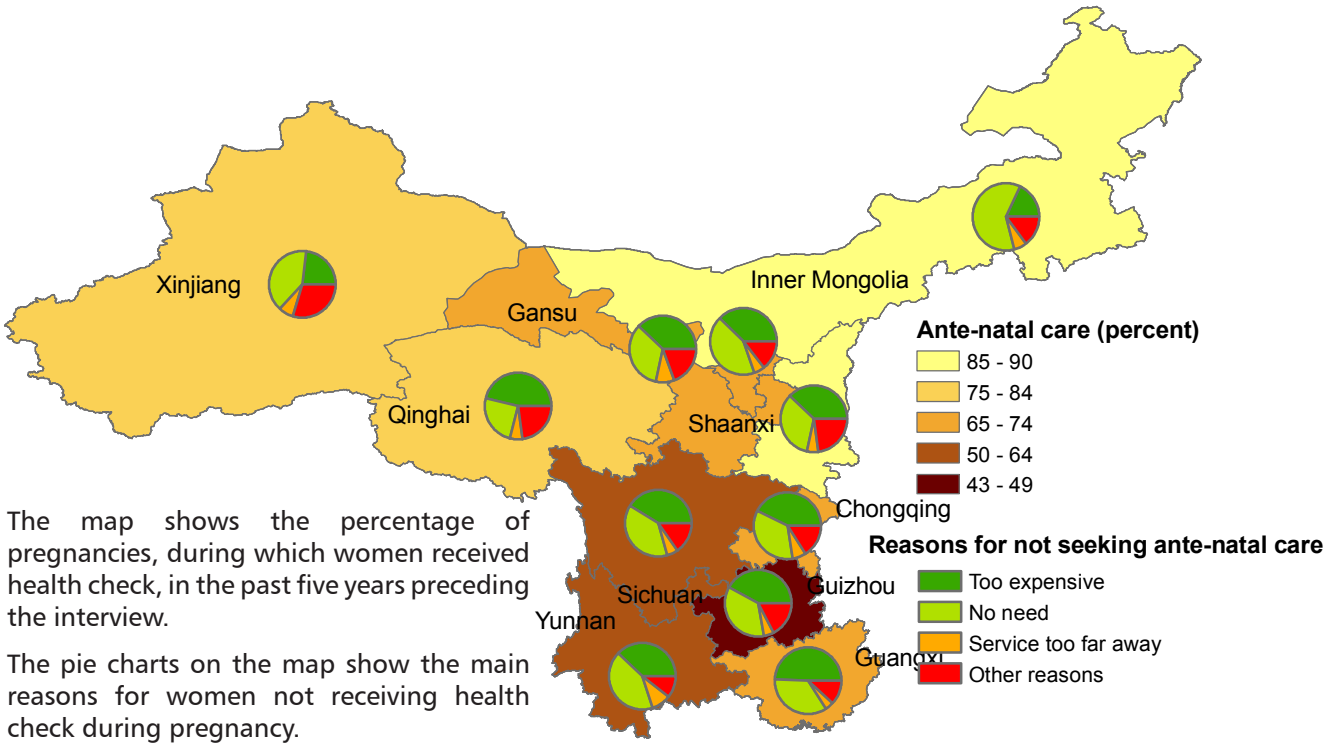


The maps show the proportion of births taking place at home during the five years prior to the interview. The map above shows the births to the women with urban hukou, while the map below shows those by the women with rural hukou.

Births at home (Rural hukou)



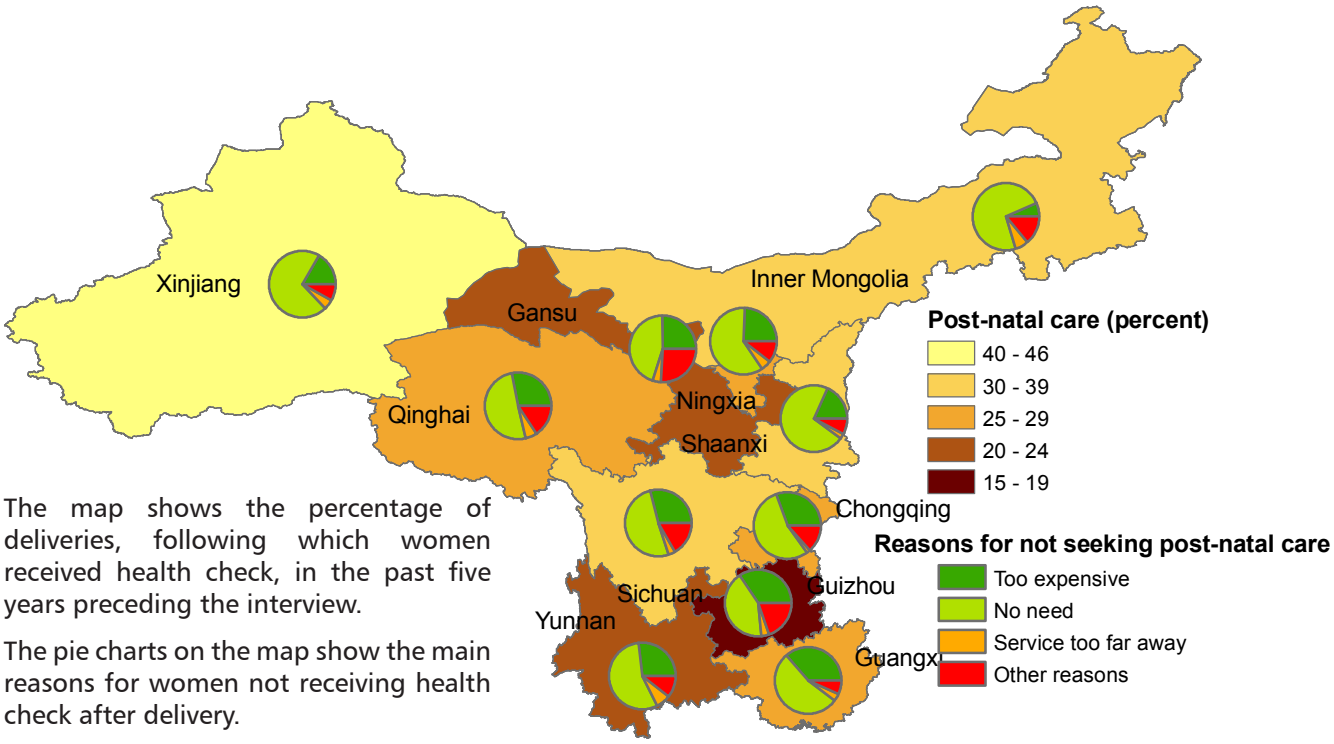
Health checks during pregnancy



The map shows the percentage of pregnancies, during which women received health check, in the past five years preceding the interview.

The pie charts on the map show the main reasons for women not receiving health check during pregnancy.

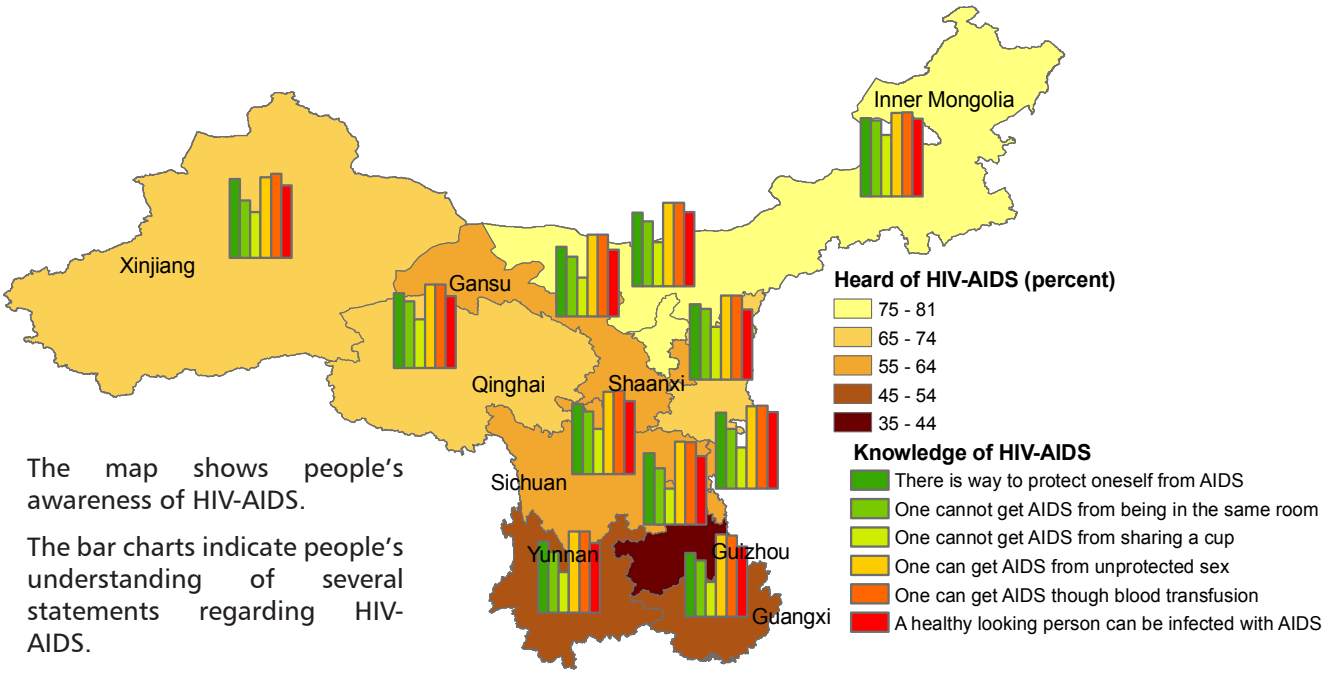
Health checks after delivery



The map shows the percentage of deliveries, following which women received health check, in the past five years preceding the interview.

The pie charts on the map show the main reasons for women not receiving health check after delivery.

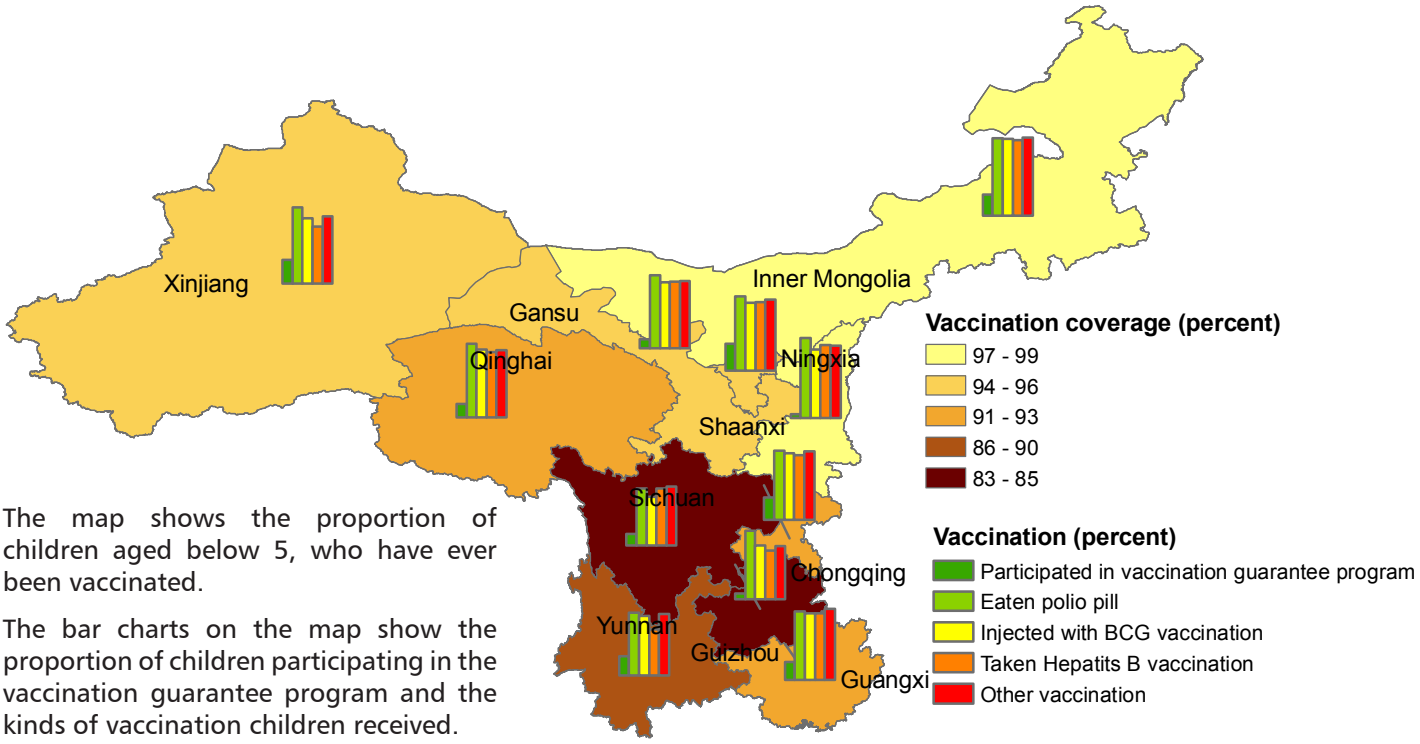
Knowledge of HIV-AIDS



The map shows people's awareness of HIV-AIDS.

The bar charts indicate people's understanding of several statements regarding HIV-AIDS.

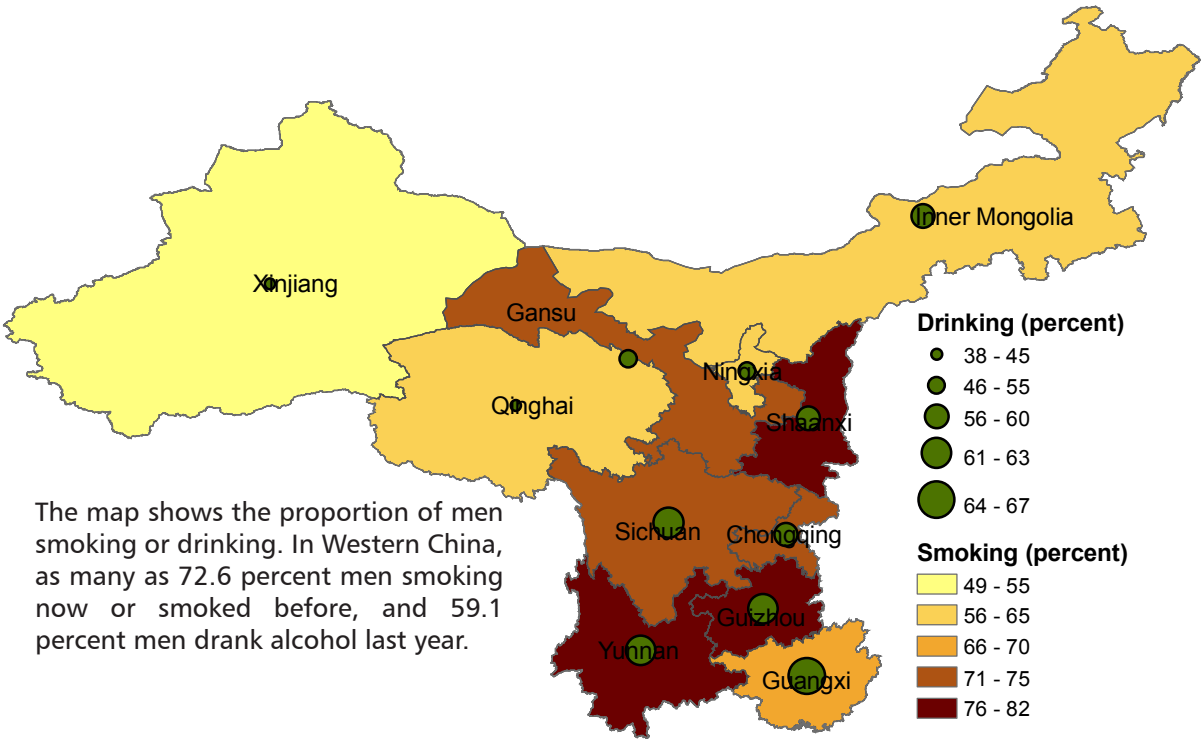
Vaccination of children



The map shows the proportion of children aged below 5, who have ever been vaccinated.

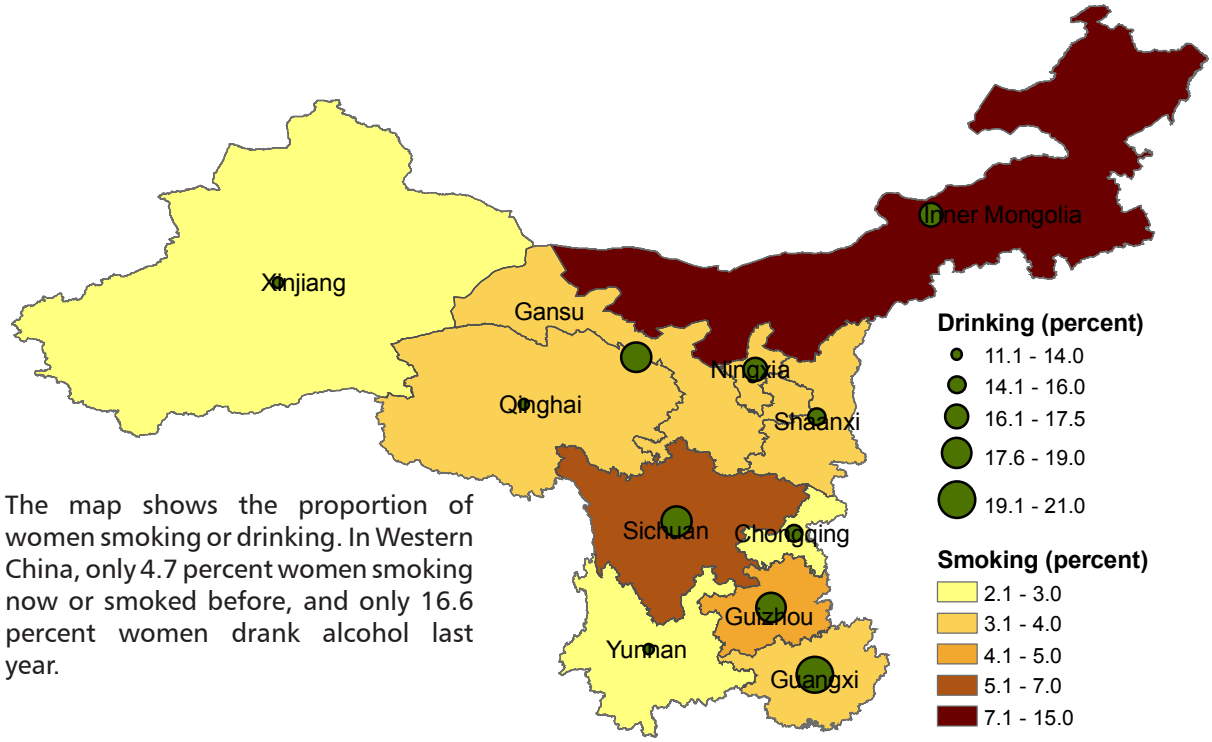
The bar charts on the map show the proportion of children participating in the vaccination guarantee program and the kinds of vaccination children received.

Smoking and drinking (Men)



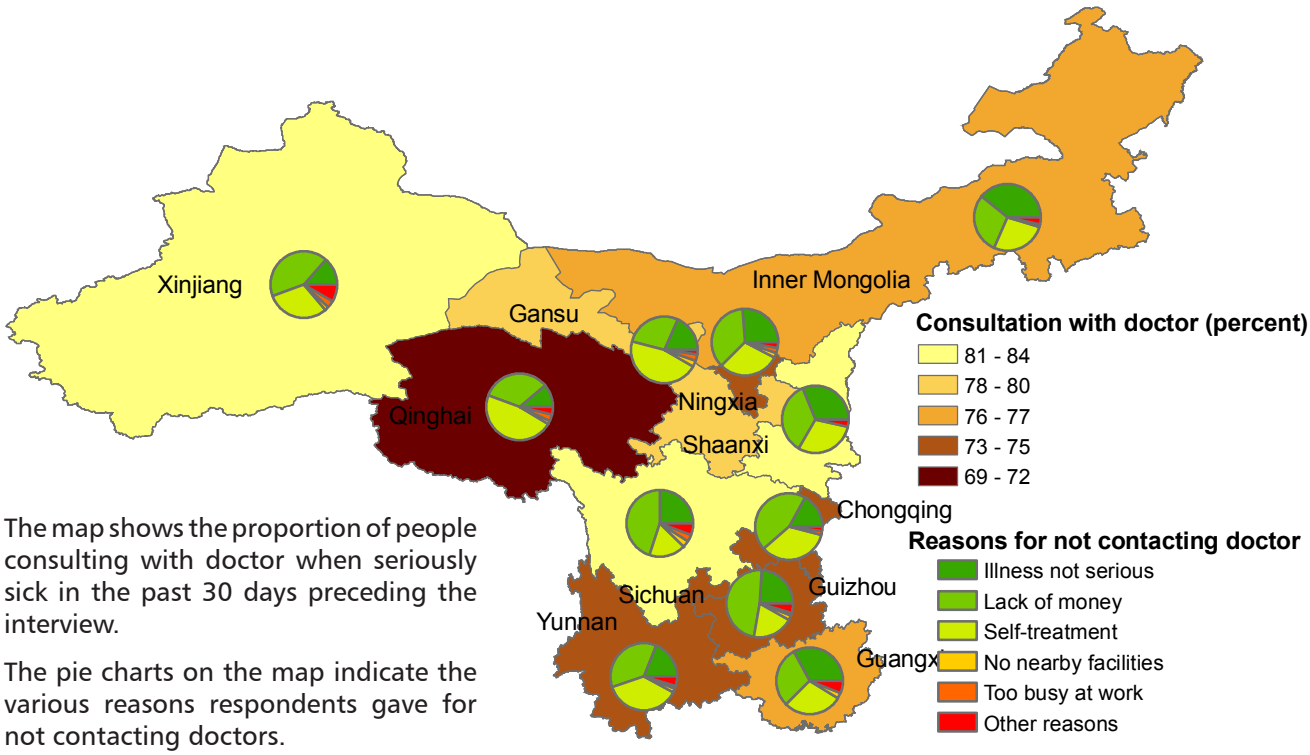
The map shows the proportion of men smoking or drinking. In Western China, as many as 72.6 percent men smoking now or smoked before, and 59.1 percent men drank alcohol last year.

Smoking and drinking (Women)



The map shows the proportion of women smoking or drinking. In Western China, only 4.7 percent women smoking now or smoked before, and only 16.6 percent women drank alcohol last year.

Consult with doctor when seriously sick

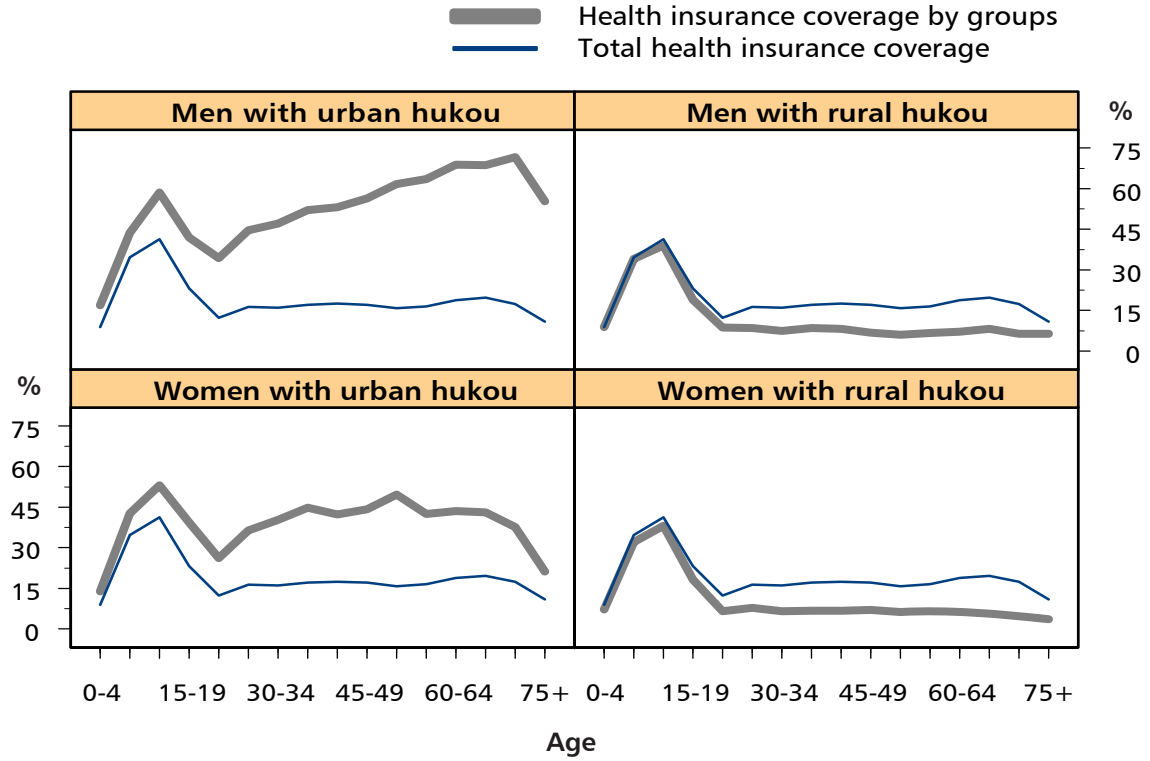


The map shows the proportion of people consulting with doctor when seriously sick in the past 30 days preceding the interview.

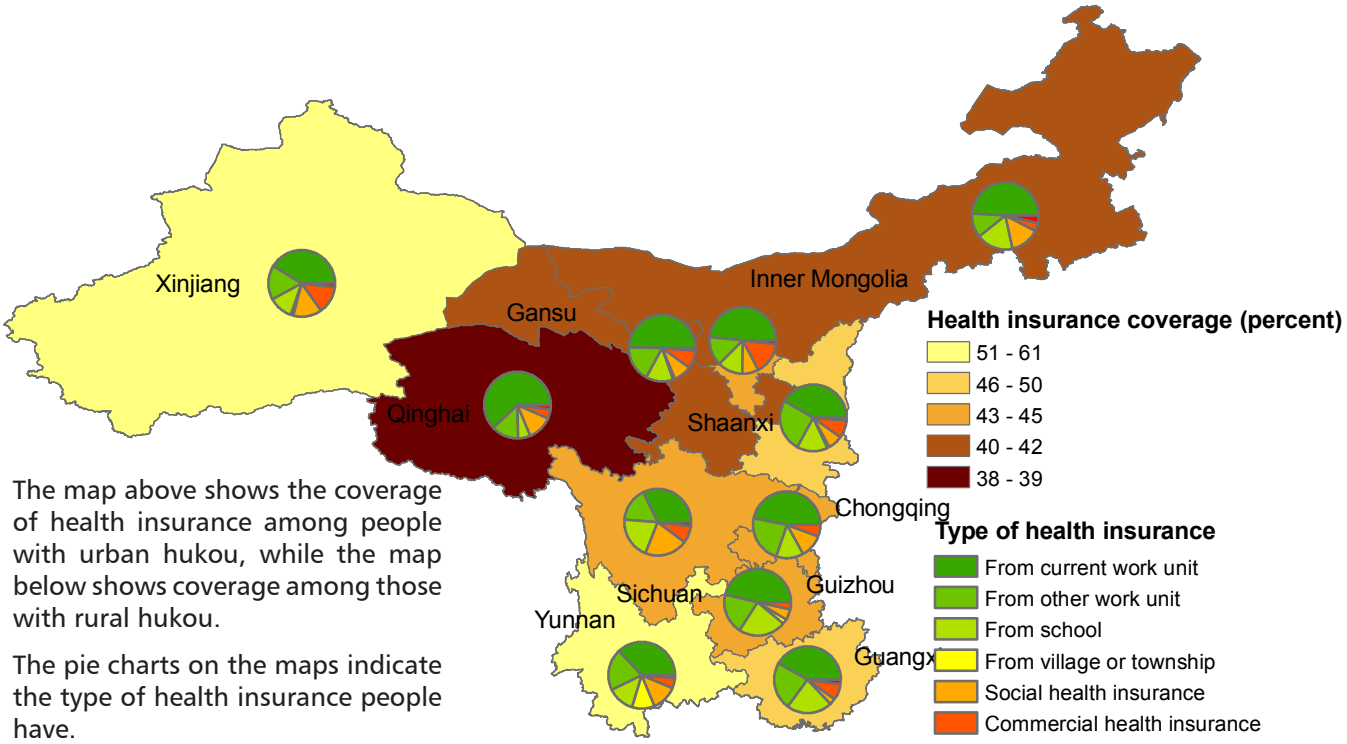
The pie charts on the map indicate the various reasons respondents gave for not contacting doctors.

Access to health insurance by gender and age

Access to health insurance is low in the Western Provinces, and overall 20 percent have some form of health insurance. Coverage is extremely low for those with rural hukou (12.7 percent), but higher for those with urban hukou (46.9 percent). Men with urban hukou have the highest health insurance coverage.



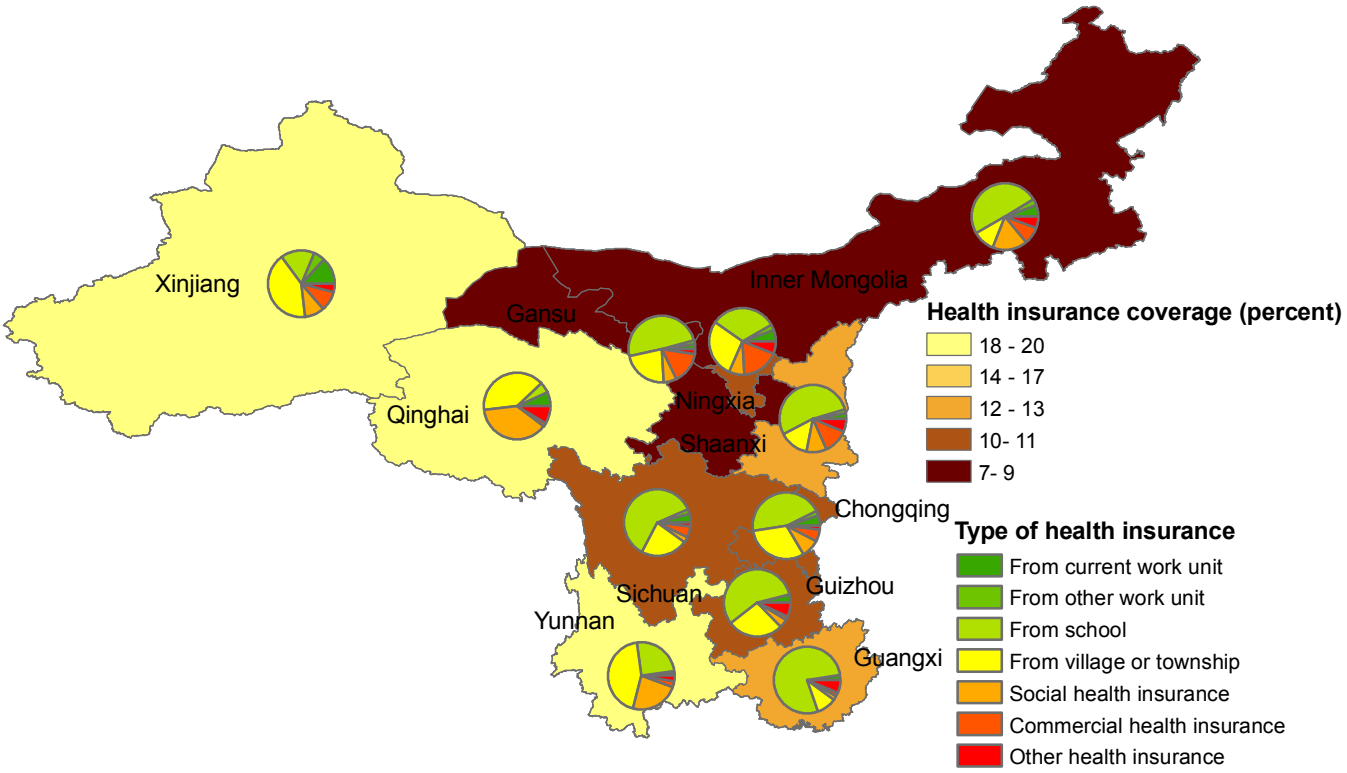
Health insurance (Urban hukou)



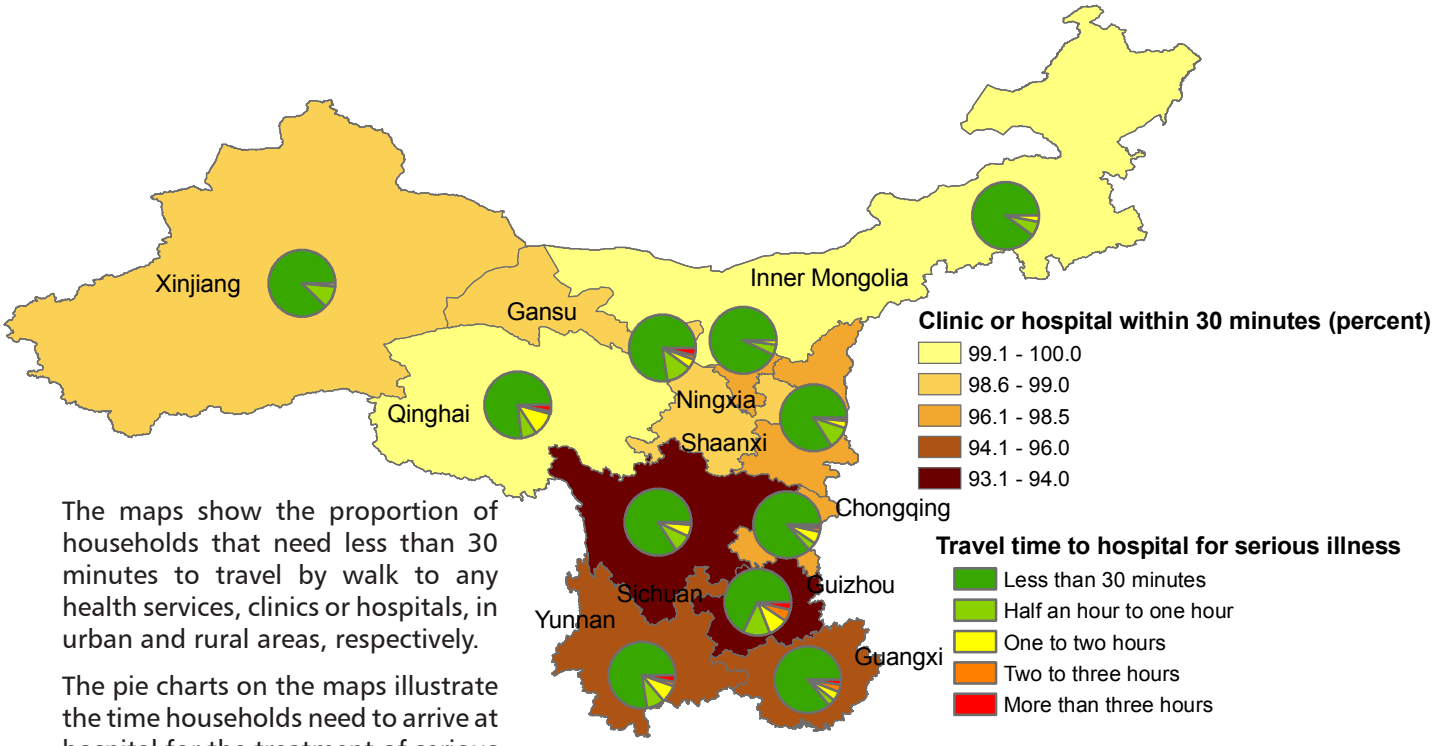
The map above shows the coverage of health insurance among people with urban hukou, while the map below shows coverage among those with rural hukou.

The pie charts on the maps indicate the type of health insurance people have.

Health insurance (Rural hukou)



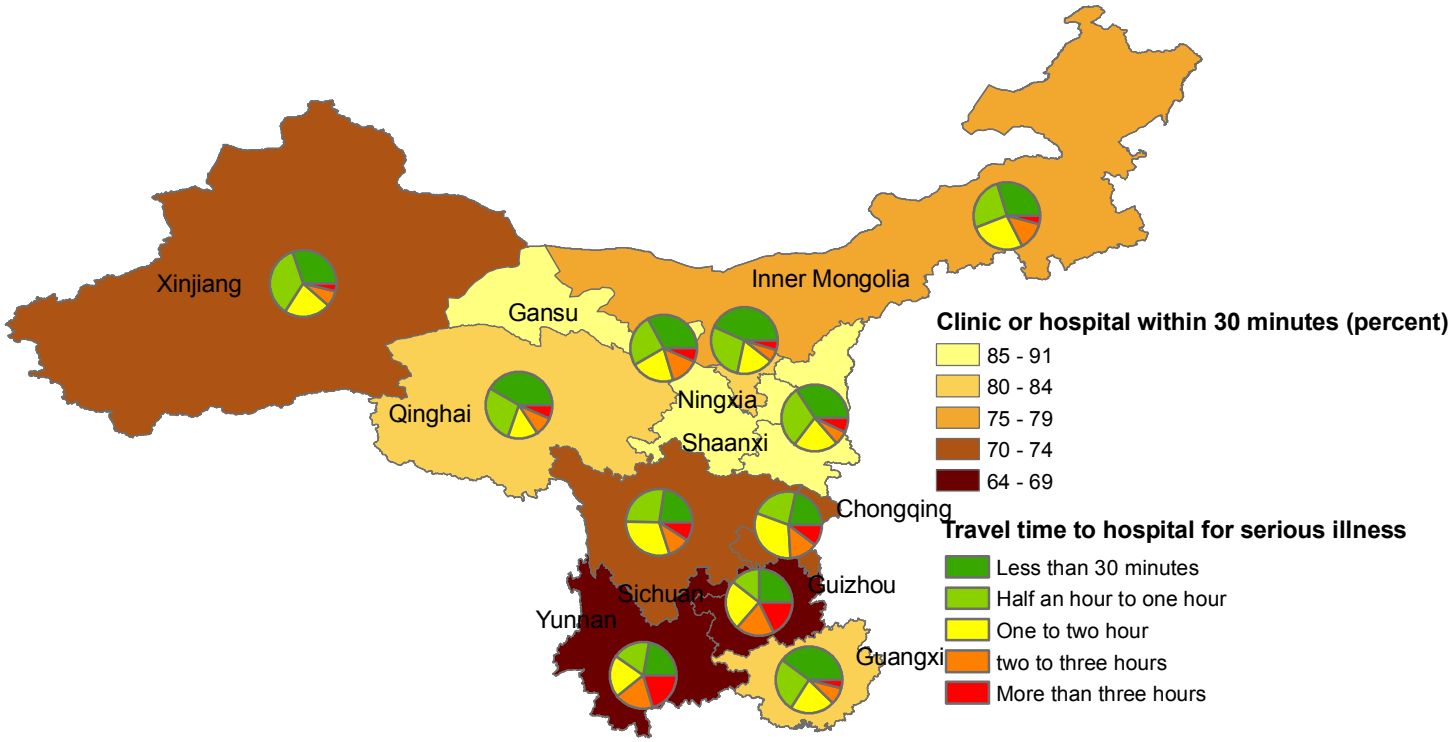
Access to health services (Urban)



The maps show the proportion of households that need less than 30 minutes to travel by walk to any health services, clinics or hospitals, in urban and rural areas, respectively.

The pie charts on the maps illustrate the time households need to arrive at hospital for the treatment of serious illness, by using their regular mode of transport.

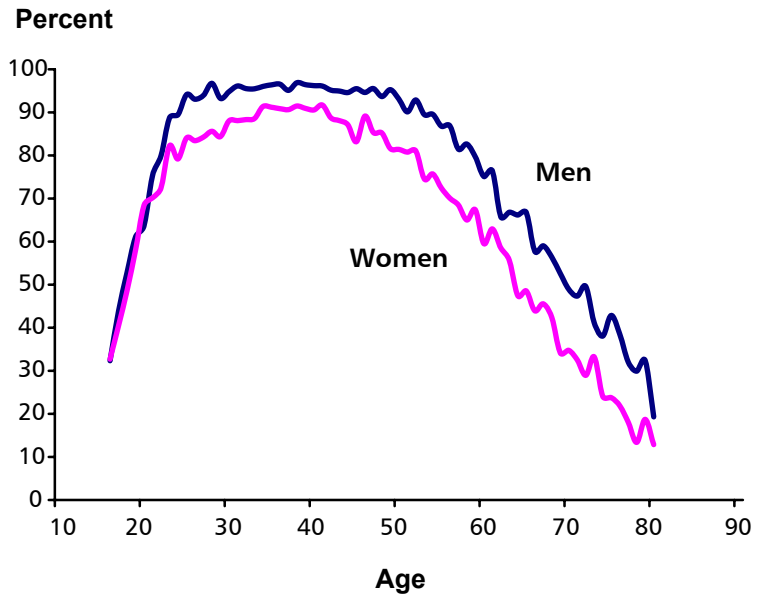
Access to health services (Rural)



Labour and employment

Employment status (million)			
Total population in the Western Provinces 369 M			
Working age population 280 M			
Labour force 215 M			
Employed 211 M	Unemployed 4 M	Out of labour force 65 M	Below working age 89 M

Labour force participation by age

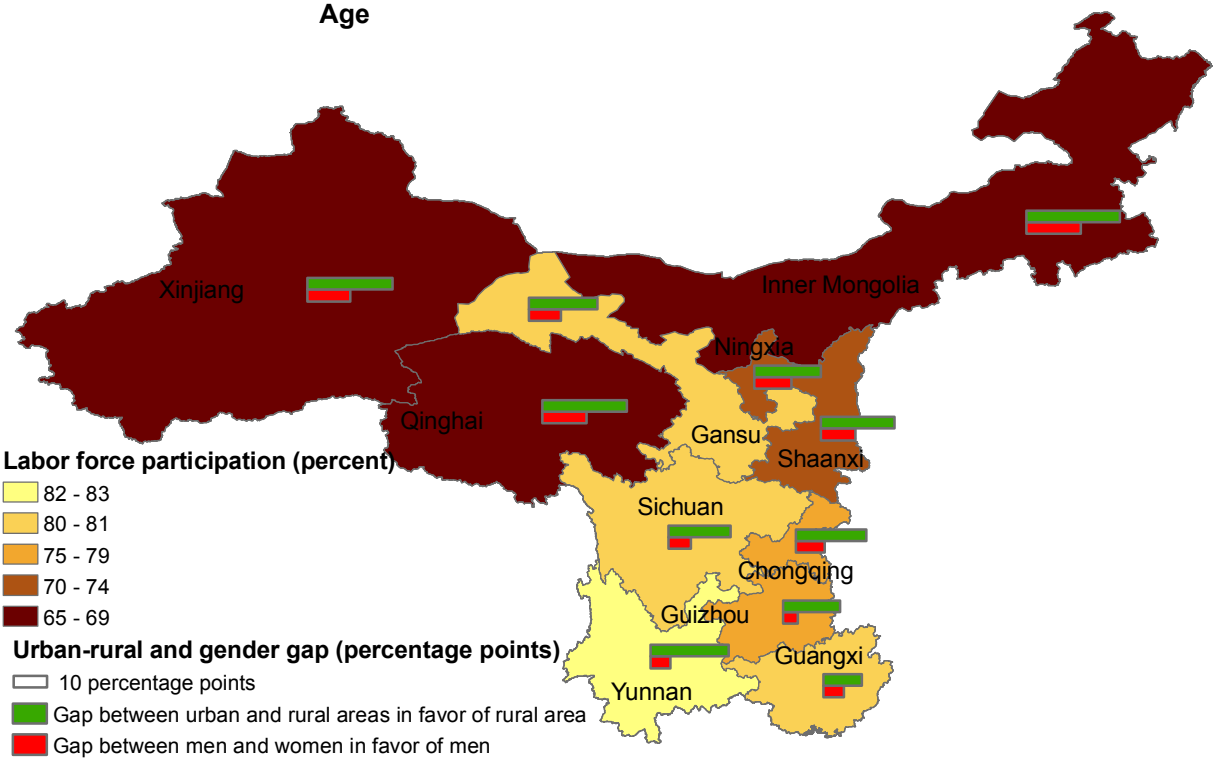


According to the definition from International Labour Organization (ILO), the unemployed are those not having worked at least one hour during the week preceding the interview; are actively seeking work; and are available for work.

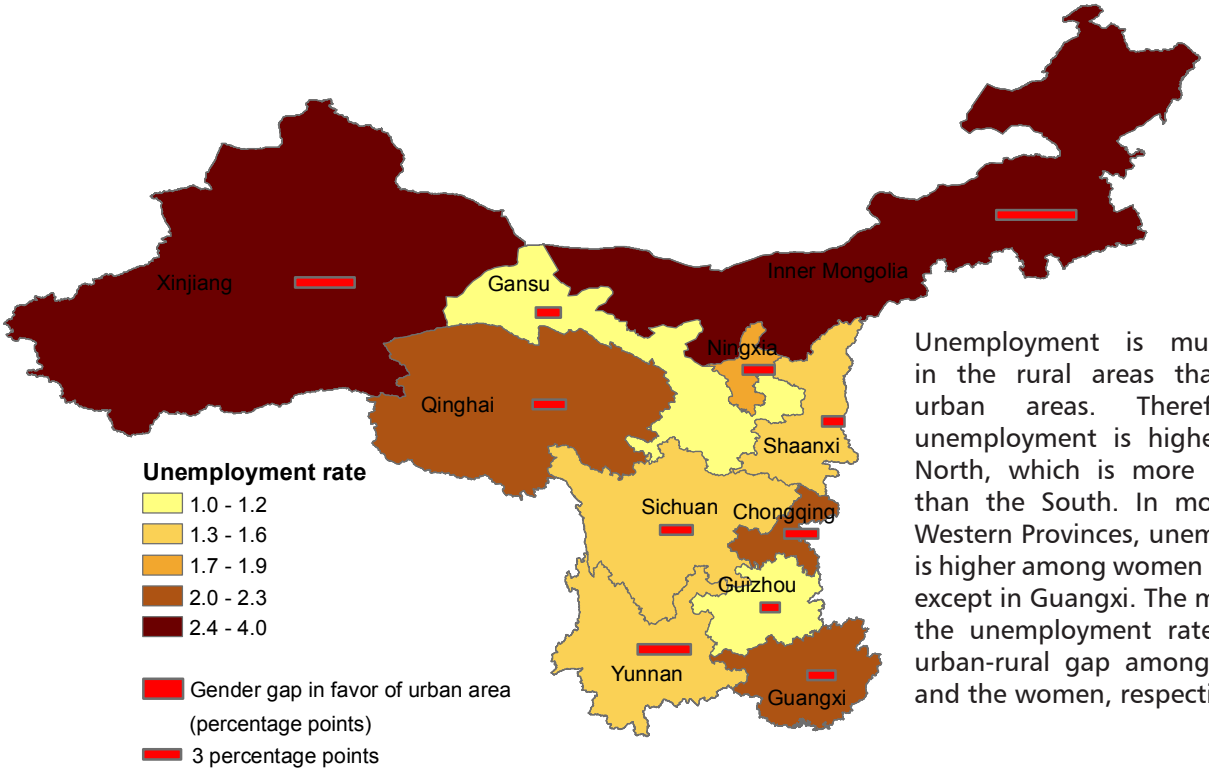
The population below working age here is defined as the population aged below 16.

The map on the left shows the labour force participation in the Western Provinces by age and gender. Slightly more women than men are out of the labour force.

The map below indicates that a higher proportion of population are out of the labour force in the North Western Provinces than in the South. Rural areas have much higher labour force participation rates than urban areas. Men have slightly higher participation rates than women.

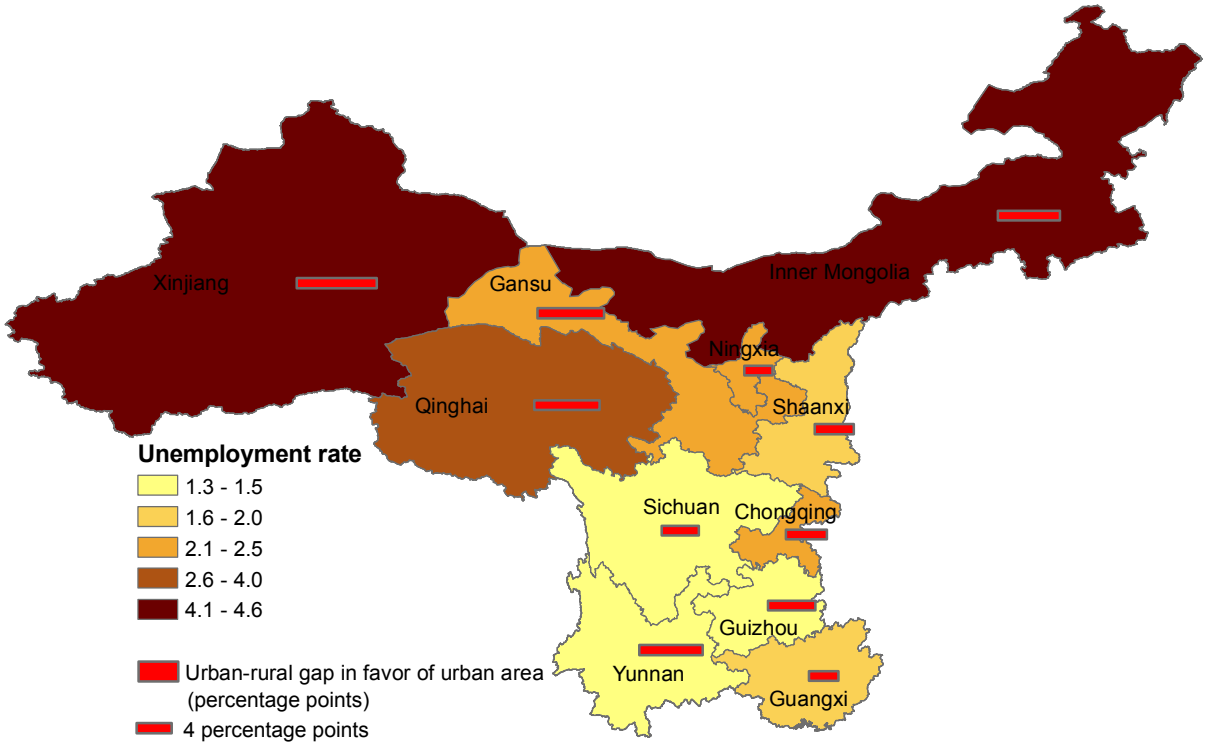


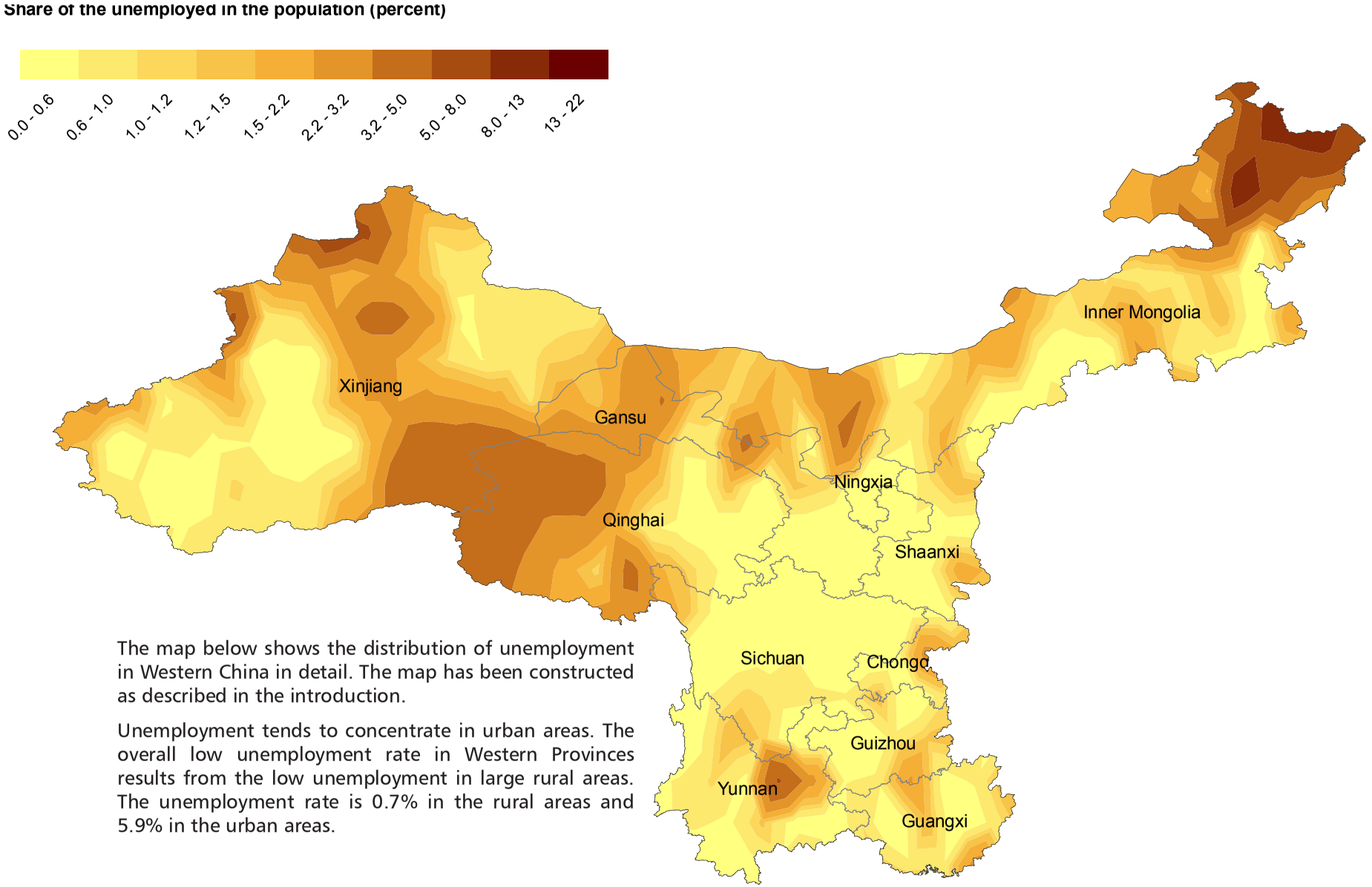
Unemployment (Men)



Unemployment is much lower in the rural areas than in the urban areas. Therefore the unemployment is highest in the North, which is more urbanized than the South. In most of the Western Provinces, unemployment is higher among women than men, except in Guangxi. The maps show the unemployment rate and the urban-rural gap among the men and the women, respectively,

Unemployment (Women)





The map below shows the distribution of unemployment in Western China in detail. The map has been constructed as described in the introduction.

Unemployment tends to concentrate in urban areas. The overall low unemployment rate in Western Provinces results from the low unemployment in large rural areas. The unemployment rate is 0.7% in the rural areas and 5.9% in the urban areas.

Unemployment among youth

Millennium Development Goals

Goal 8: Develop a global partnership for development

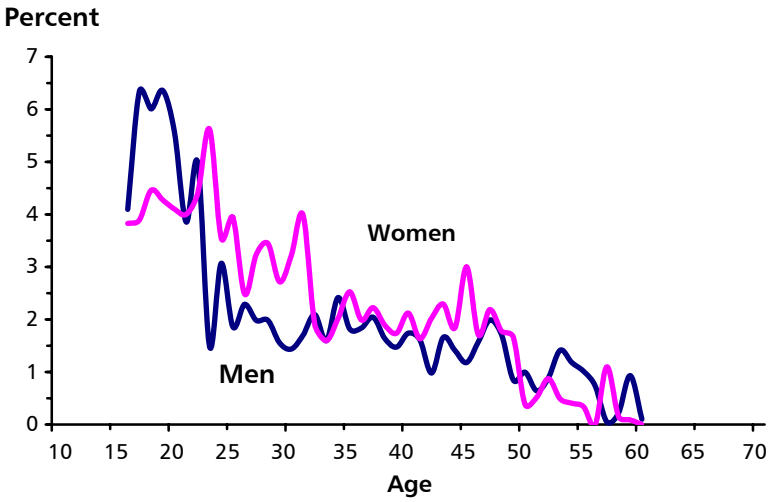
Target 16: In cooperation with developing countries, develop and implement strategies for decent and productive work for youth

Indicator 45: Unemployment of 15-24 year-olds, Each Sex and Total (ILO)

Unemployment rate of 15-24 year-olds in Western Provinces in China

Men: 4.4 percent
Women: 4.2 percent
Total: 4.3 percent

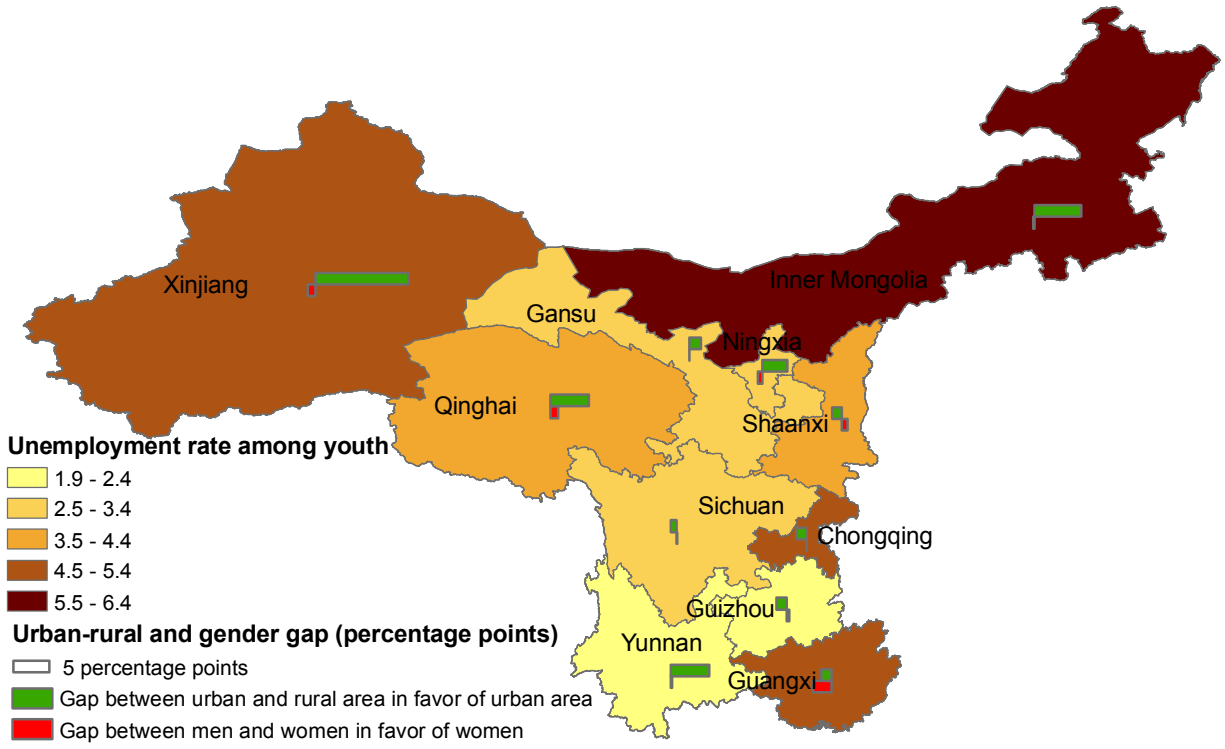
Unemployment by age



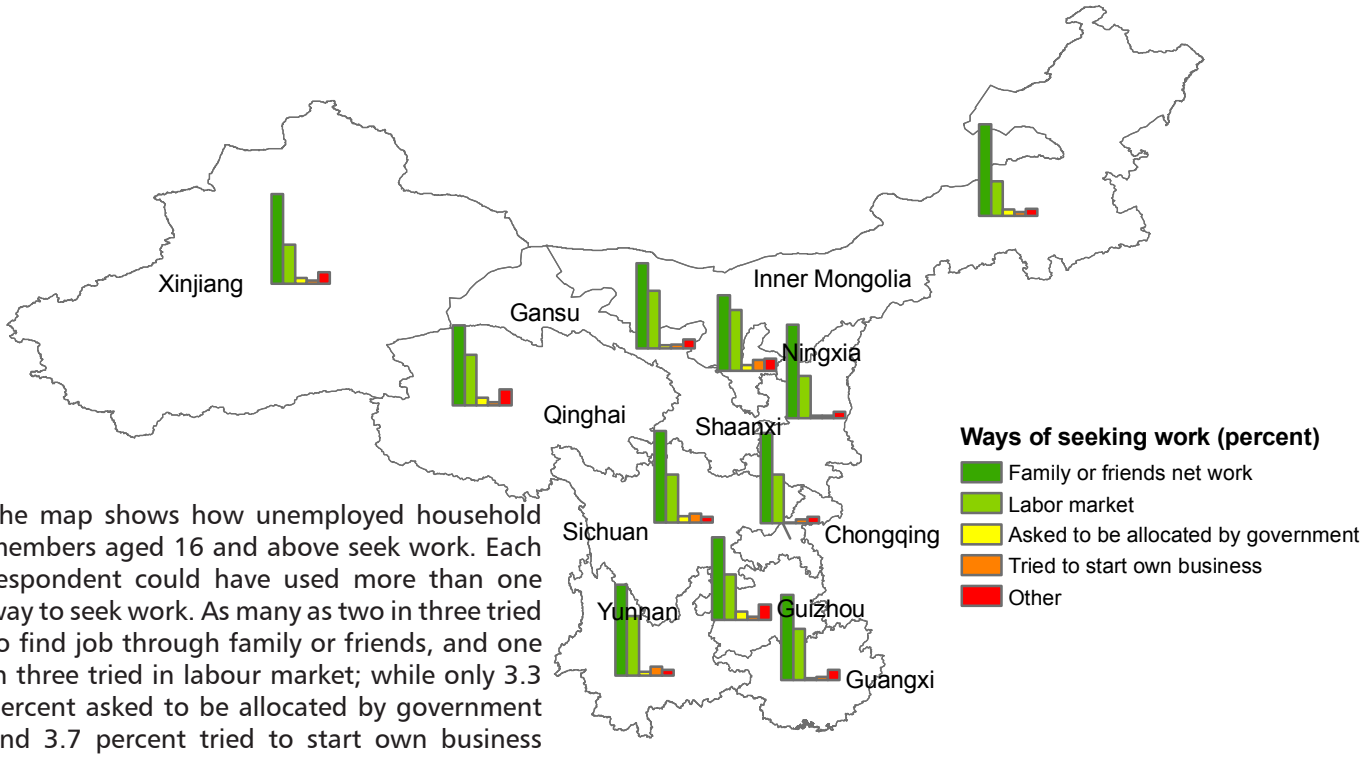
Of the total 369 million people in Western China, 47 million are aged between 15 and 24.

Among the youth, 28 million (60 percent) are in the labour force, and of those 1.24 million are unemployed. The unemployment rate among youth (4%) is high compared to the overall rate (1.9%). Nearly one-third of the unemployed are among youth.

The map below shows the unemployment rate among youth. The difference between genders is very small, and in some provinces unemployment is higher among men than that among women, such as Guangxi and Ningxia.

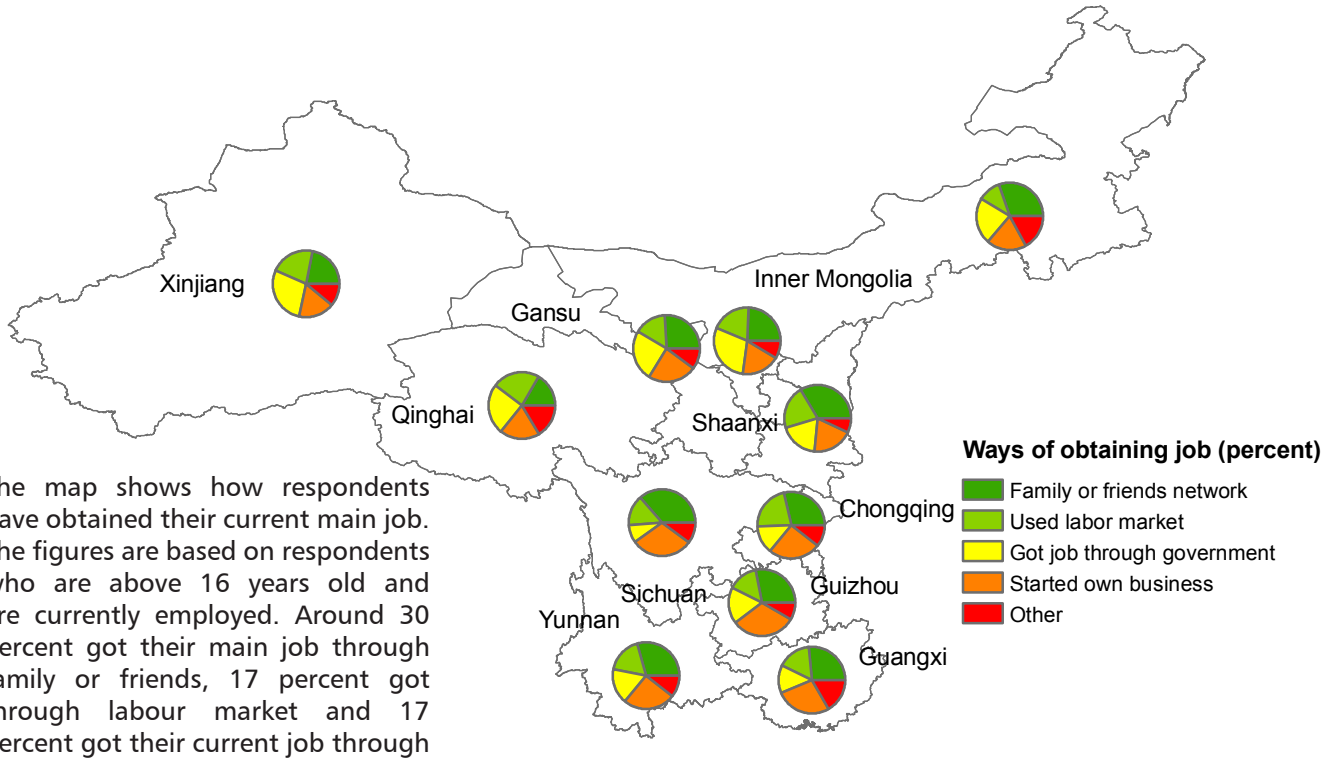


Ways of seeking work



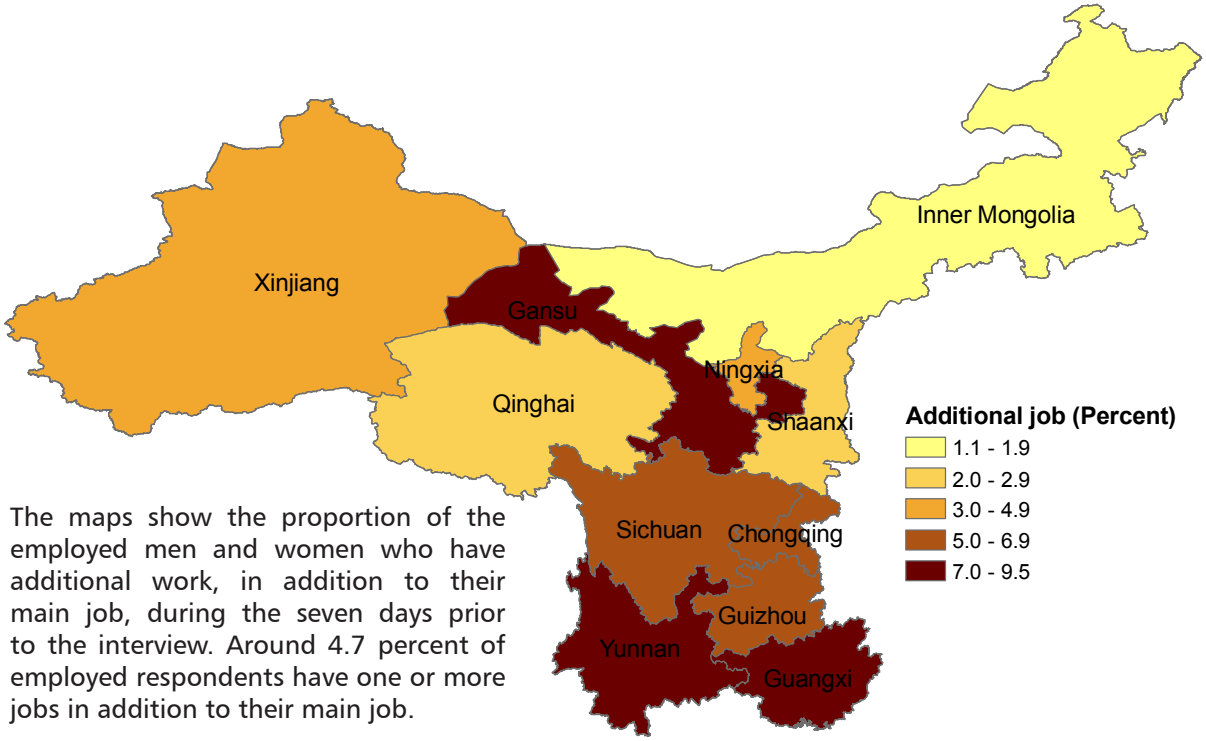
The map shows how unemployed household members aged 16 and above seek work. Each respondent could have used more than one way to seek work. As many as two in three tried to find job through family or friends, and one in three tried in labour market; while only 3.3 percent asked to be allocated by government and 3.7 percent tried to start own business and 6 percent tried other ways.

Ways of obtaining current job



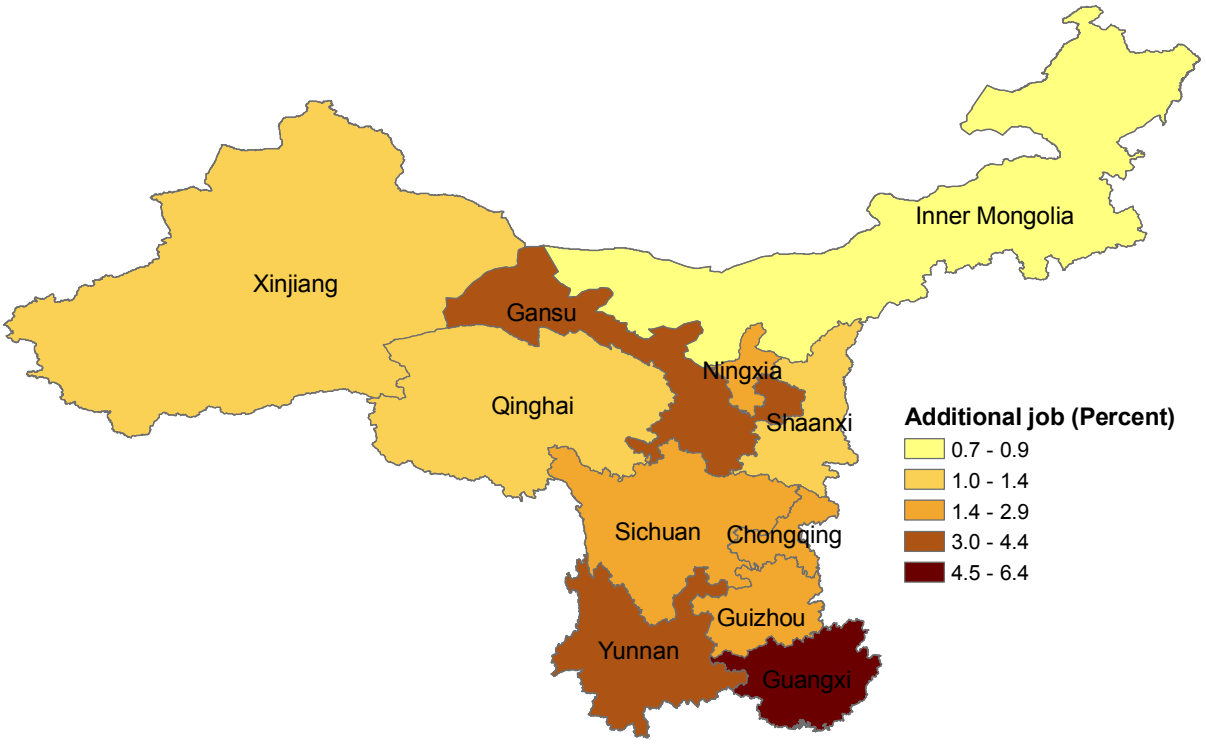
The map shows how respondents have obtained their current main job. The figures are based on respondents who are above 16 years old and are currently employed. Around 30 percent got their main job through family or friends, 17 percent got through labour market and 17 percent got their current job through the government and one in four got job in other ways.

Work in addition to main job (Men)

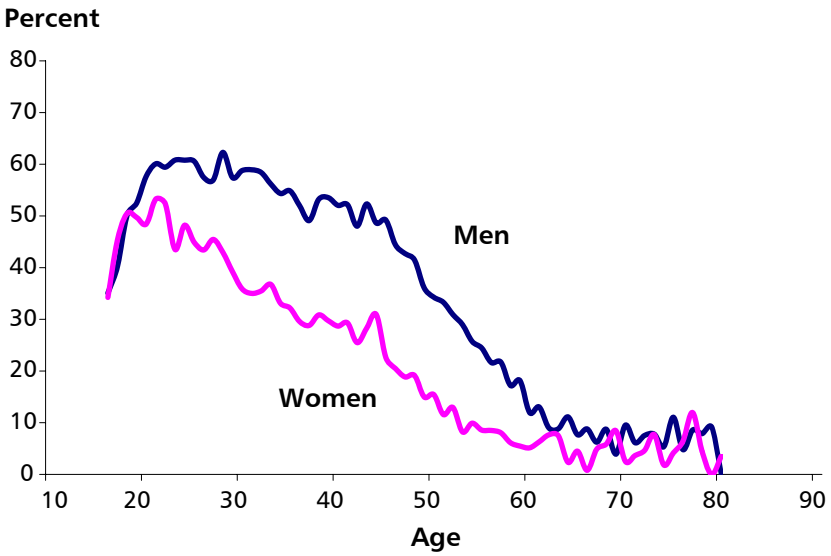


The maps show the proportion of the employed men and women who have additional work, in addition to their main job, during the seven days prior to the interview. Around 4.7 percent of employed respondents have one or more jobs in addition to their main job.

Work in addition to main job (Women)



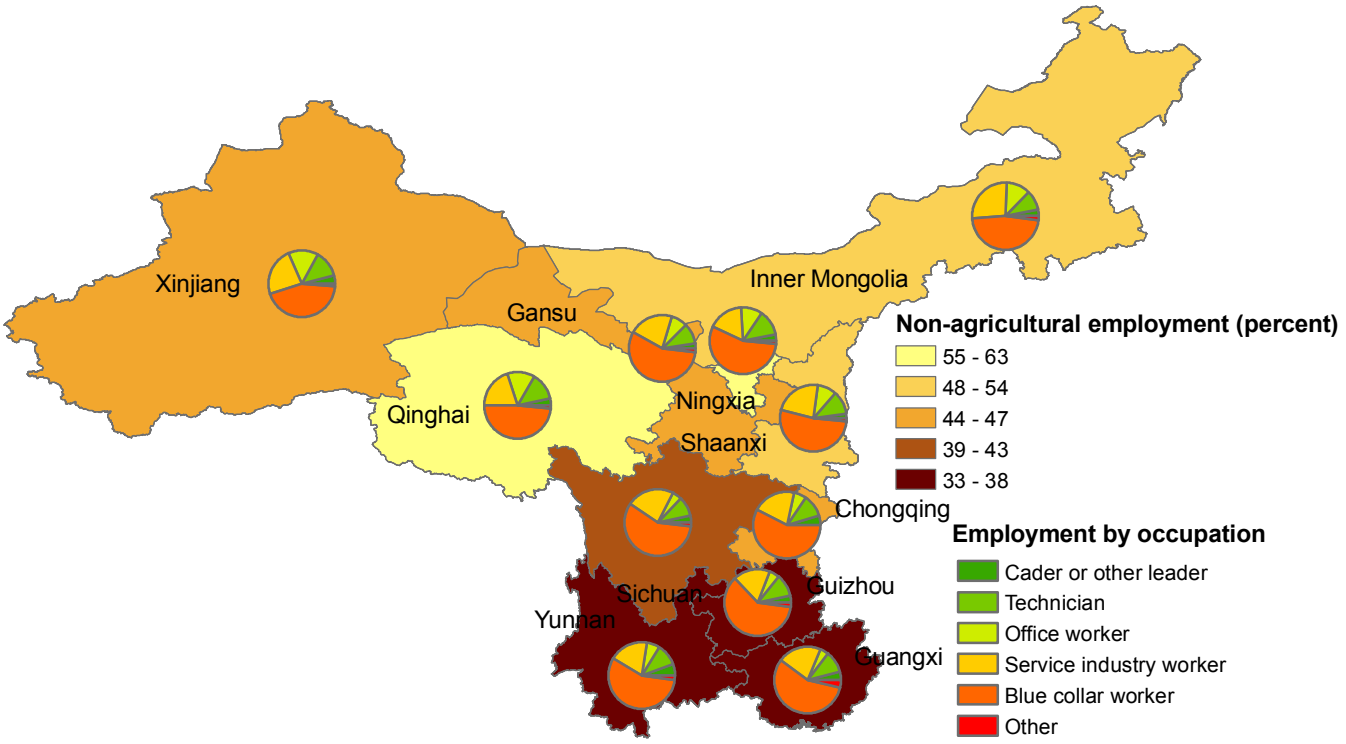
Non-agricultural wage employment



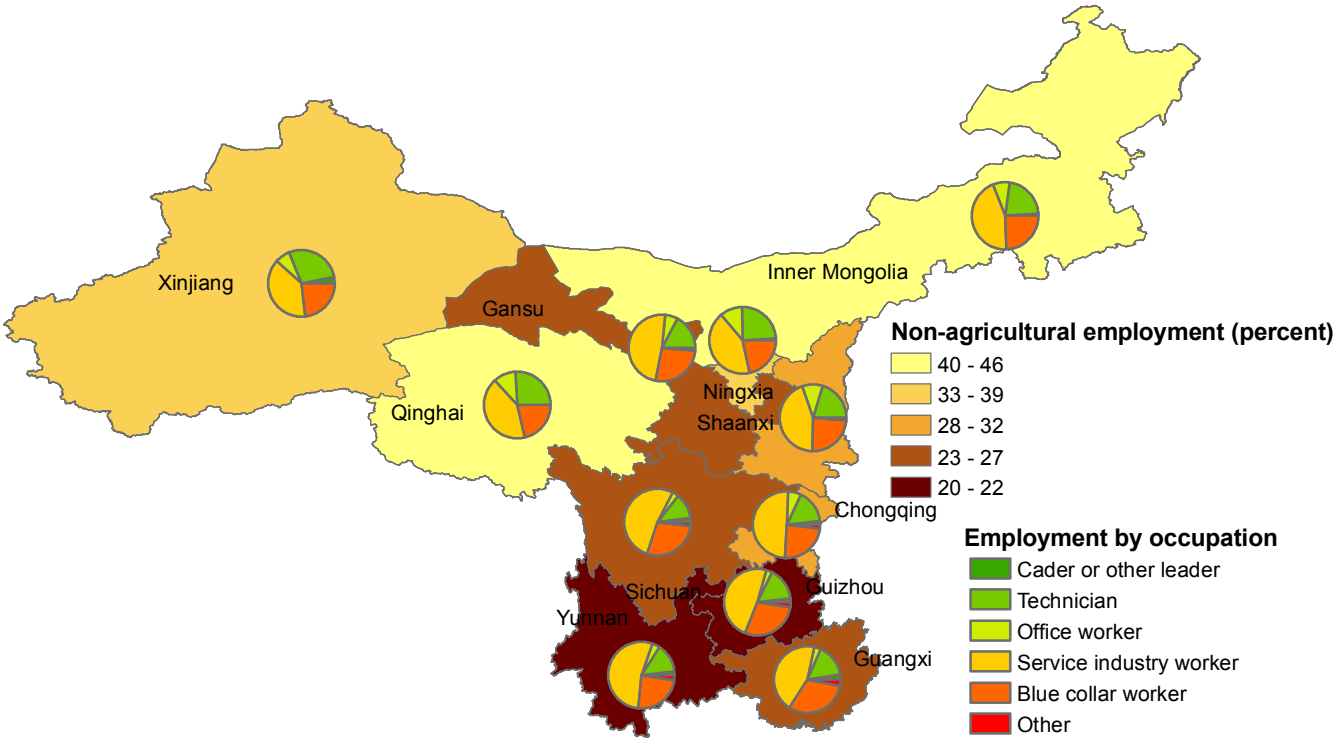
The map shows the proportion of men and women employed in the non-agricultural sector among the employed.

Around half of employed men are working in the non-agricultural sectors, while only one in three employed women are working in the non-agricultural sectors. A small minority of the employed elder are working in non-agricultural sectors, indicating that a high proportion of women and elders are cultivating land, while young men frequently are working in the non-agricultural sectors.

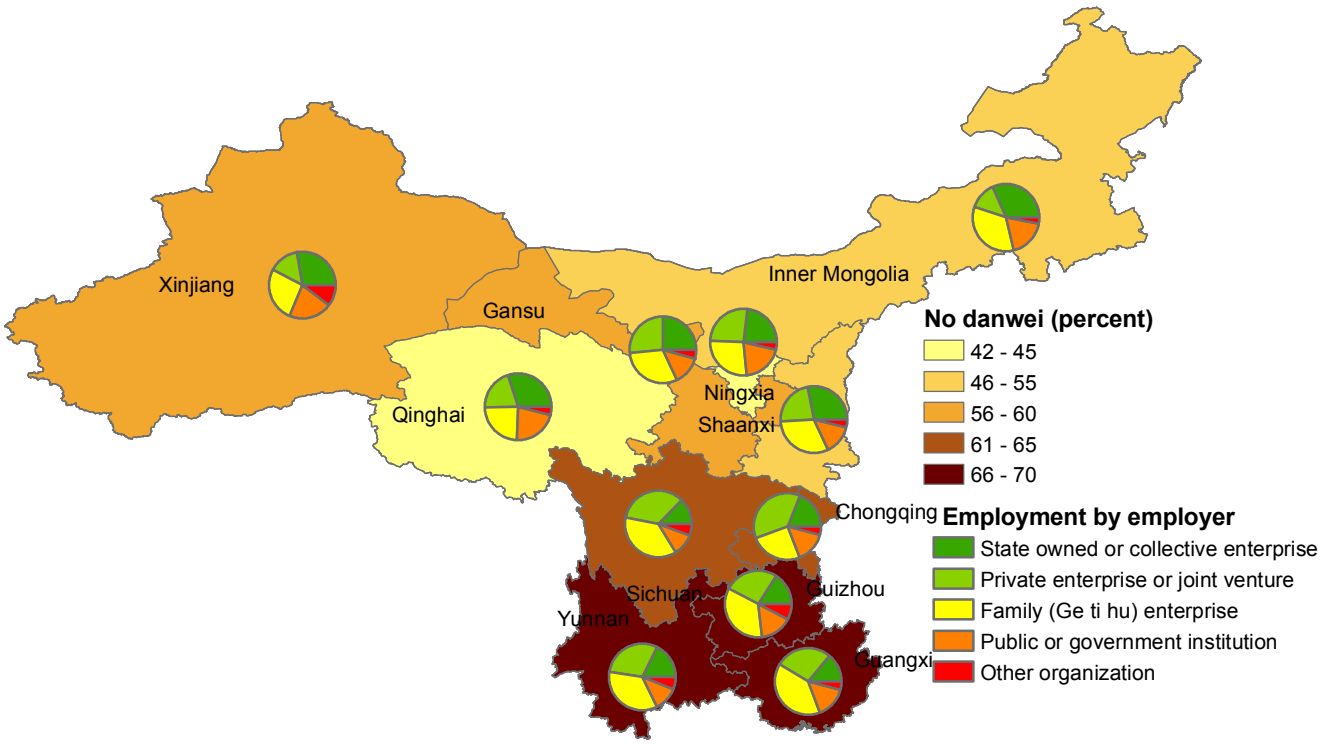
Occupation and non-agricultural employment (Men)



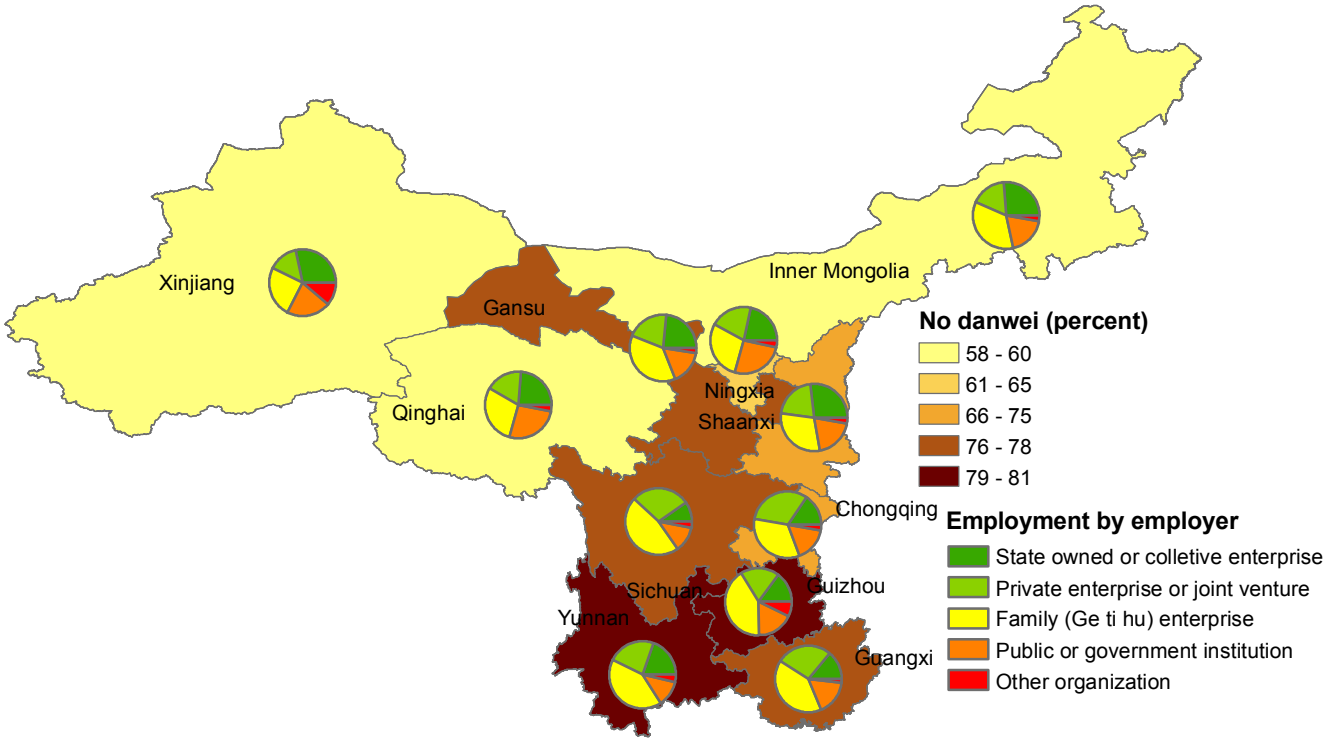
Employment by occupation and non-agricultural employment (Women)



Employment by employer (men)



Employment by employer (women)



Employment by sector and women's share

Sector	Employment (percent)			Women's share of employment in sector (percent)
	Men	Women	Total	
Agriculture	57.9	73.3	65.1	53
Mining	2.5	0.5	1.6	15
Manufacturing	8.0	5.5	6.8	37
Energy production and water	0.9	0.4	0.6	27
Construction	8.5	1.3	5.1	12
Transportation/post	4.6	0.9	2.9	14
Information technology	0.3	0.2	0.3	35
Wholesale and retail	6.0	7.5	6.7	52
Hotel and restaurant	2.0	2.9	2.4	57
Finance	0.3	0.4	0.3	53
Real estate	0.2	0.2	0.2	42
Leasing and business services	0.8	0.4	0.6	32
Research	0.2	0.1	0.2	29
Environment preservation	0.2	0.3	0.2	53
Service industry	1.4	1.5	1.5	47
Education	2.1	2.3	2.2	48
Health and social security	0.8	0.9	0.9	49
Culture, sports and entertainment	0.4	0.3	0.4	38
Public management and social organization	2.8	1.3	2.1	28

Millennium Development Goals

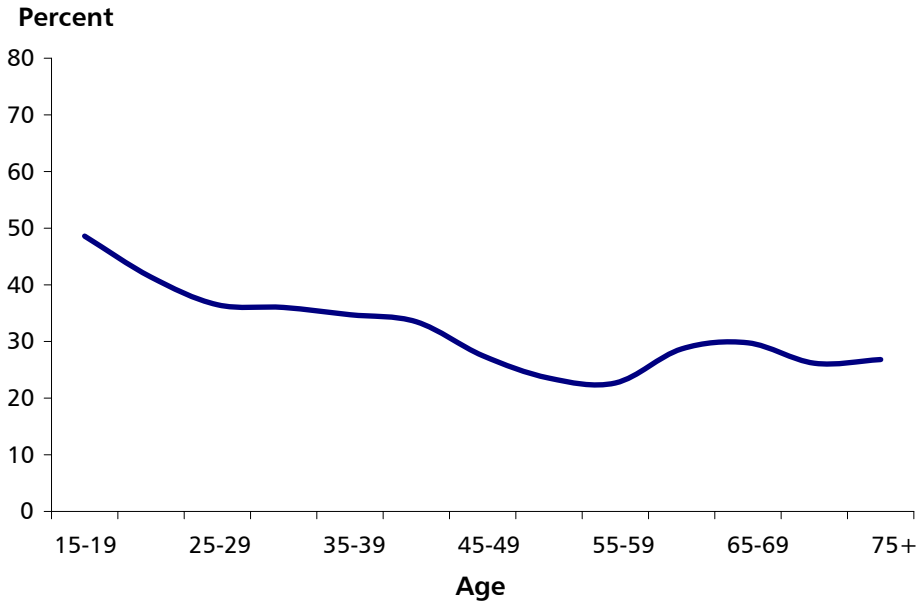
Goal 3: Promote gender equality and empower women

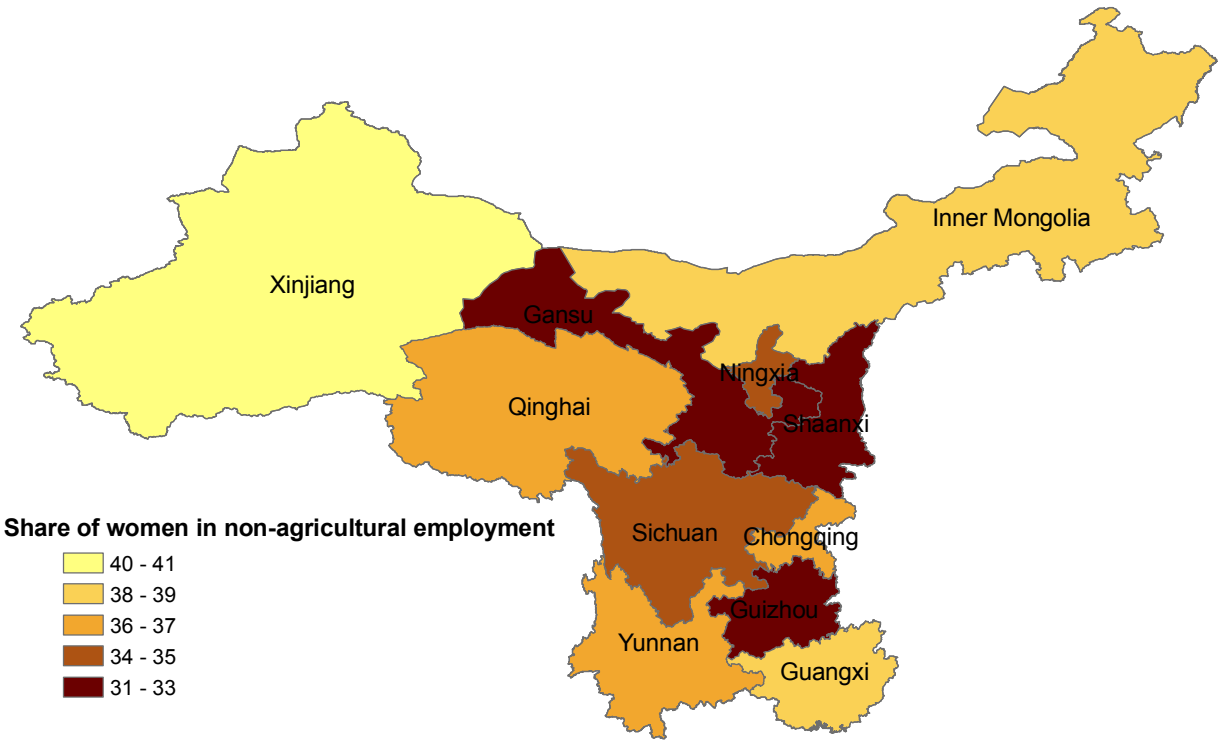
Target 4: Eliminate gender disparity in primary and secondary education, preferably by 2005, and in all levels of education, no later than 2015

Indicator 11: Share of women in wage employment in the non-agricultural sector

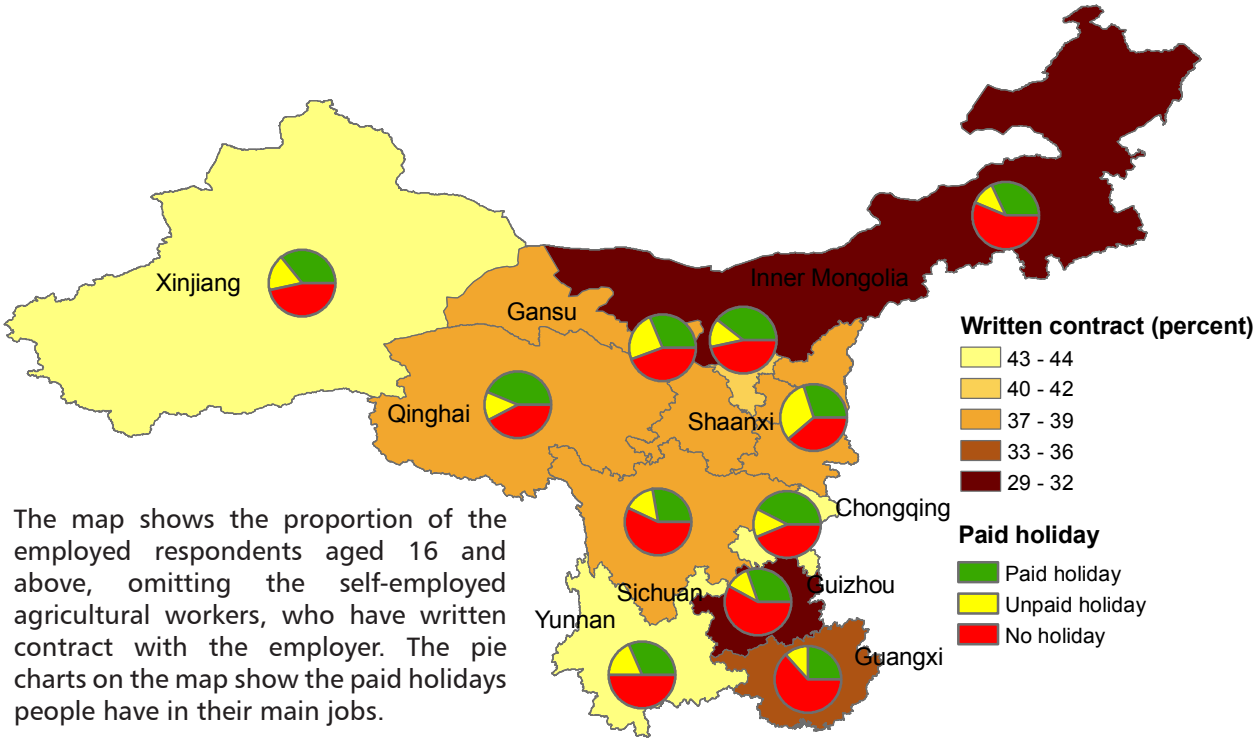
Share of women in wage employment in the non-agricultural sector in Western Provinces: 35.5 percent

Share of women in non-agricultural employment (percent)



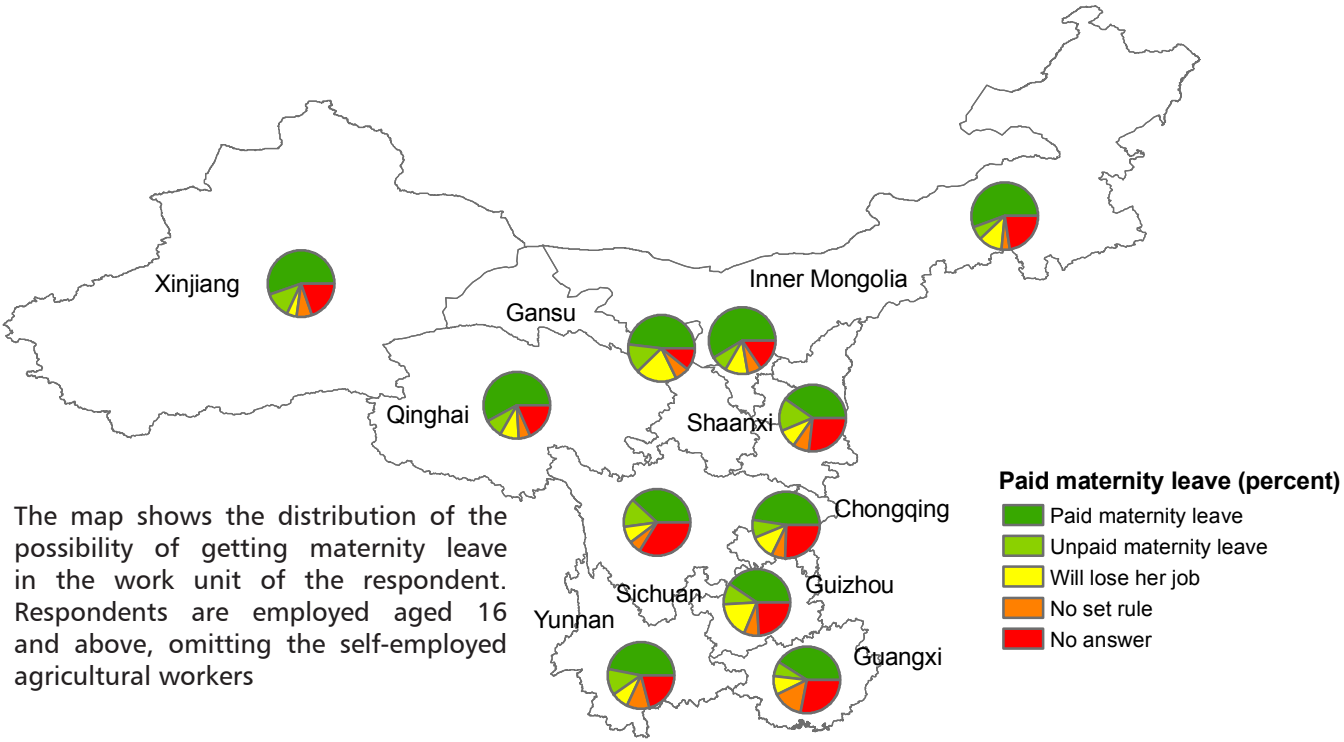


Written contract at main job



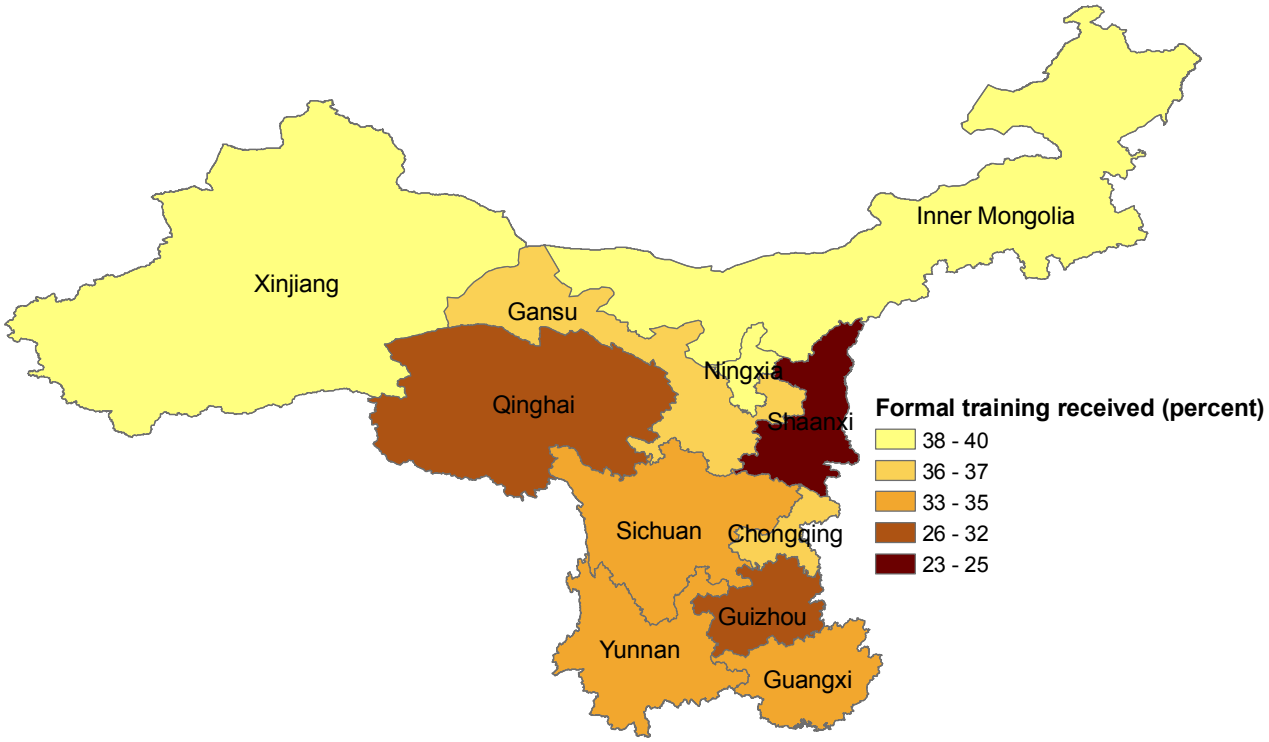
The map shows the proportion of the employed respondents aged 16 and above, omitting the self-employed agricultural workers, who have written contract with the employer. The pie charts on the map show the paid holidays people have in their main jobs.

Paid maternity leave

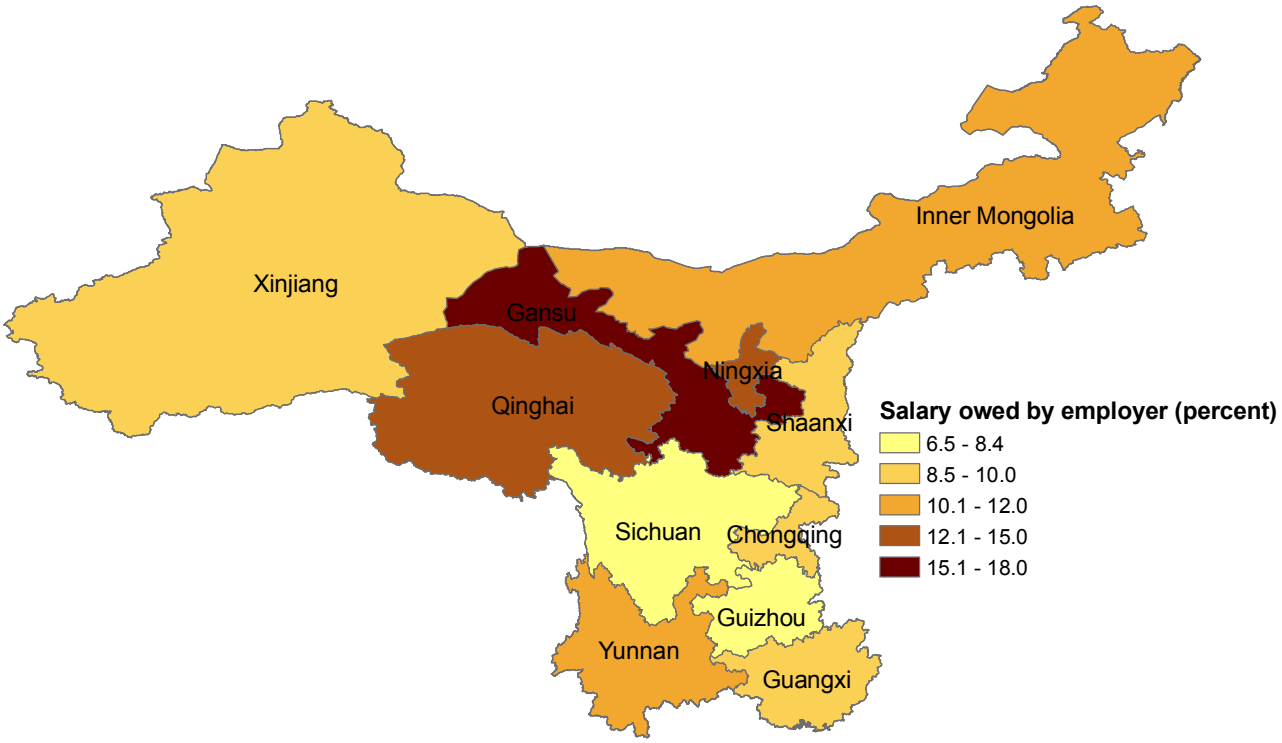


The map shows the distribution of the possibility of getting maternity leave in the work unit of the respondent. Respondents are employed aged 16 and above, omitting the self-employed agricultural workers

Formal training provided by employer



Salary owed by employer



Education

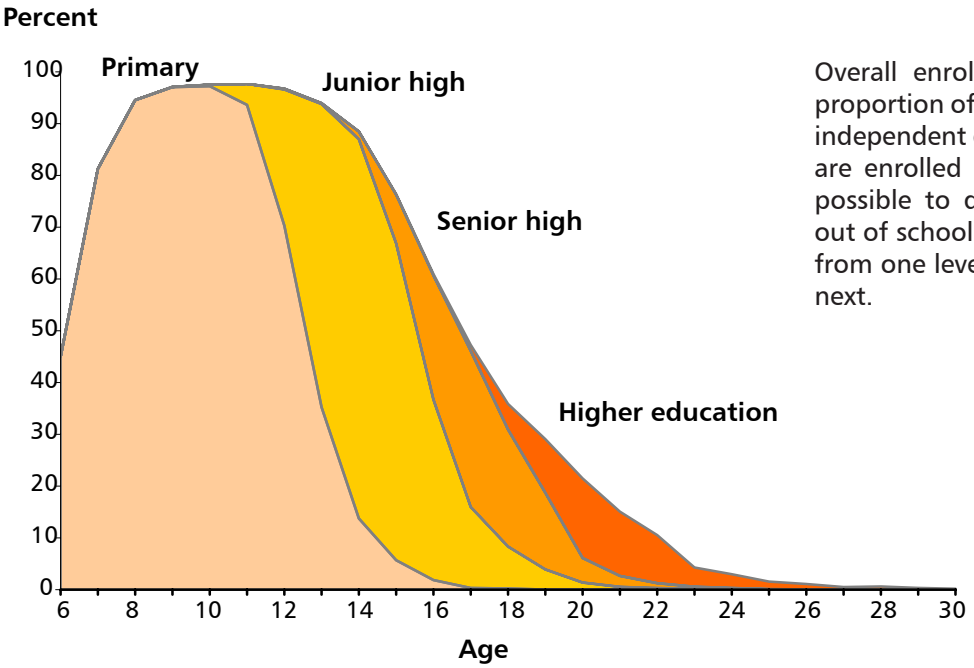
Millennium Development Goals

Goal 2: Achieve universal primary education

Target 3: Ensure that children everywhere, boys and girls alike, will be able to complete a full course of primary schooling

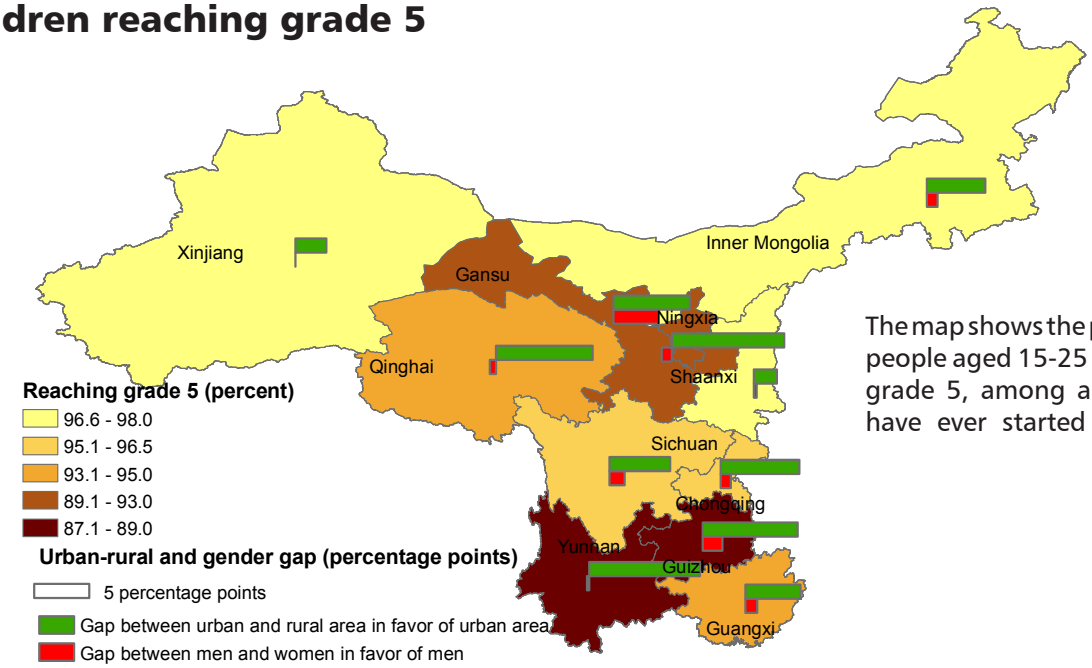
Indicator 7: Proportion of pupils starting grade 1 who reach grade 5	Indicator 8: Literacy rate of 15 to 24-year-olds
Boys:94.0%	Men: 86.8%
Girls: 93.2%	Women: 84.0%
Total: 93.6%	Total: 85.5%

Overall enrolment in school



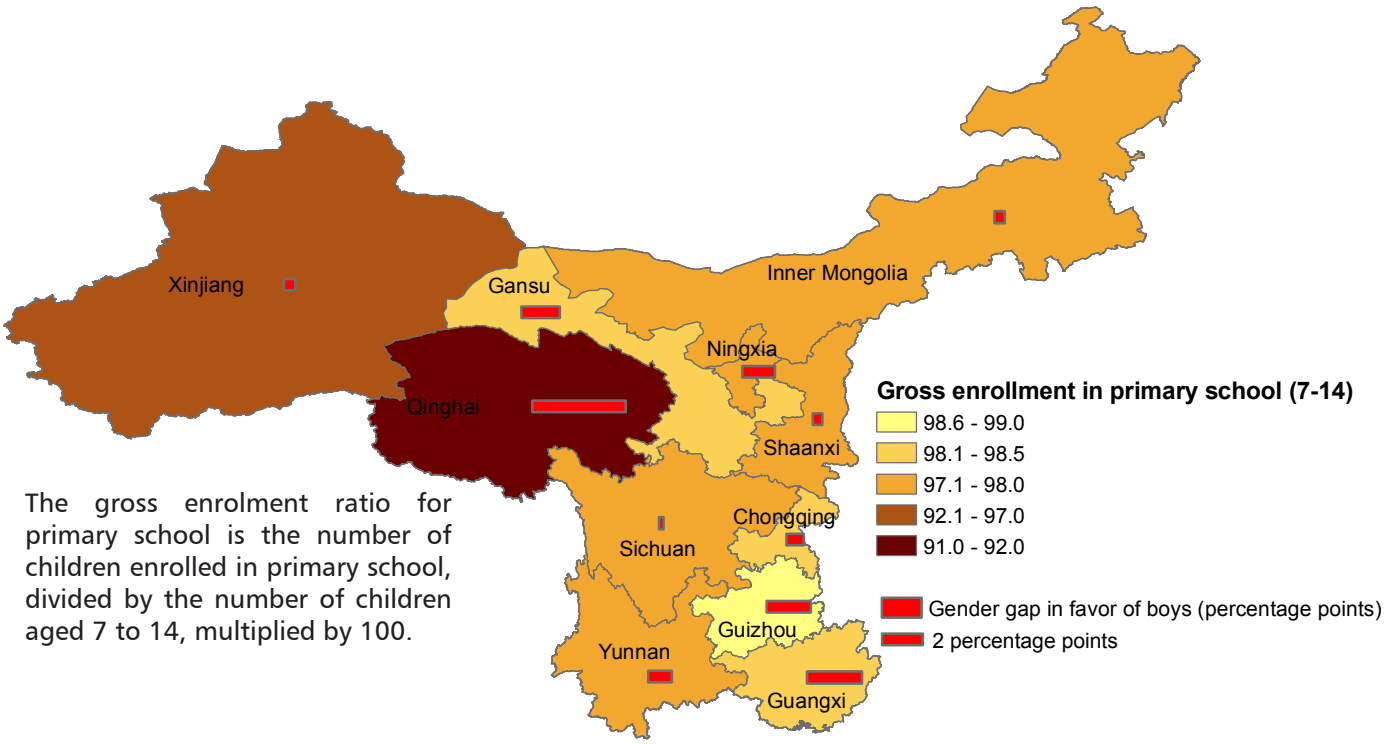
Overall enrolment is measured as the proportion of children enrolled in school, independent of which level or grade they are enrolled in. This indicator makes it possible to detect when children drop out of school, as opposed to graduating from one level and continuing on to the next.

Children reaching grade 5



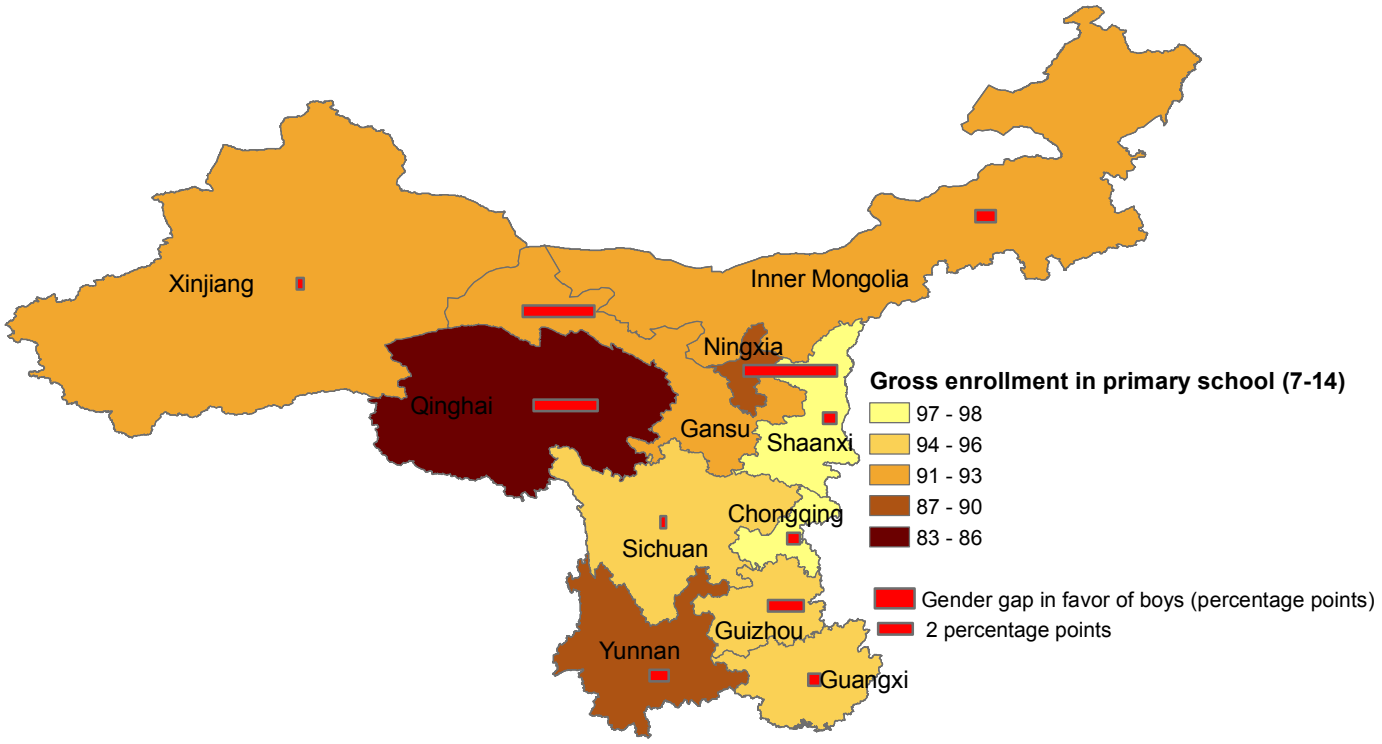
The map shows the proportion of people aged 15-25 who reached grade 5, among all those who have ever started in grade 1.

Gross enrolment in primary school for children aged 7 to 14 (Urban)

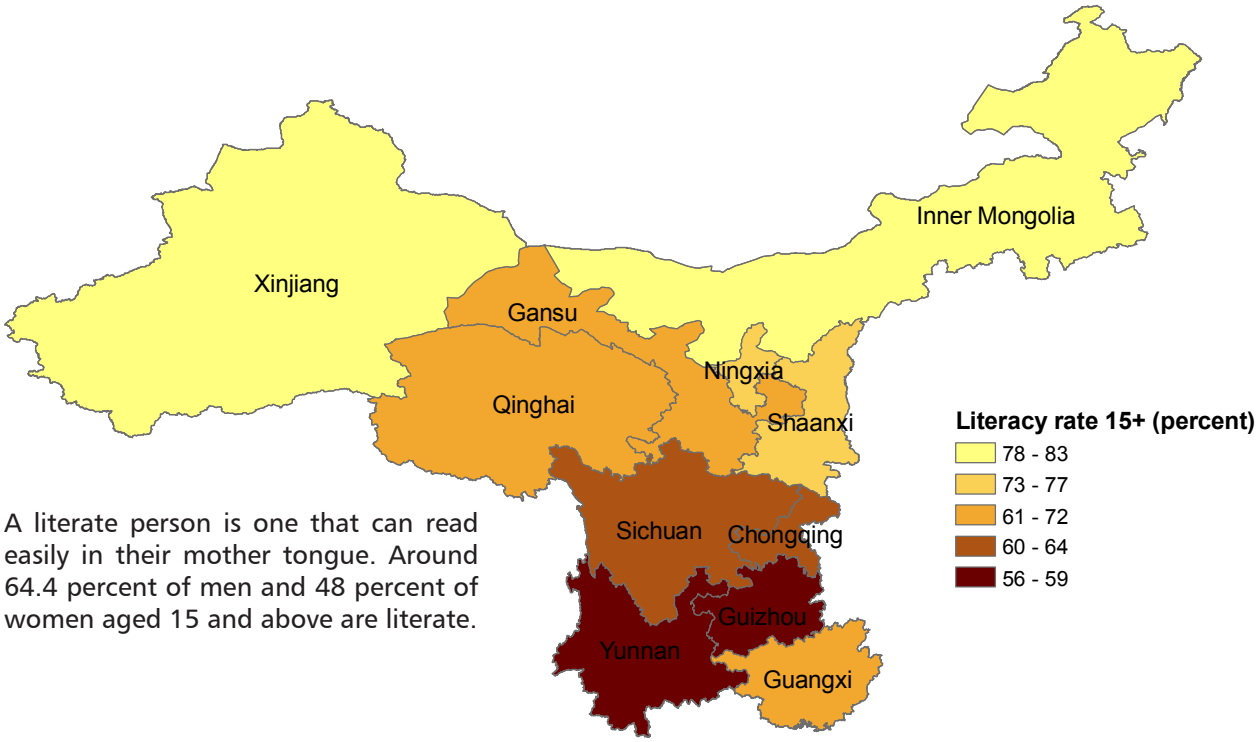


The gross enrolment ratio for primary school is the number of children enrolled in primary school, divided by the number of children aged 7 to 14, multiplied by 100.

Gross enrolment in primary school for children aged 7 to 14 (Rural)

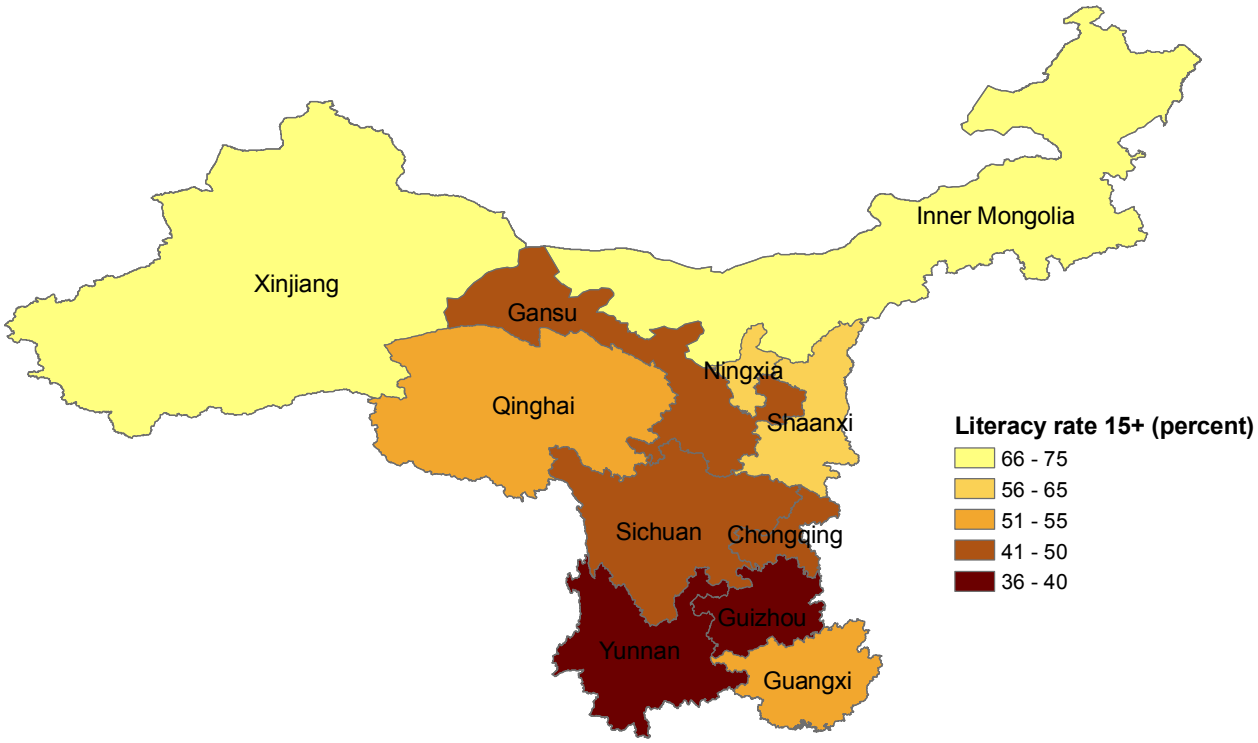


Literacy rate (Men)

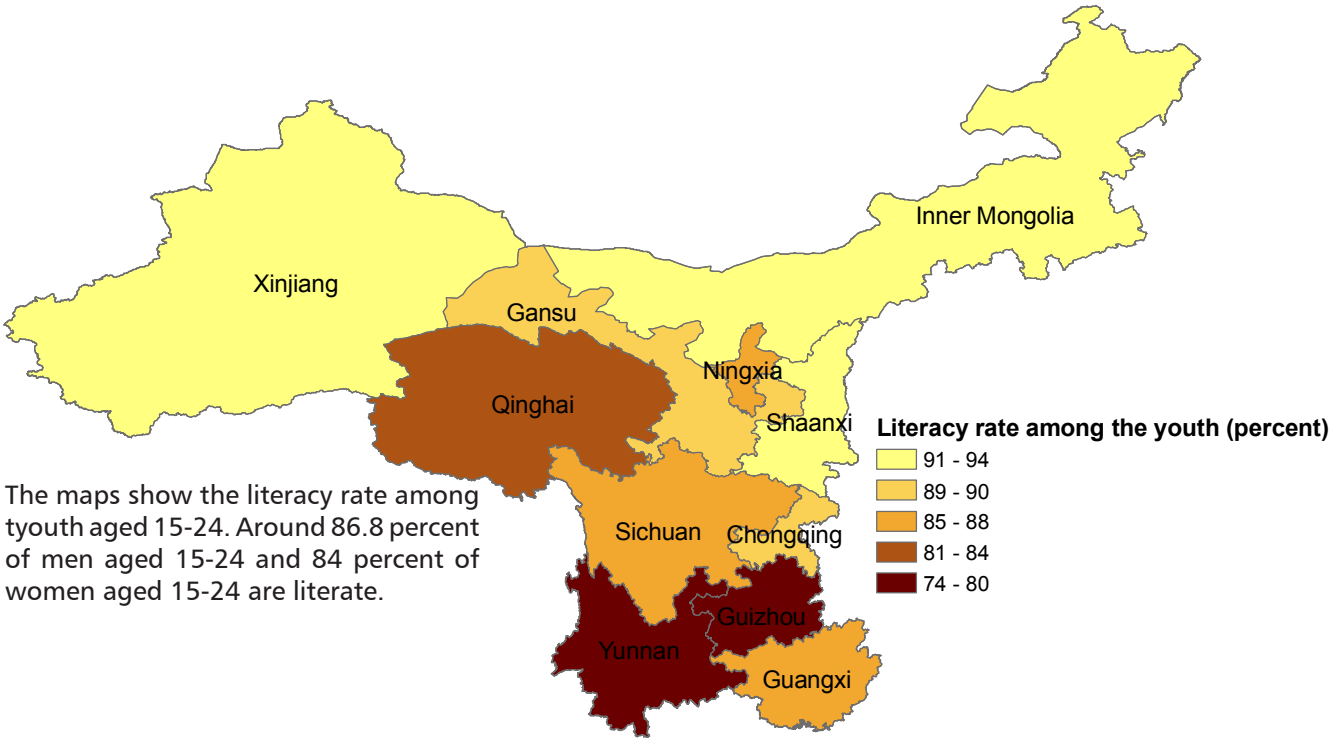


A literate person is one that can read easily in their mother tongue. Around 64.4 percent of men and 48 percent of women aged 15 and above are literate.

Literacy rate (Women)

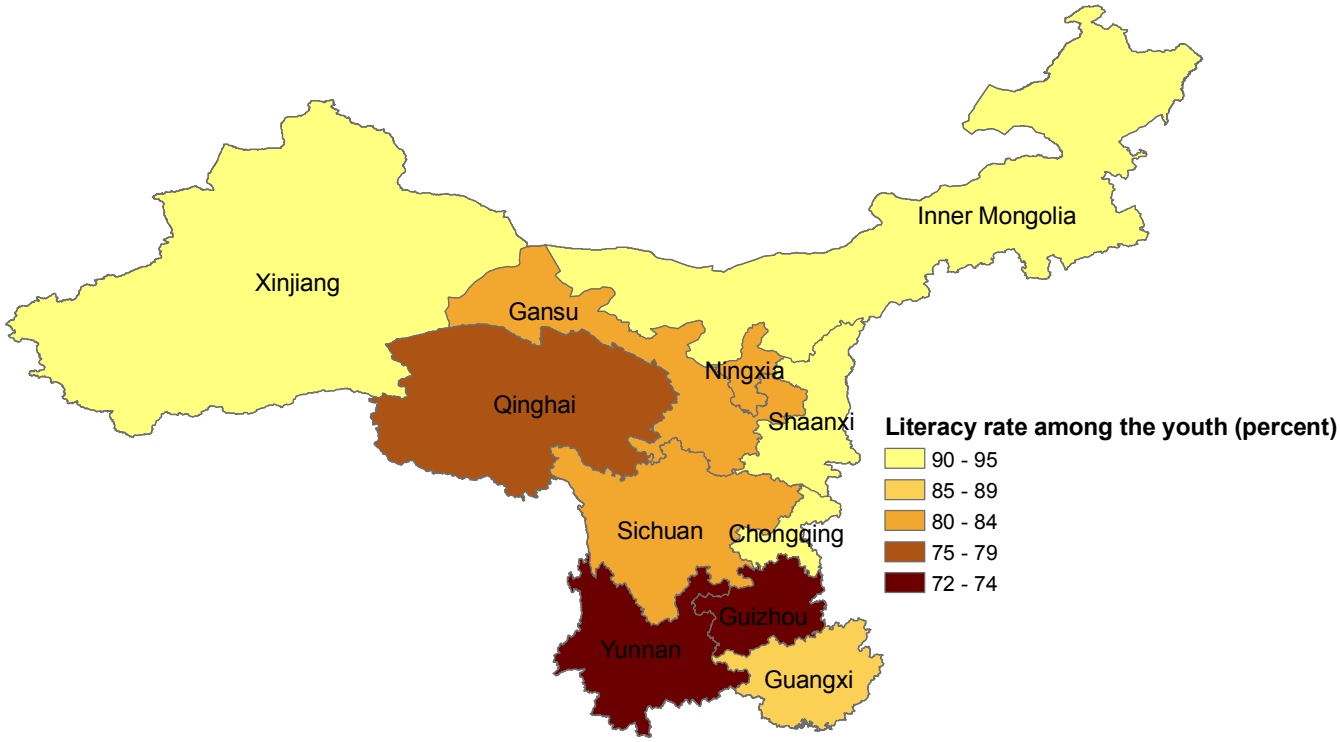


Literacy rate among the youth aged 15-24 (Men)



The maps show the literacy rate among tyouth aged 15-24. Around 86.8 percent of men aged 15-24 and 84 percent of women aged 15-24 are literate.

Literacy rate among the youth aged 15-24 (Women)



Education and women

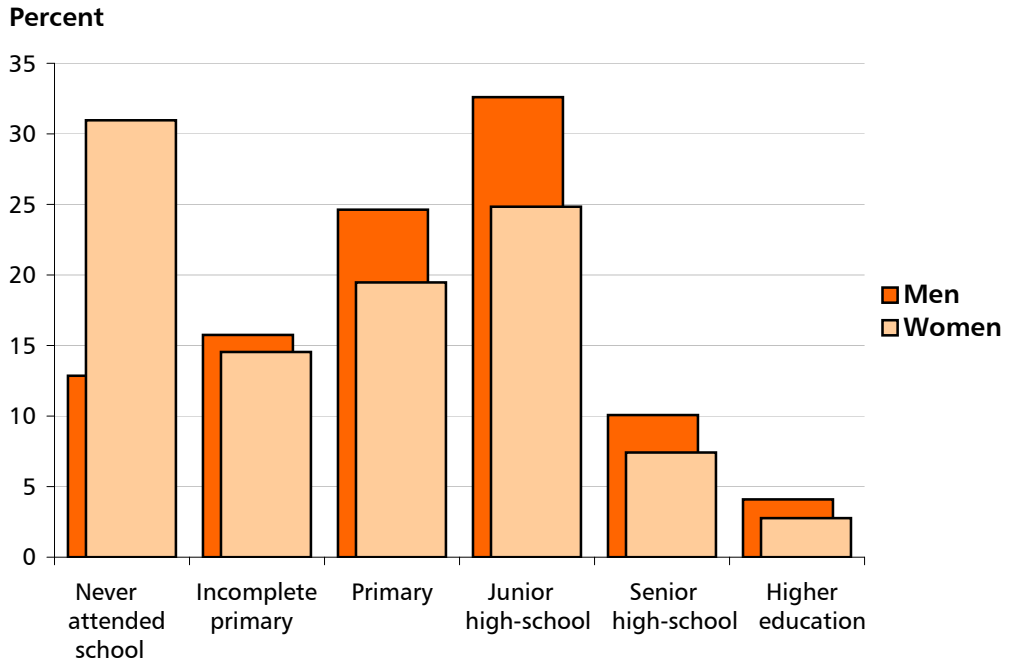
Millennium Development Goals

Goal 3: Promote gender equality and empower women

Target 4: Eliminate gender disparity in primary and secondary education, preferably by 2005, and in all levels of education, no later than 2015

Indicator 9: Ratio of girls to boys in primary, secondary and tertiary education	Indicator 10: Ratio of literate women to men among 15-24 year-olds
Primary: 85.2% Junior high: 90.3% Senior high: 80.1% Higher: 79.0%	Ratio: 85.9%

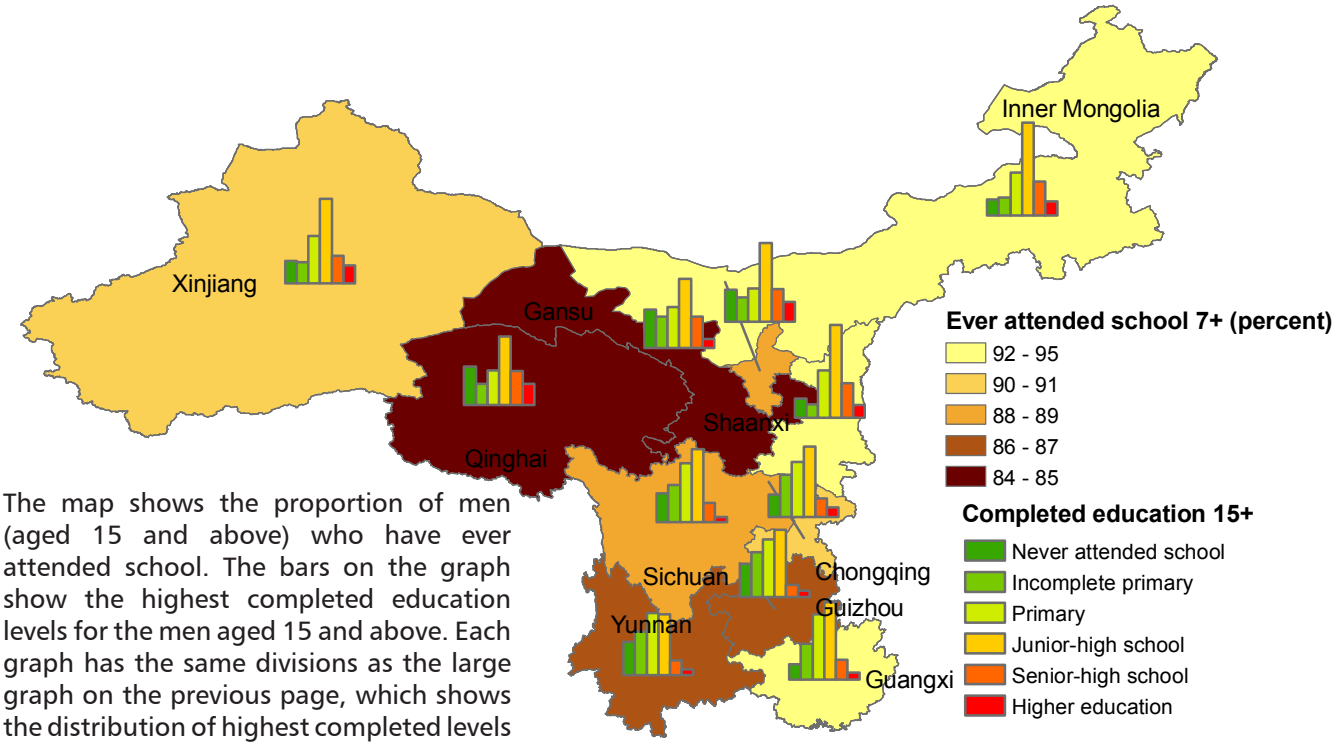
Completed education



Literacy by age (Percent)

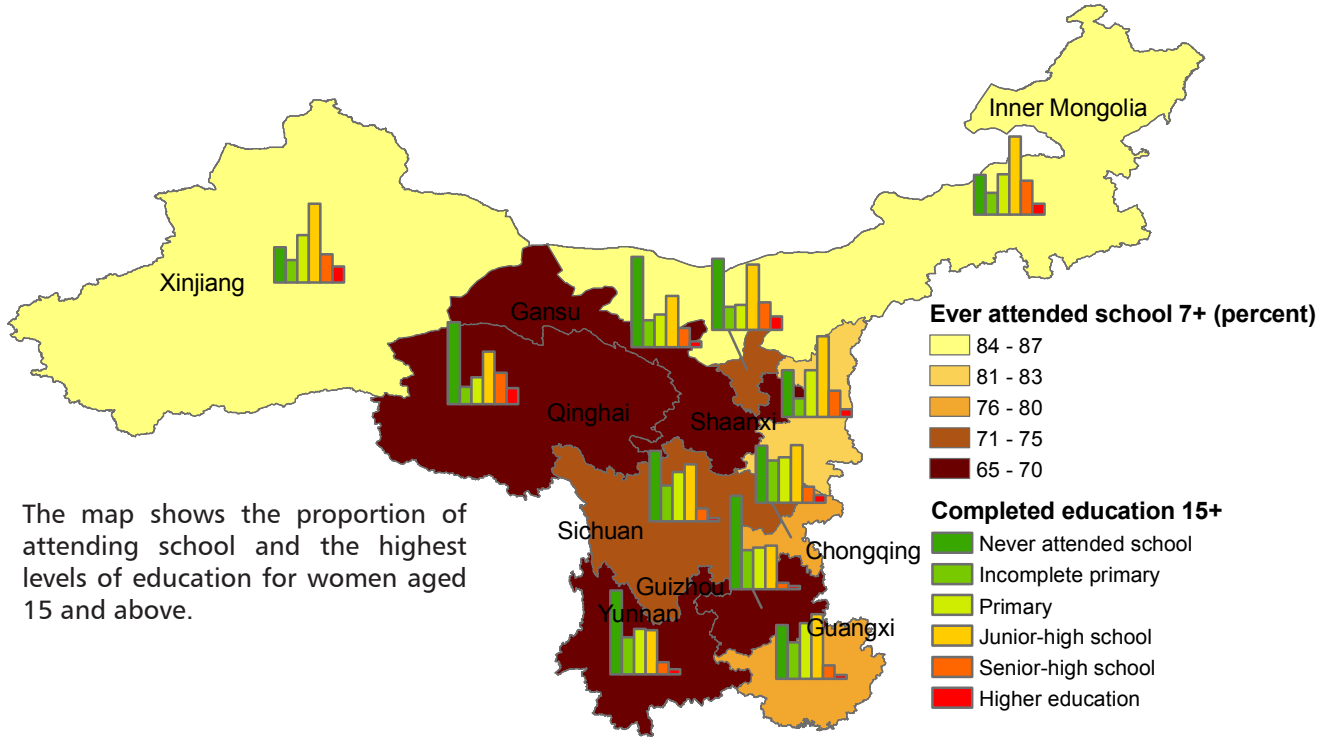
Age group	Men	Women	Total
15-24	87	84	86
25-34	74	63	68
35-44	70	54	62
45-54	56	31	44
55-64	47	23	35
65+	32	9	21
Total	64	48	56

Ever attended school (Men)



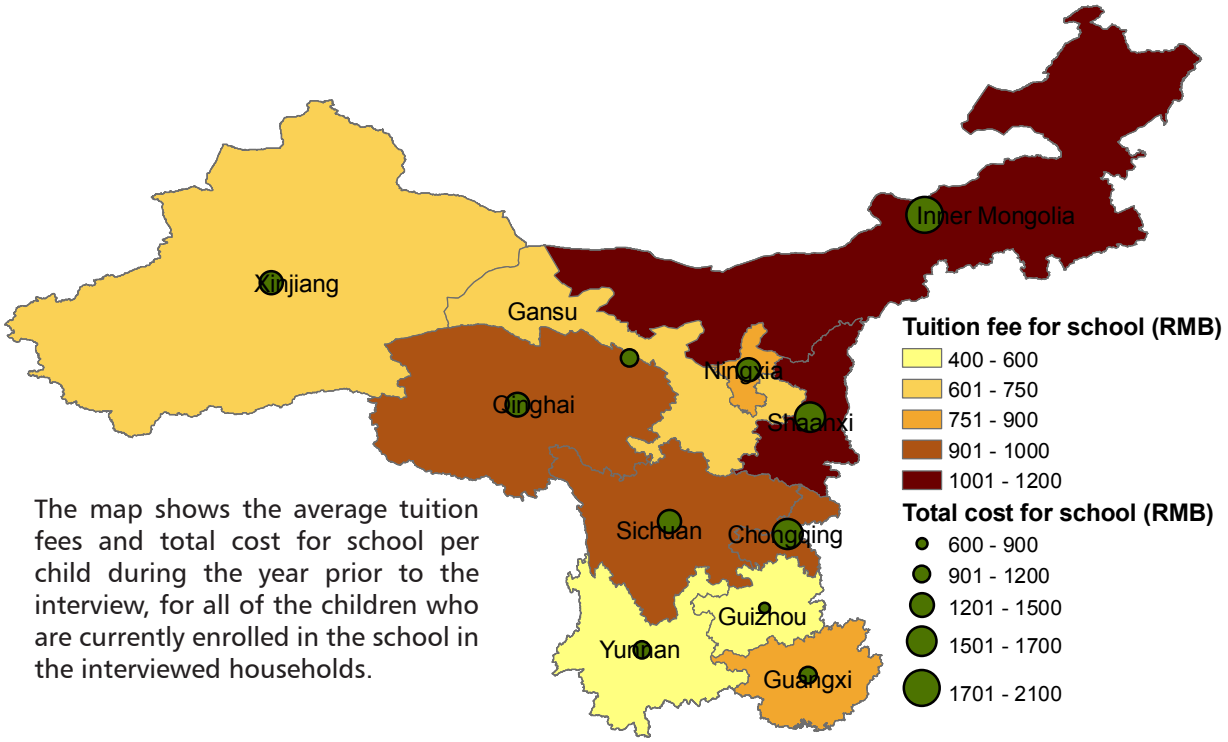
The map shows the proportion of men (aged 15 and above) who have ever attended school. The bars on the graph show the highest completed education levels for the men aged 15 and above. Each graph has the same divisions as the large graph on the previous page, which shows the distribution of highest completed levels of education for all the Western Provinces in China.

Ever attended school (Women)



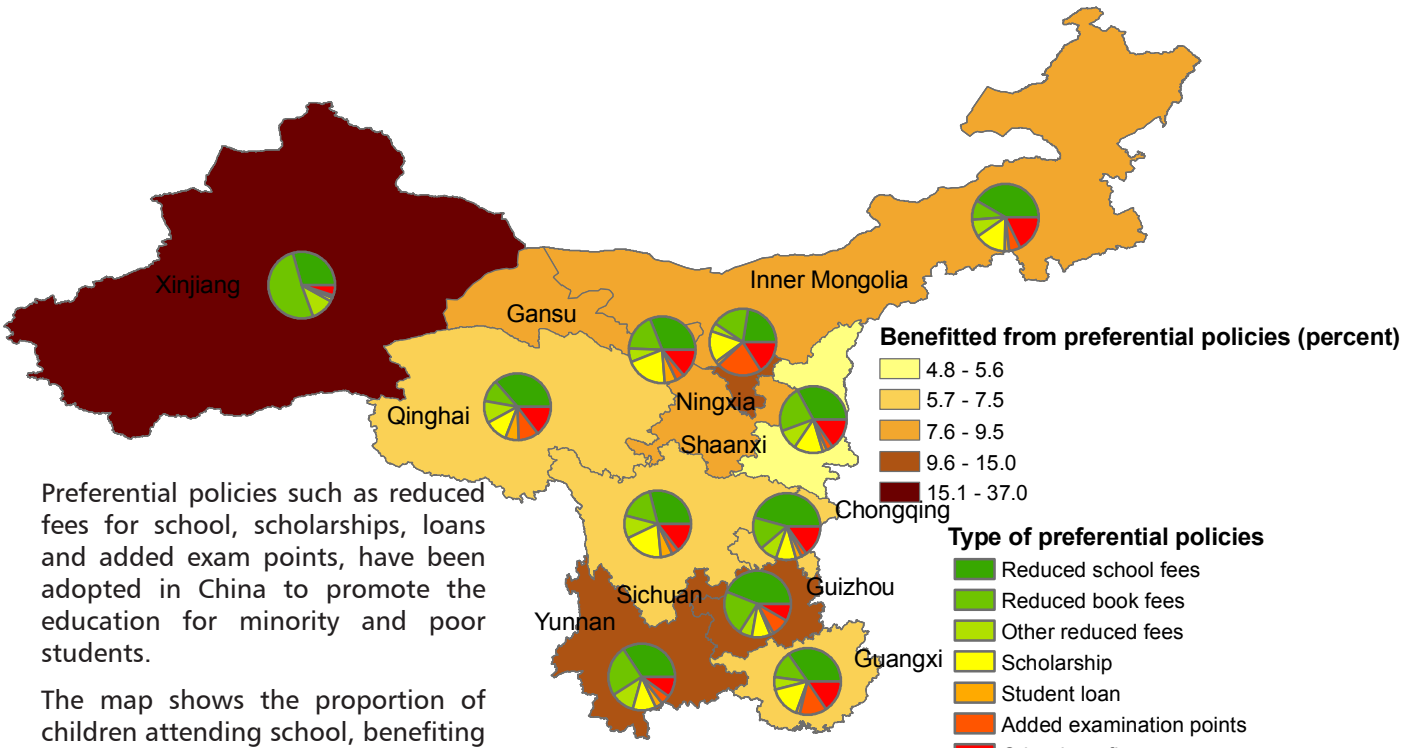
The map shows the proportion of attending school and the highest levels of education for women aged 15 and above.

Tuition fees and total cost for schooling



The map shows the average tuition fees and total cost for school per child during the year prior to the interview, for all of the children who are currently enrolled in the school in the interviewed households.

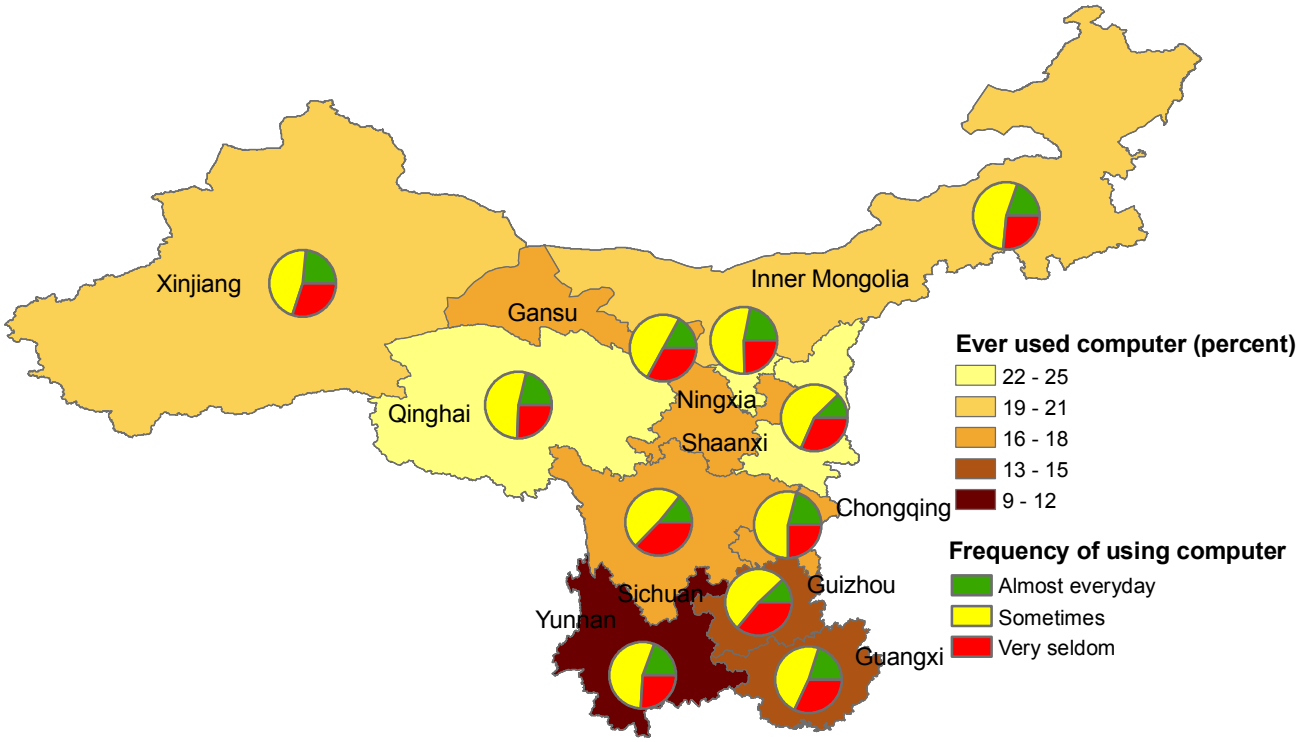
Preferential policies



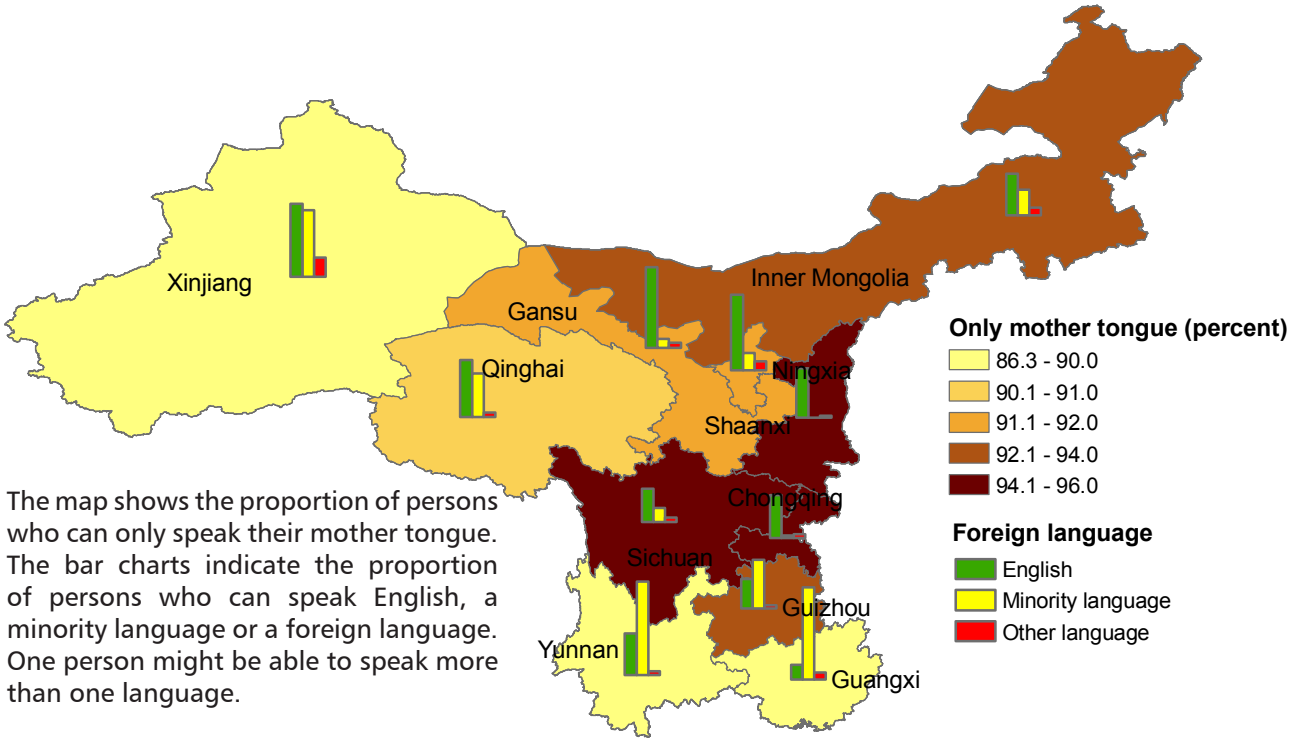
Preferential policies such as reduced fees for school, scholarships, loans and added exam points, have been adopted in China to promote the education for minority and poor students.

The map shows the proportion of children attending school, benefiting from preferential policies. The pie charts on the map show the distribution of different policies among the children who have benefited from preferential policies.

Computer use

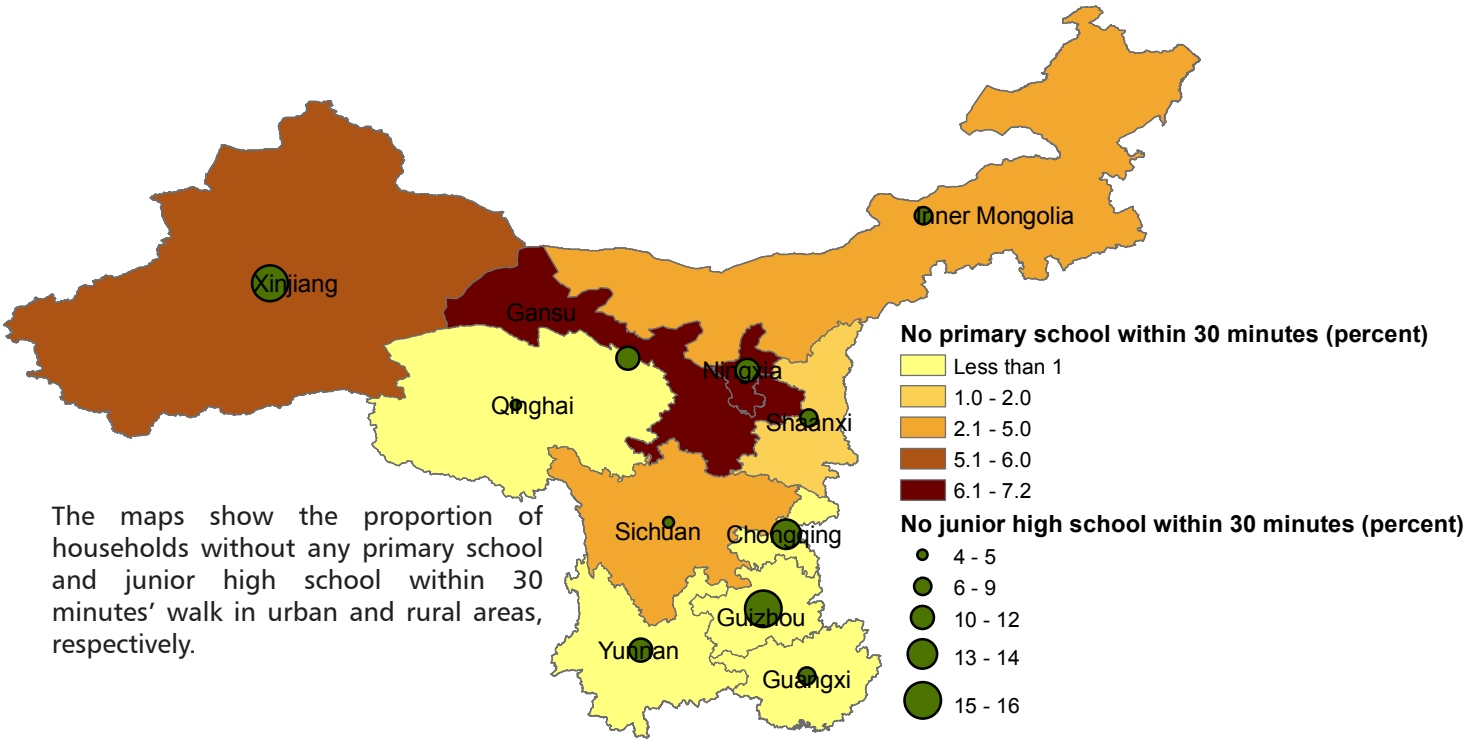


Knowledge of languages other than mother tongue



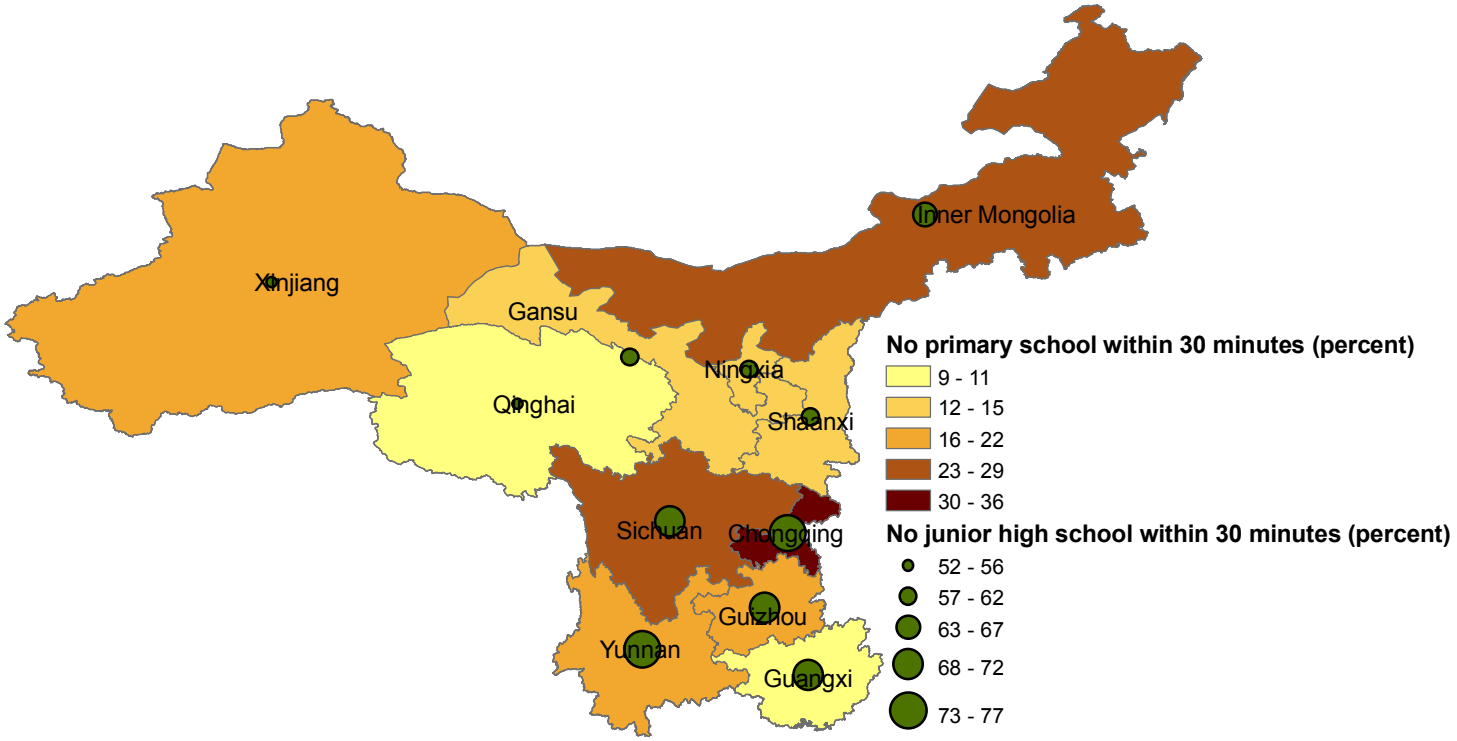
The map shows the proportion of persons who can only speak their mother tongue. The bar charts indicate the proportion of persons who can speak English, a minority language or a foreign language. One person might be able to speak more than one language.

Access to the primary and secondary school (Urban)



The maps show the proportion of households without any primary school and junior high school within 30 minutes' walk in urban and rural areas, respectively.

Access to the primary and secondary school (Rural)



Housing and infrastructure

Millennium Development Goals

Goal 7: Ensure environmental sustainability

Target 10: Reduced by 2015 the proportion of people without sustainable access to safe drinking water.

Indicator 29: Proportion of population with sustainable access to an improved water source

Total: 55%

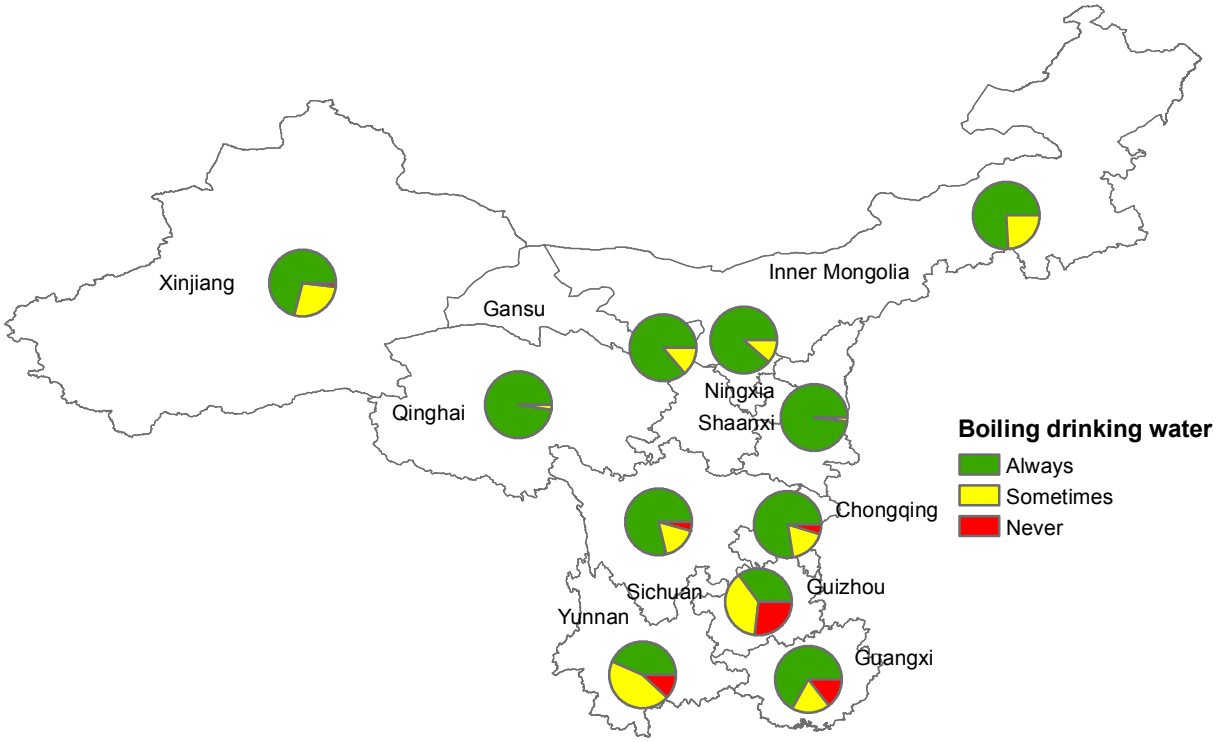
Urban: 89%

Rural: 44%

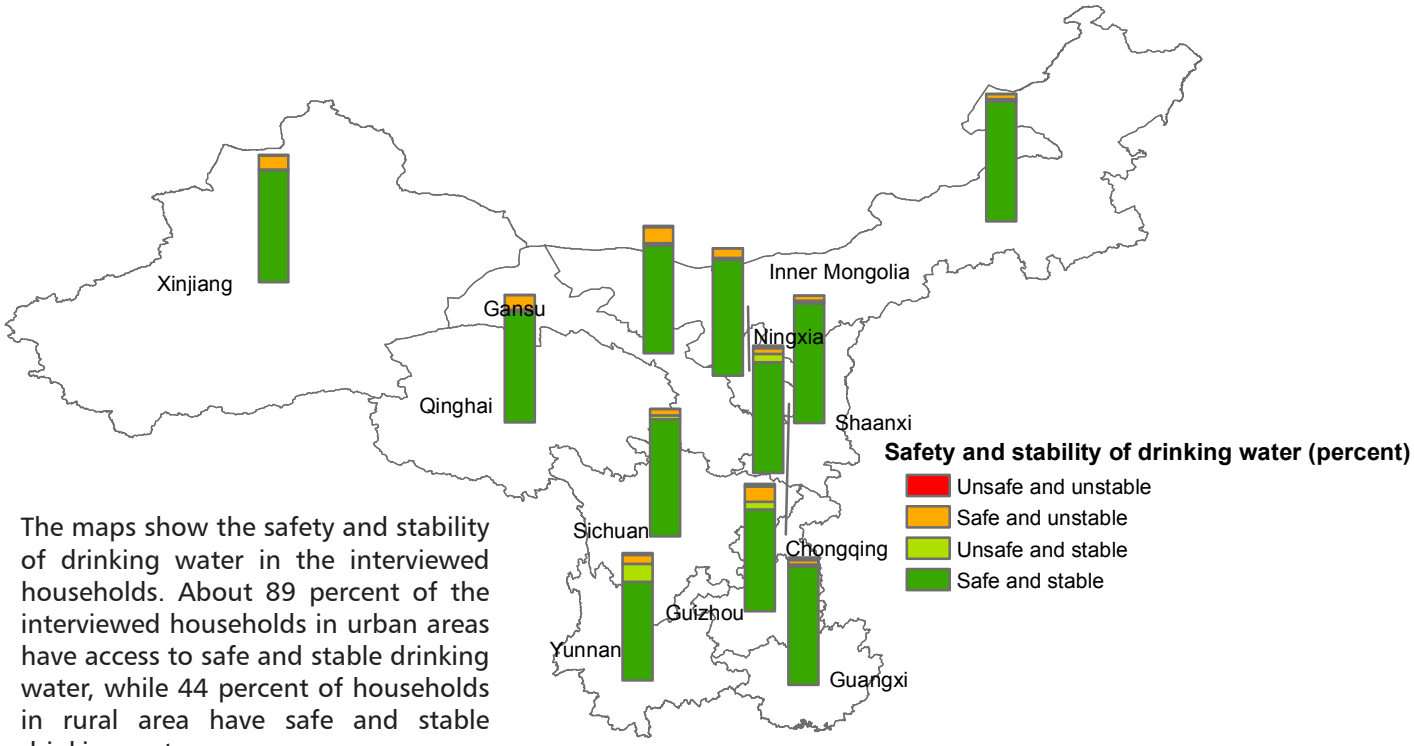
The Millennium Development Goals stipulate that drinking water supply should be both safe and sustainable. "Safety" is defined by the way to deliver water. Water is considered safe if it comes from an "improved" water source, namely: tap water from water plant, covered well, pressure well, bottled or barrelled water, or water from tanker truck.

Water is considered "Sustainable" if the households do not report problems with water supply more than a whole day.

Boiling drinking water

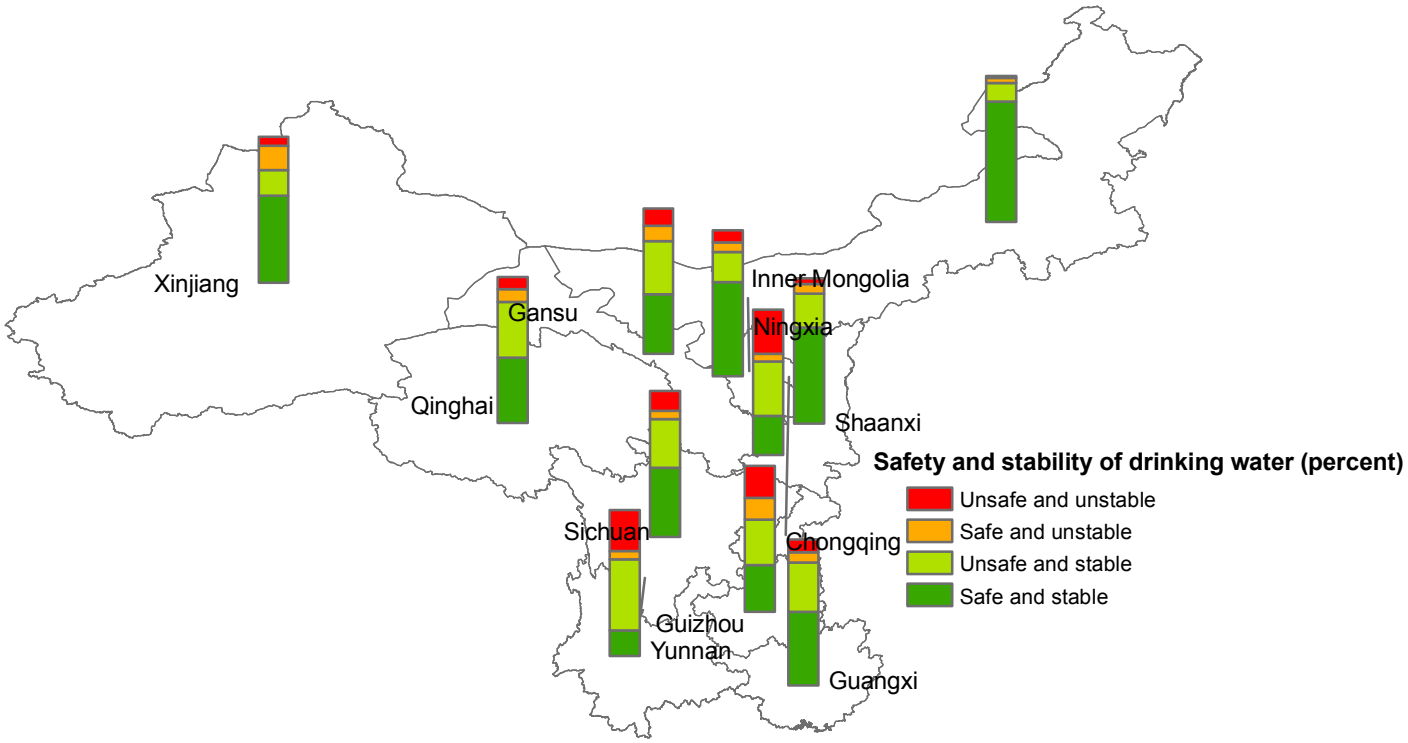


Safety and stability of drinking water (Urban)

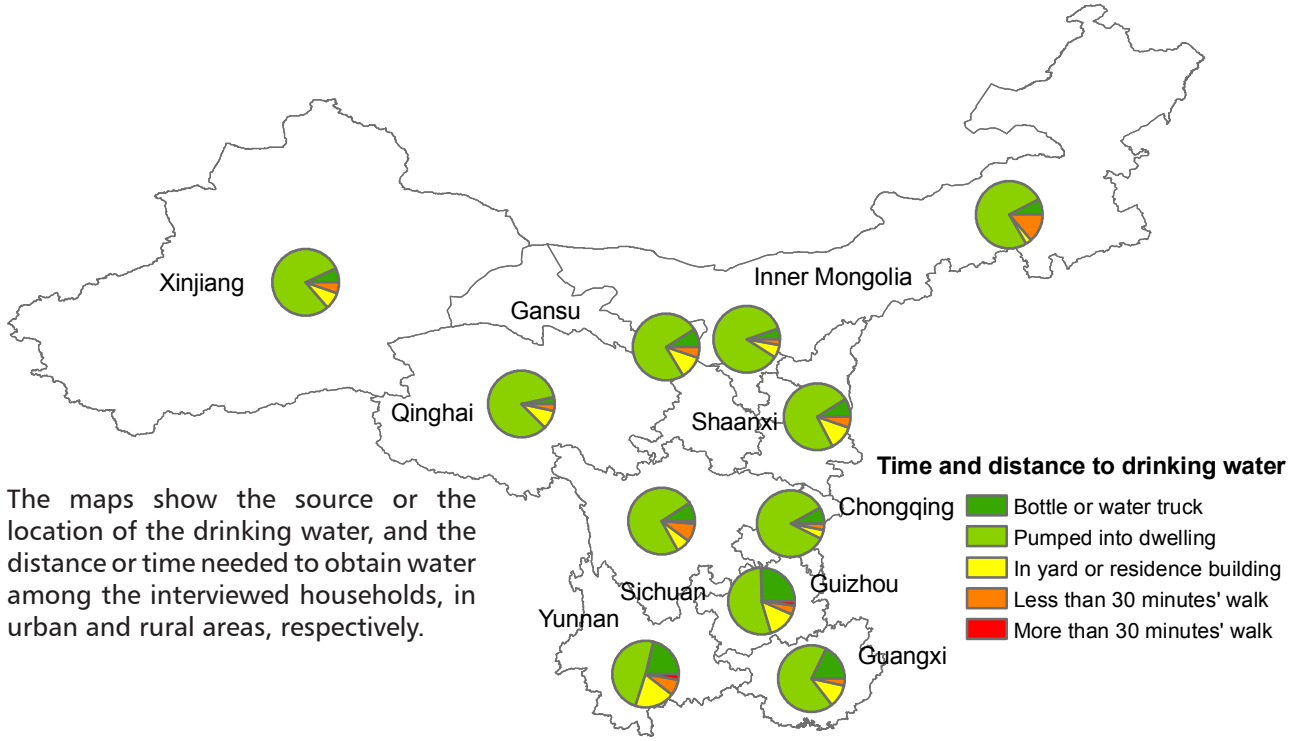


The maps show the safety and stability of drinking water in the interviewed households. About 89 percent of the interviewed households in urban areas have access to safe and stable drinking water, while 44 percent of households in rural area have safe and stable drinking water.

Safety and stability of drinking water (Rural)

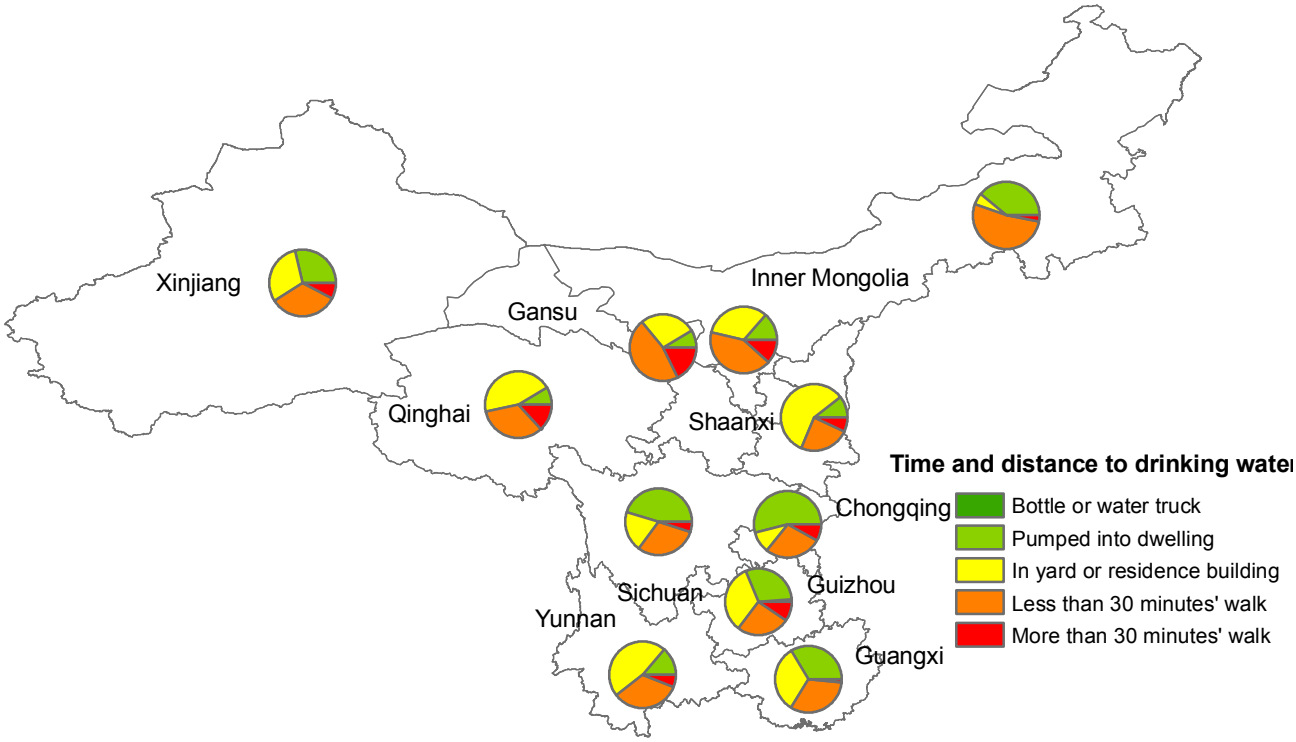


Time and distance to drinking water (Urban)

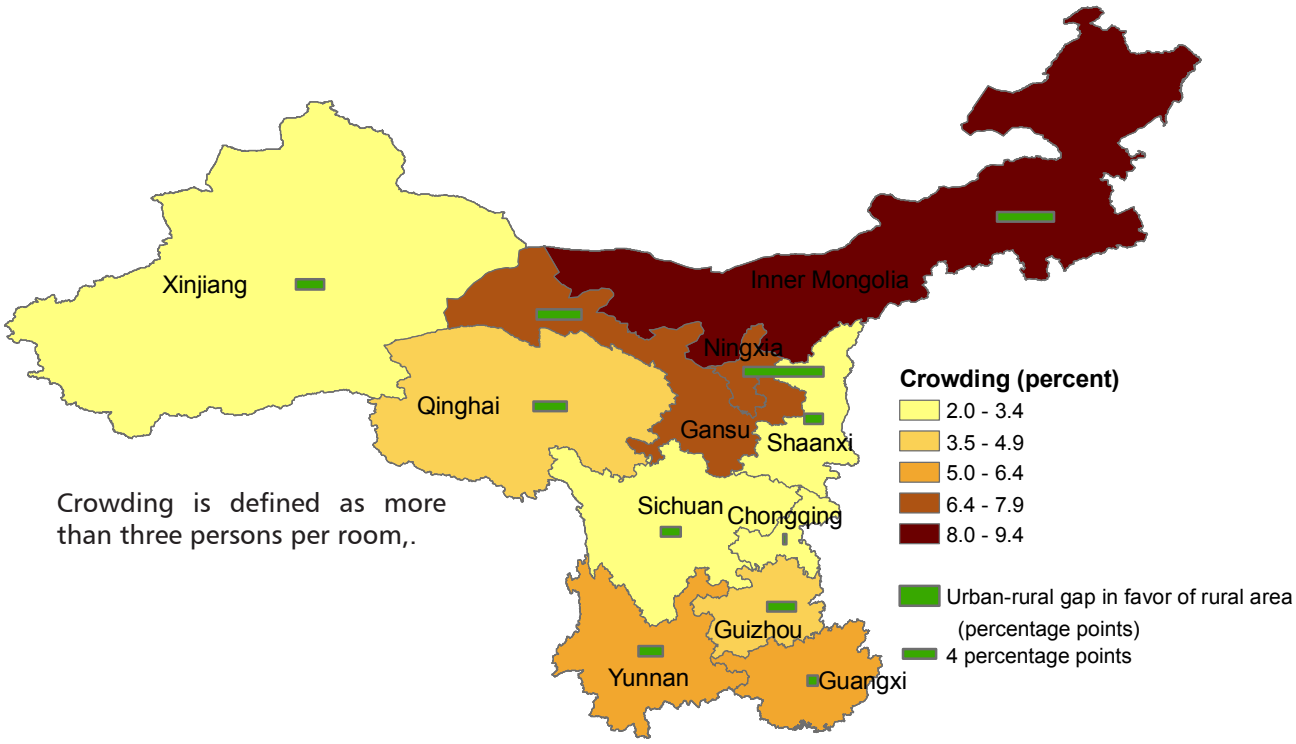


The maps show the source or the location of the drinking water, and the distance or time needed to obtain water among the interviewed households, in urban and rural areas, respectively.

Time and distance to drinking water (Rural)

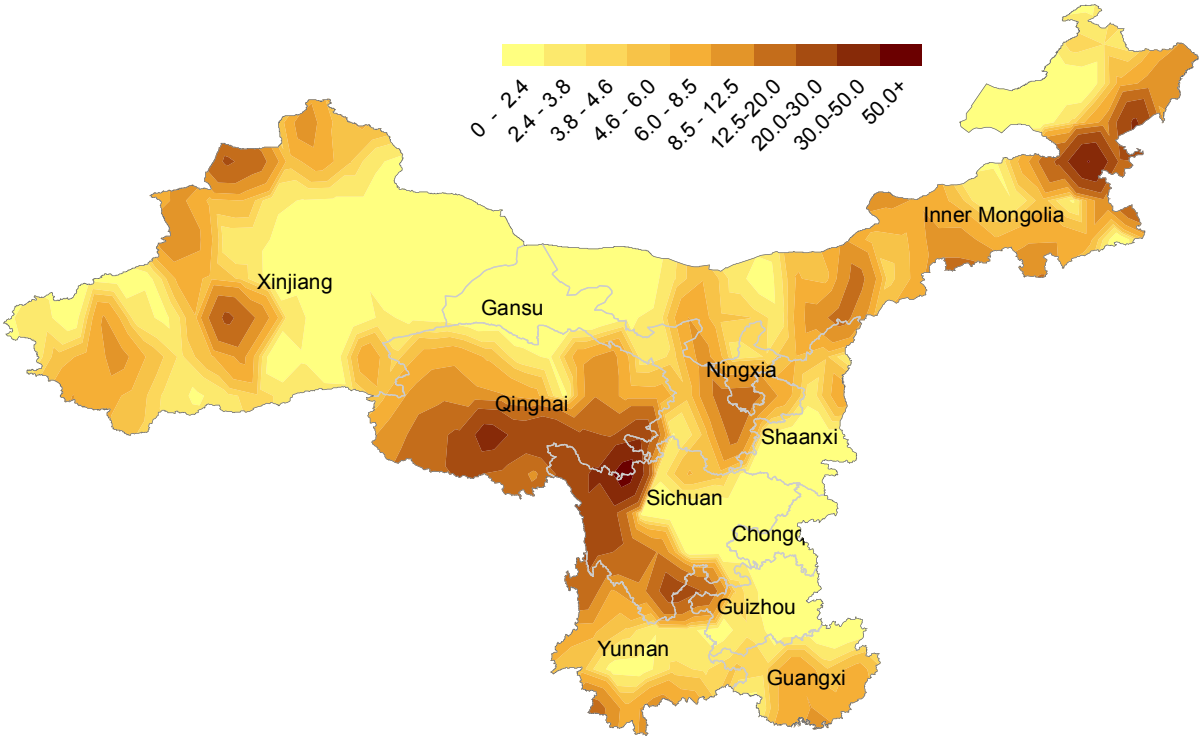


Crowding

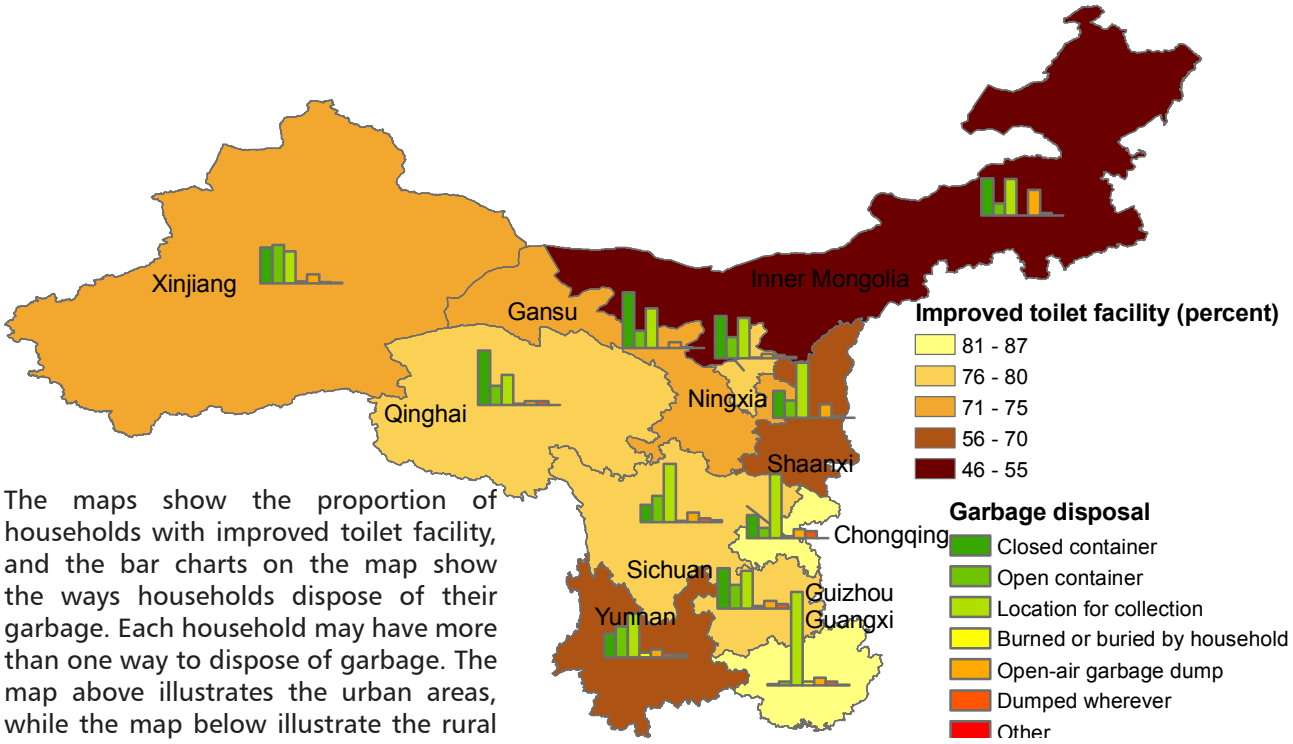


Crowding is defined as more than three persons per room,.

Crowding: another view

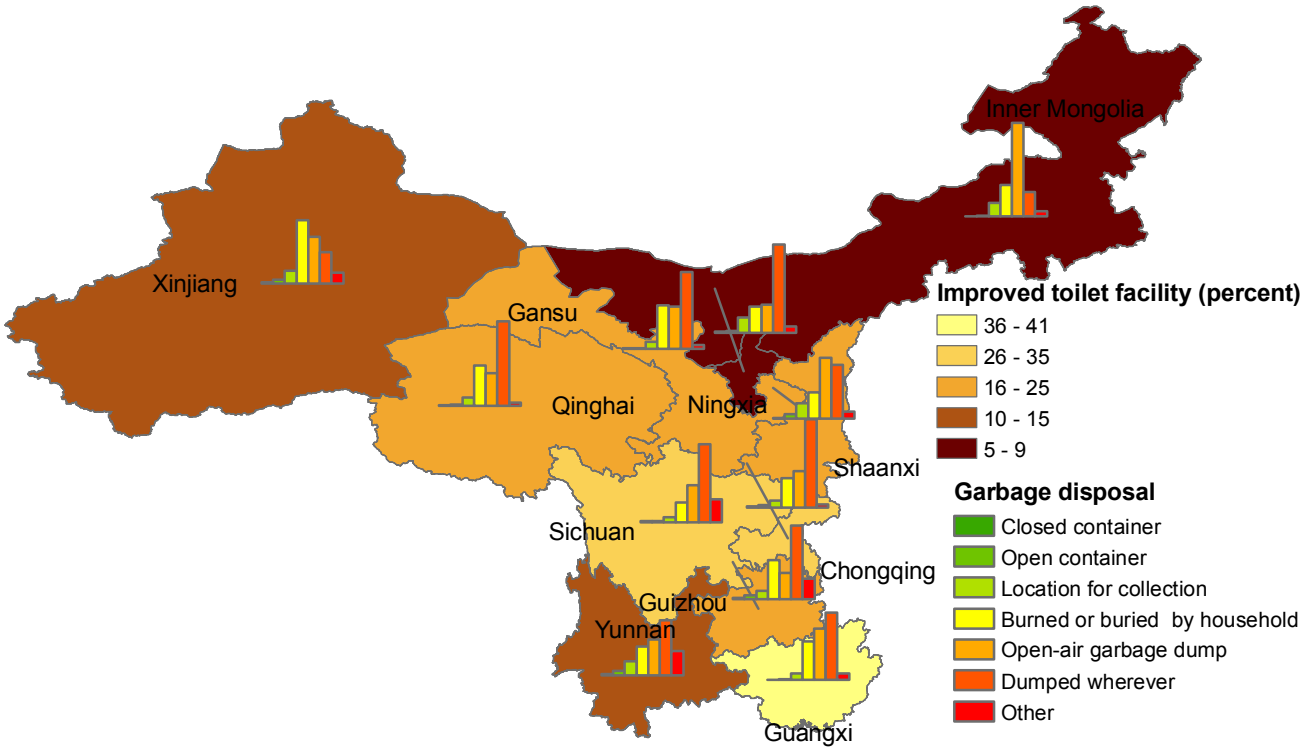


Improved toilet facility and garbage disposal (Urban)

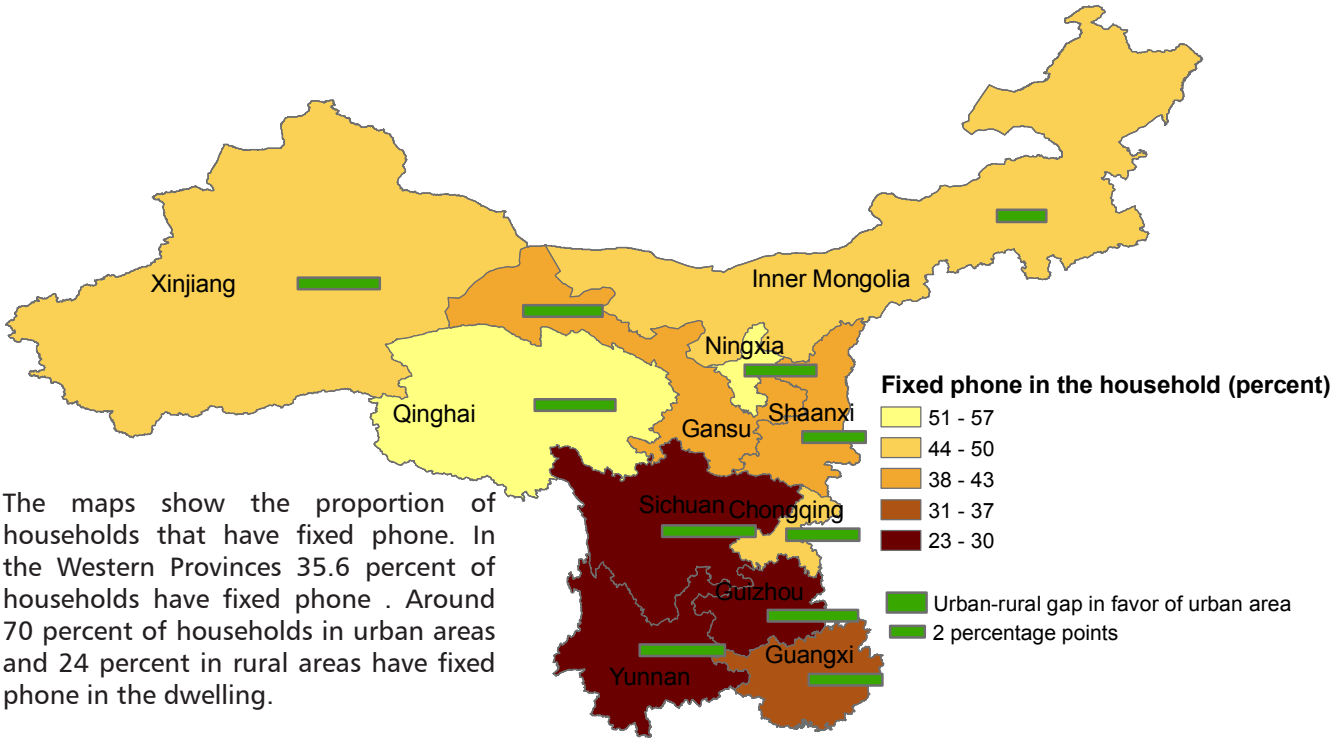


The maps show the proportion of households with improved toilet facility, and the bar charts on the map show the ways households dispose of their garbage. Each household may have more than one way to dispose of garbage. The map above illustrates the urban areas, while the map below illustrate the rural areas.

Improved toilet facility and garbage disposal (Rural)

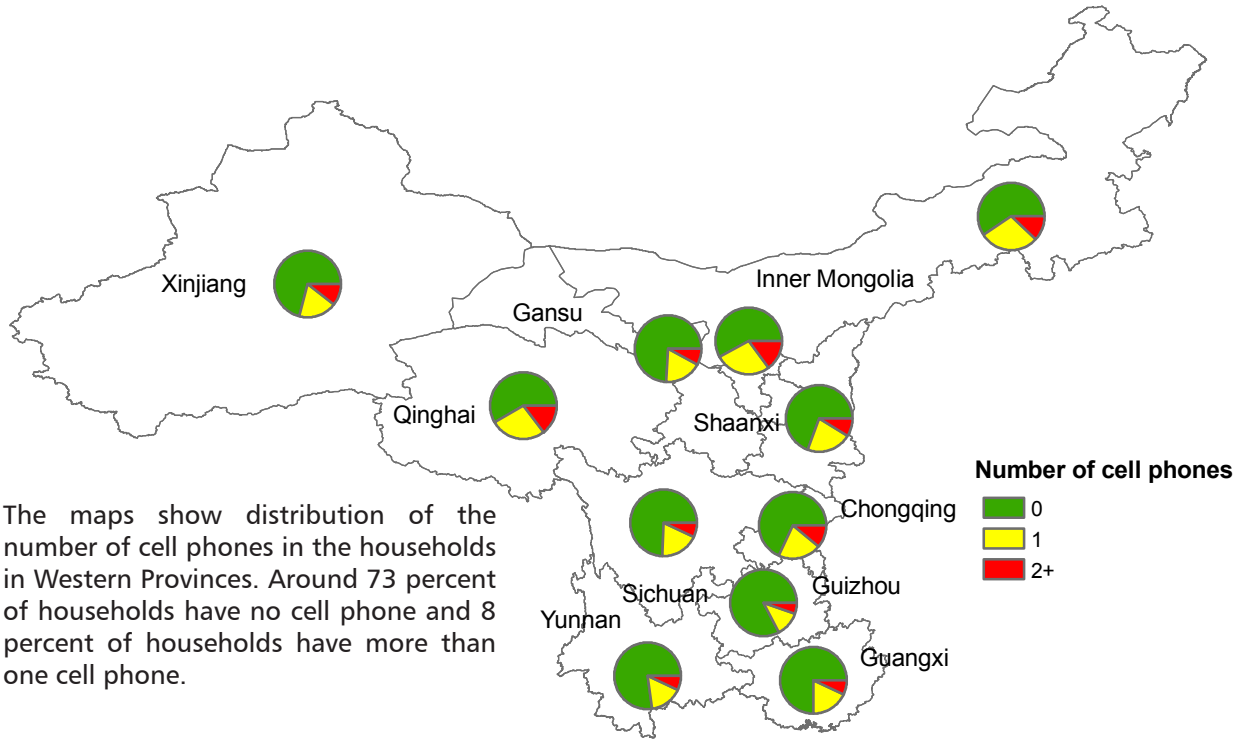


Fixed phone in the household



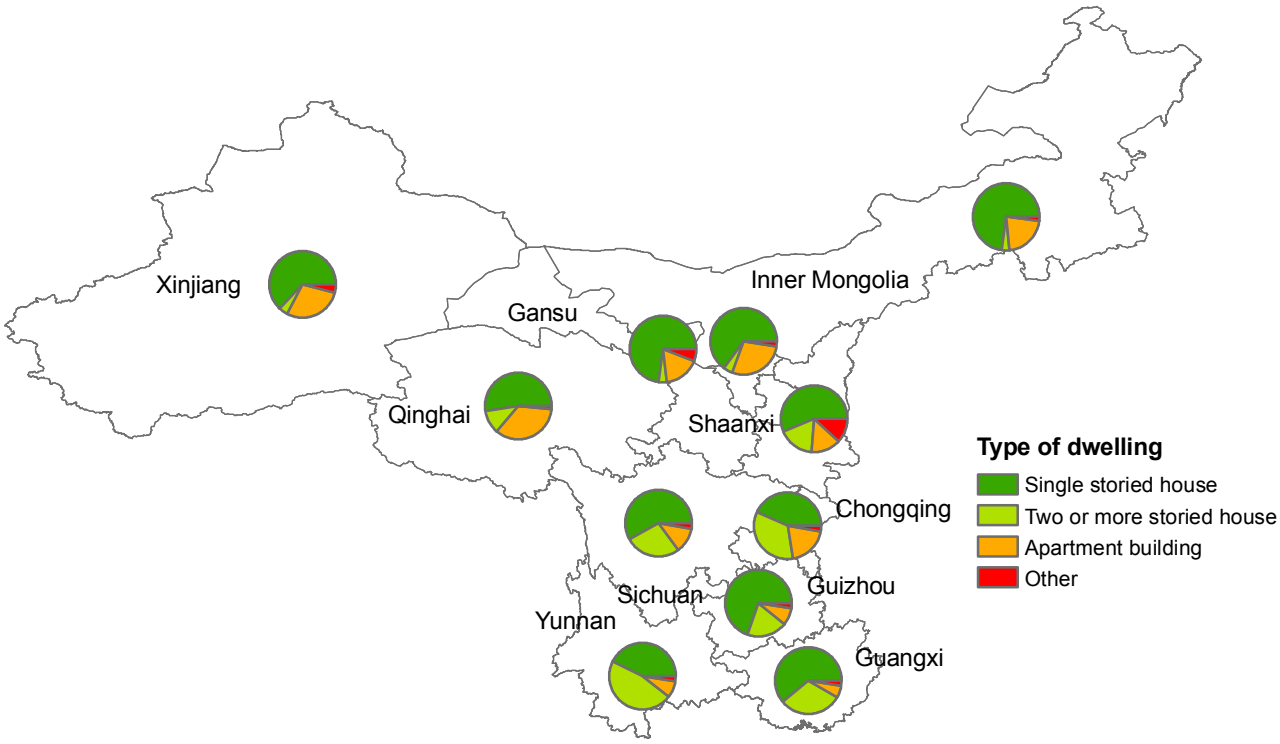
The maps show the proportion of households that have fixed phone. In the Western Provinces 35.6 percent of households have fixed phone . Around 70 percent of households in urban areas and 24 percent in rural areas have fixed phone in the dwelling.

Cell phone in the household

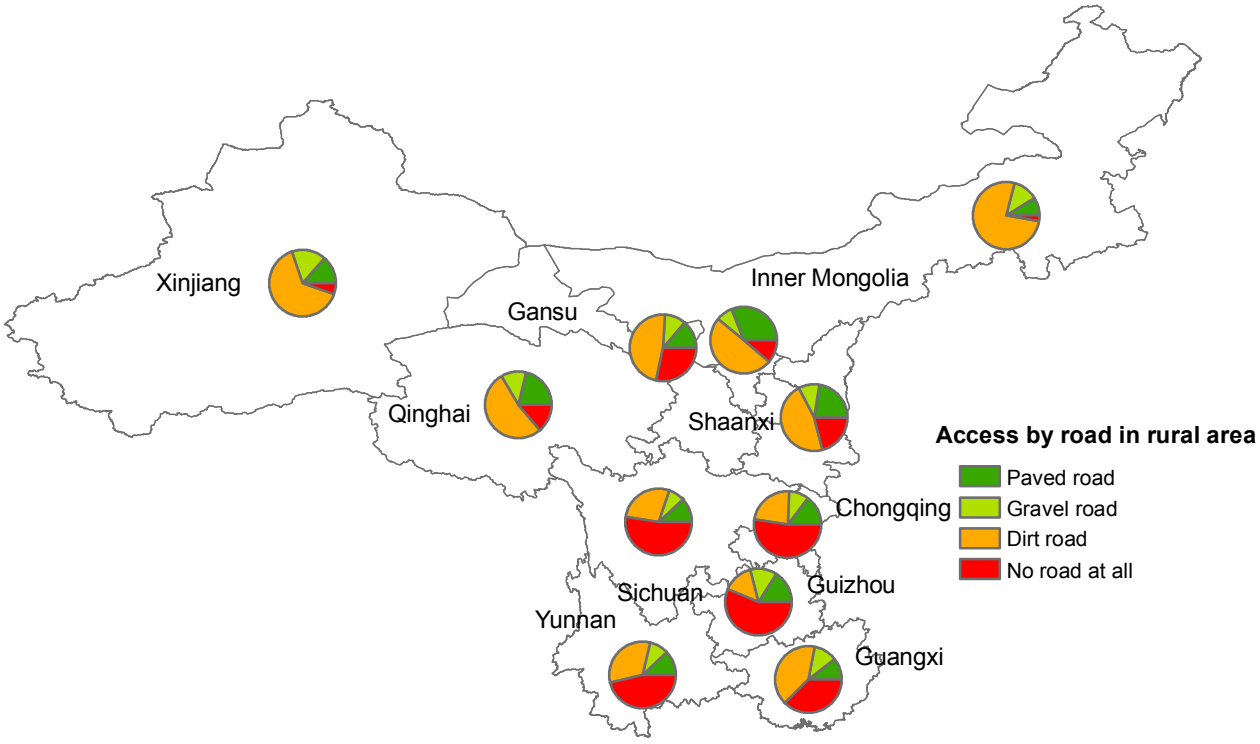


The maps show distribution of the number of cell phones in the households in Western Provinces. Around 73 percent of households have no cell phone and 8 percent of households have more than one cell phone.

Type of dwelling



Road access to households in rural areas



Income and wealth

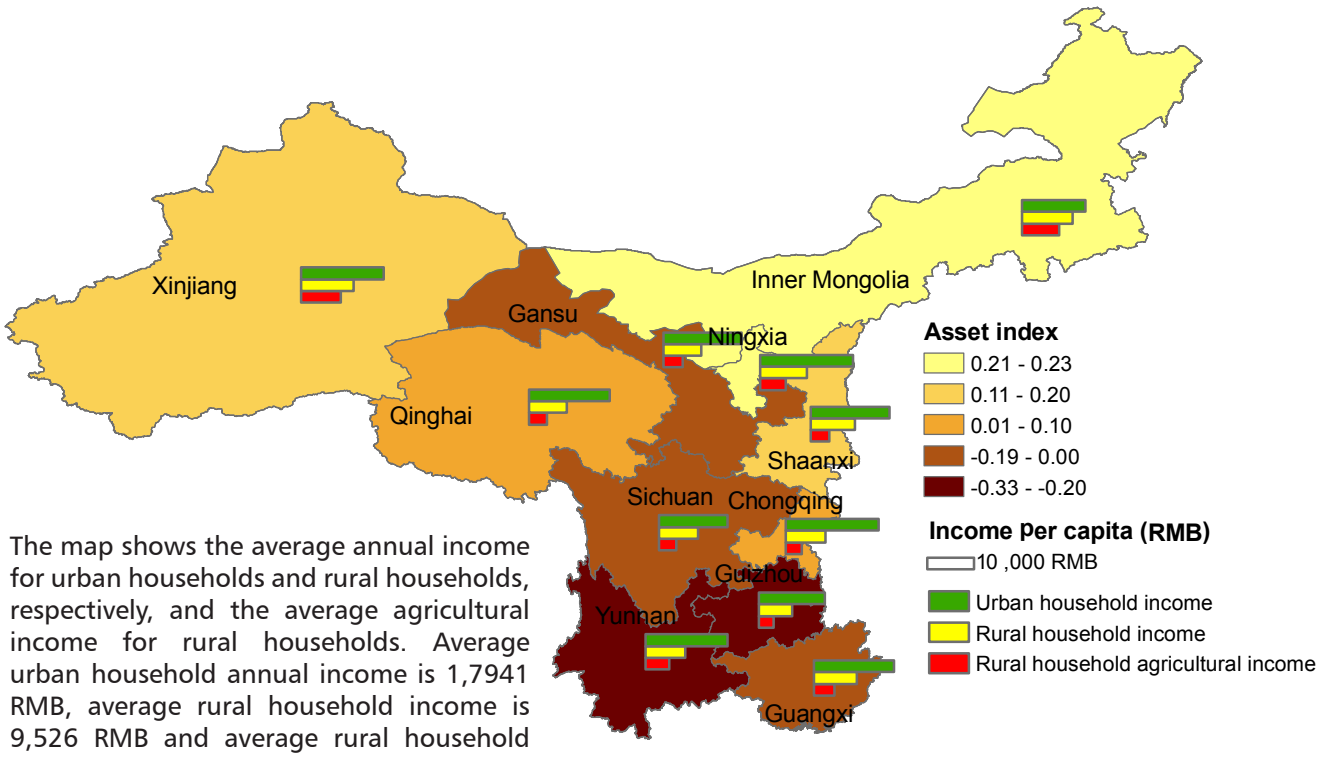
All interviewed households were asked about the exact figures of household or personal income from all kinds of sources for a one-year period preceding the interview. Annual household income presented in the map is calculated by summing up the households' income from all kinds of sources recorded in the survey.

Rural total household income and rural household agricultural income include the value of agricultural products consumed by the households.

The households were also asked to report their possession of various household goods, and their replies were used to construct an asset index together with other asset indicators related with housing, water and sanitary facilities.

An asset index is a good proxy for long-run household wealth. Principal components analysis (PCA) was used to derive the weights in the index for each asset indicato The index has been constructed so that its mean for all of the households in the Western Provinces is 0.

Annual household income and asset index



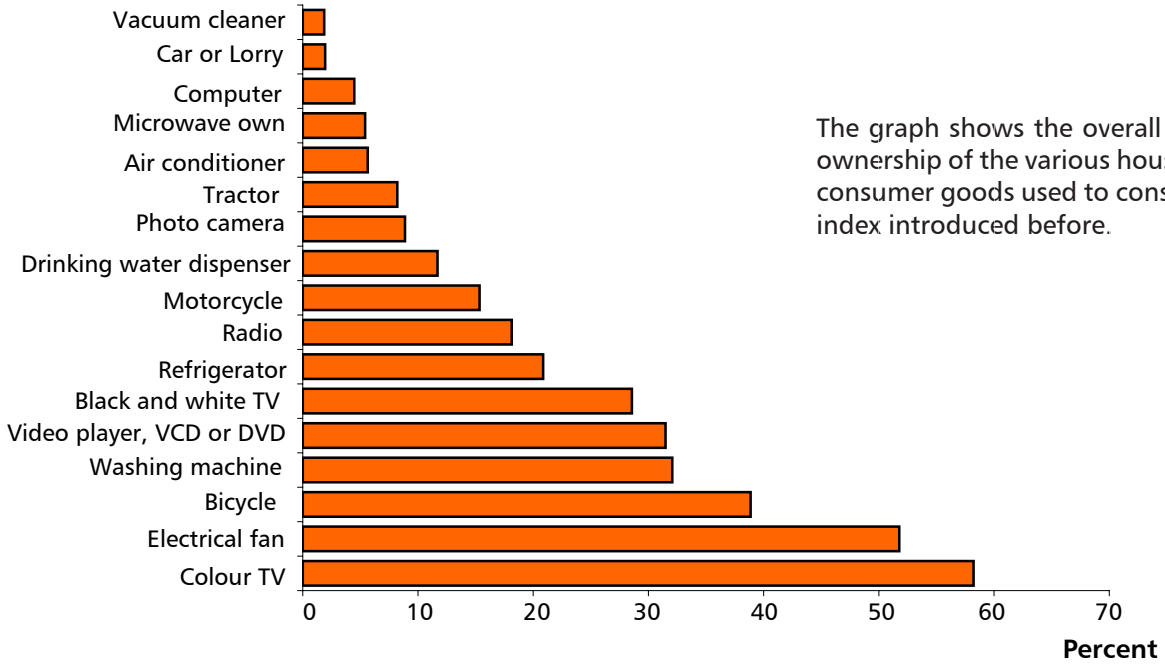
The map shows the average annual income for urban households and rural households, respectively, and the average agricultural income for rural households. Average urban household annual income is 1,7941 RMB, average rural household income is 9,526 RMB and average rural household agricultural income is 4,760 RMB. Agricultural income and total household annual income for rural households include the value of agricultural products consumed by the households.

Asset index: another view

The map below shows the distribution of the asset index in Western China in greater detail. The map has been constructed as described in the introduction.

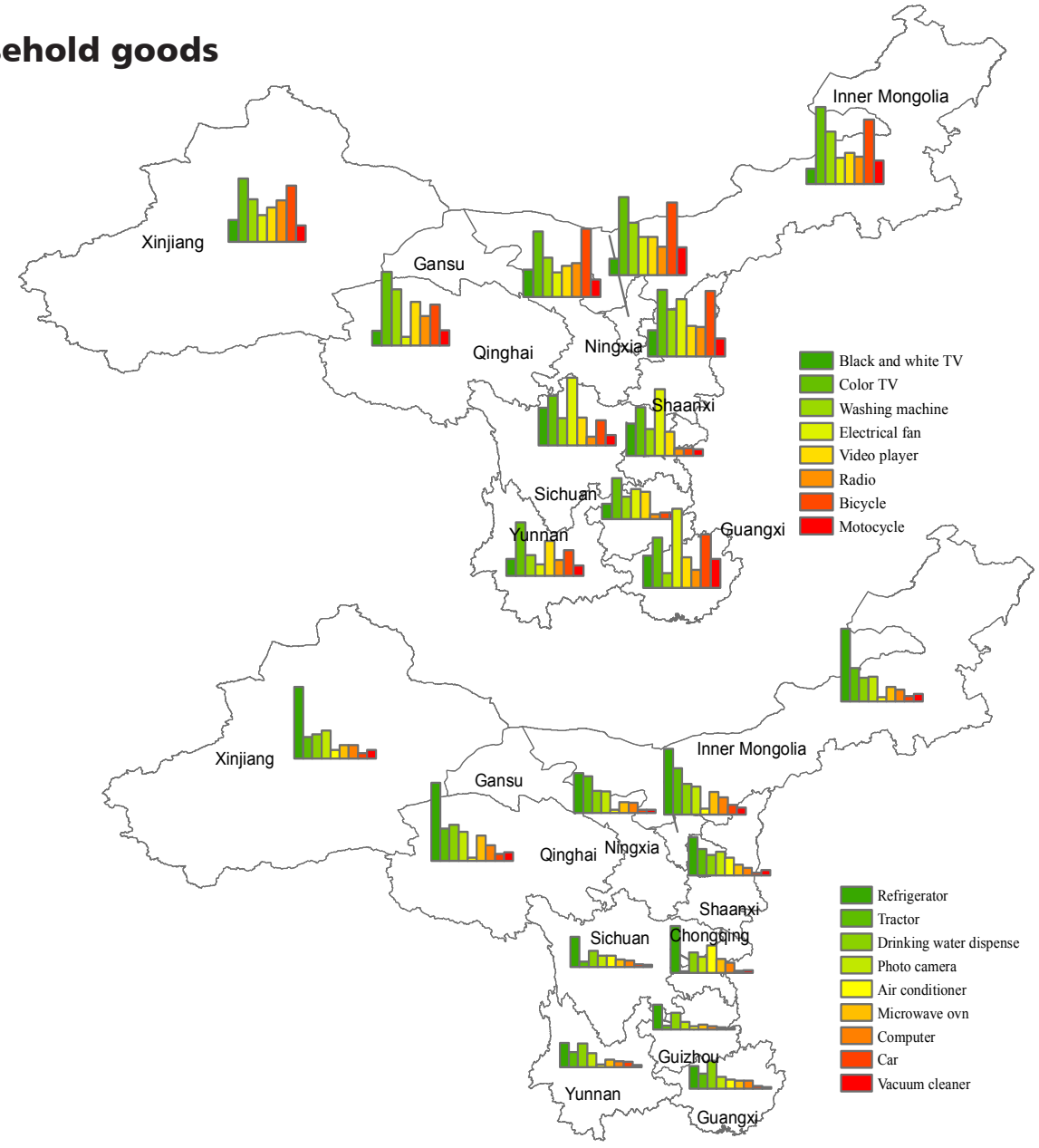
The asset index is much higher in the North Western Provinces than that in the South Western Provinces. The gap between urban and rural areas is large. The asset index is 1.300 in urban areas and -0.424 in rural areas.

Ownership of household goods



The graph shows the overall percentage of ownership of the various household durable consumer goods used to construct the asset index introduced before.

Household goods

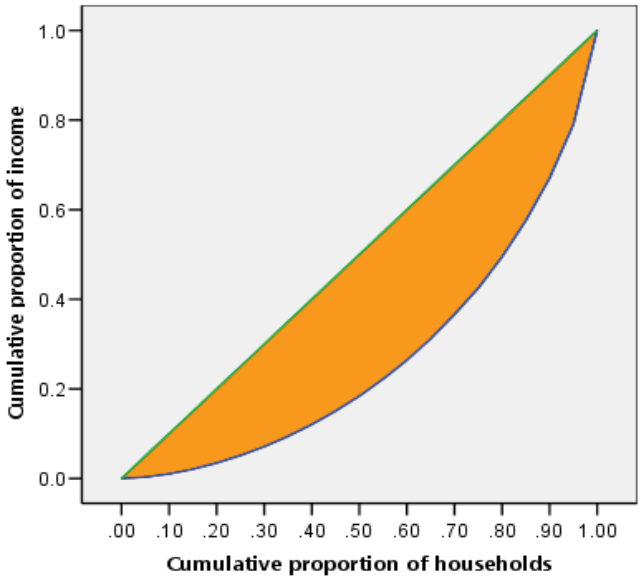


Inequality

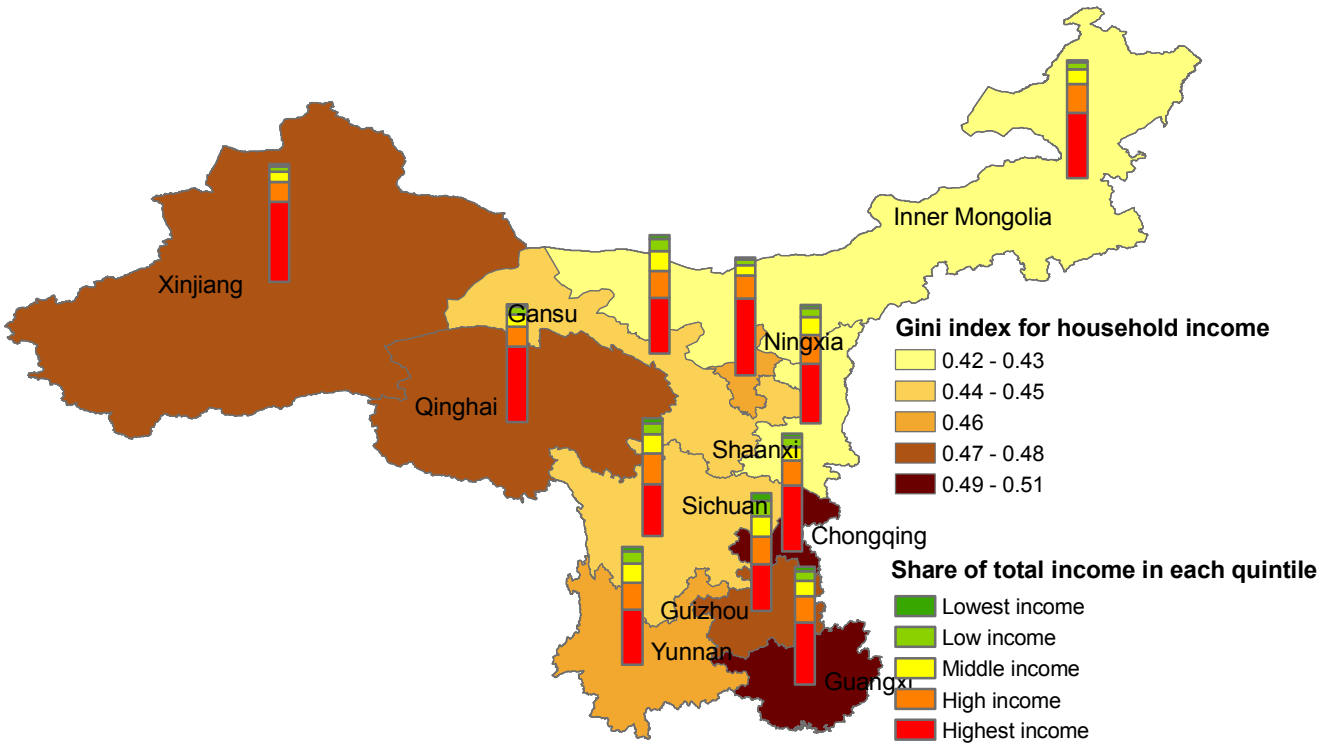
Income inequality in Western China is high. The Gini-coefficient, which is 1 if one household has all the income in the country, and 0 if income is equally distributed among households, was 0.47 in Western China. The coefficient has been calculated based on household income.

The graph shows the Lorenz-curve, which illustrates the cumulative proportion of households against the cumulative proportion of income earned by those households in the one-year period prior to the interview. The larger the coloured area, the larger the inequality.

The map below shows the Gini-coefficient in each provinces and share of total household income in each quintile.



Gini index and income share

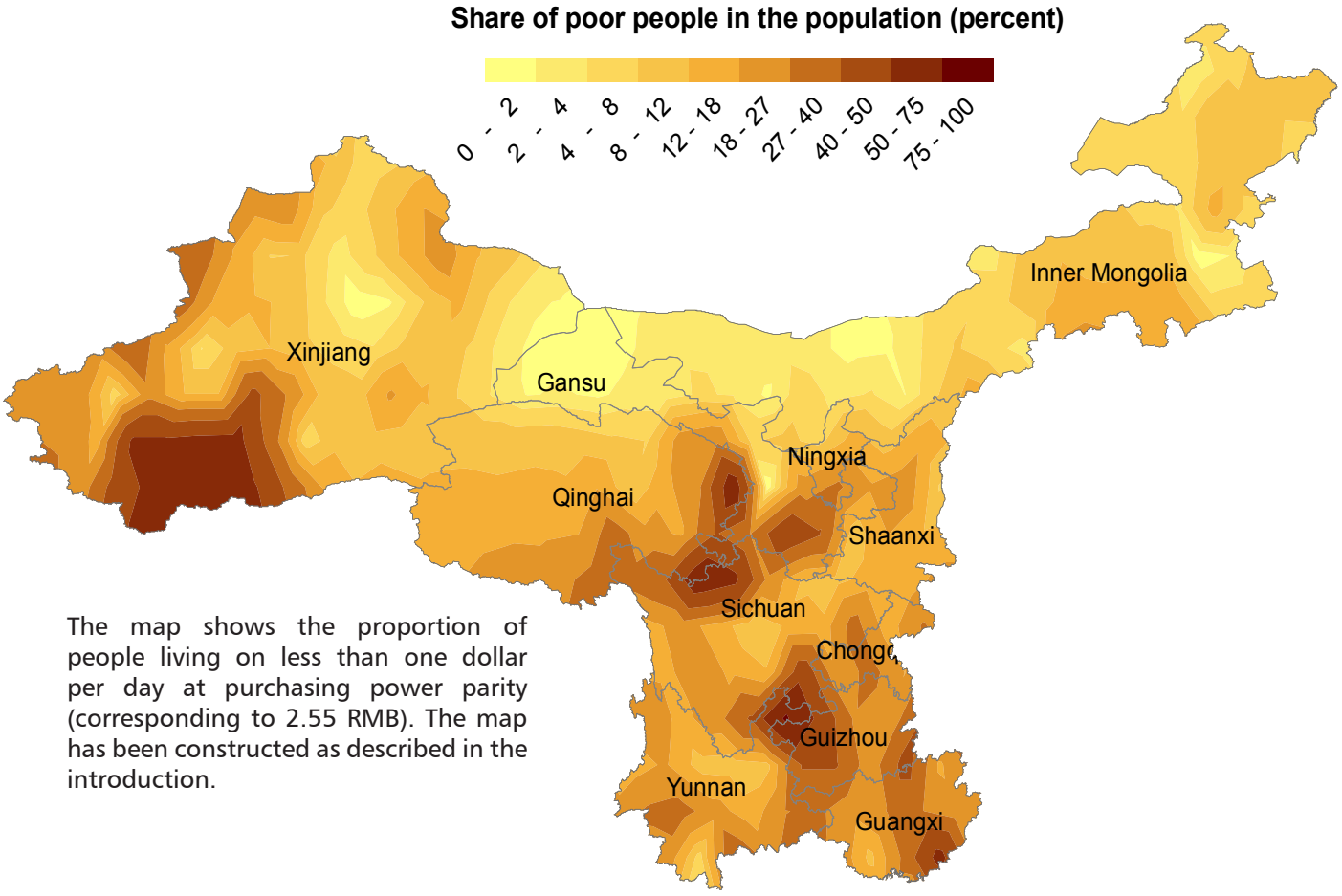


Millenium Development Goals

Goal 1: Eradicate extreme poverty and hunger

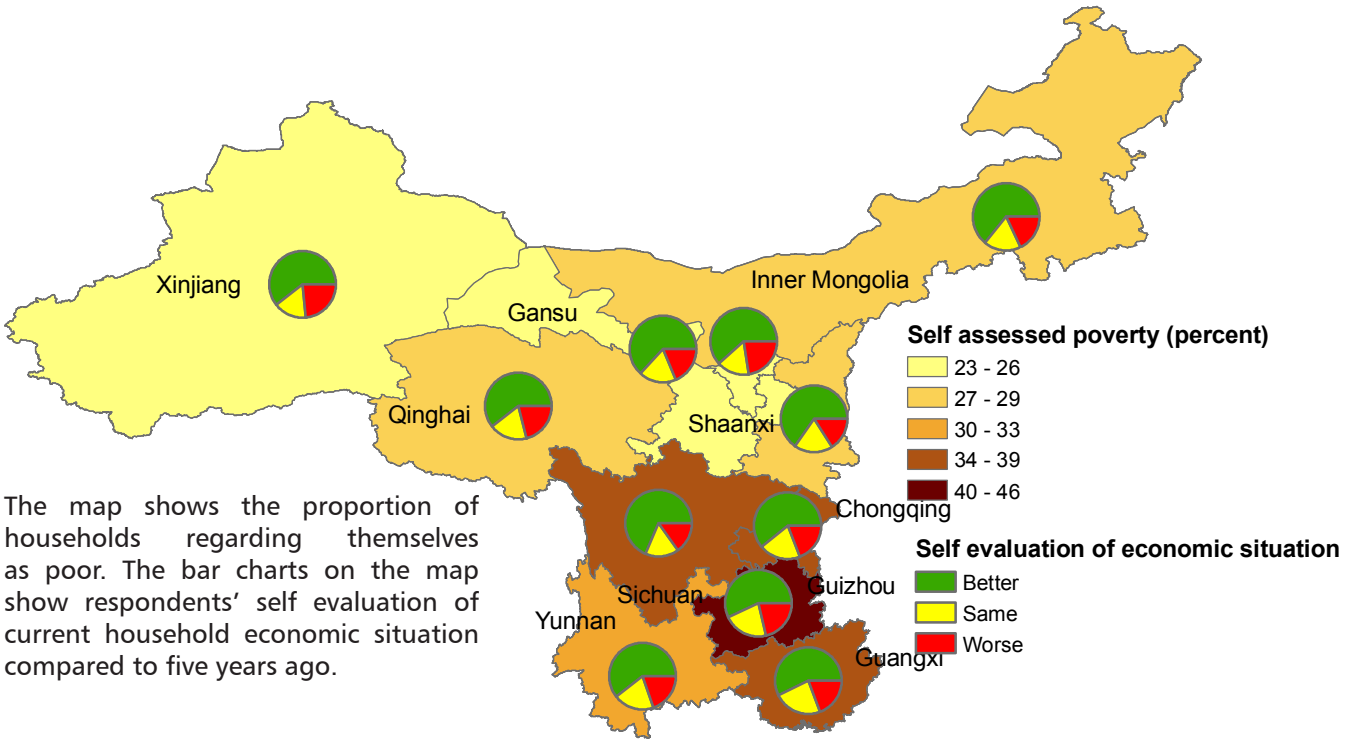
Target 1: Reduce by half the proportion of people living on less than a dollar per day

Indicator 1: Proportion of population below $1 (PPP) per day	Indicator 2: Poverty gap ratio, $1 per day	Indicator 3: Share of poorest quintile in national income or consumption
Total: 17.8%	Total: 7.0%	
Urban area: 5.9%	Urban area: 2.9%	Share: 4.3%
Rural area: 21.8%	Rural area: 8.4%	



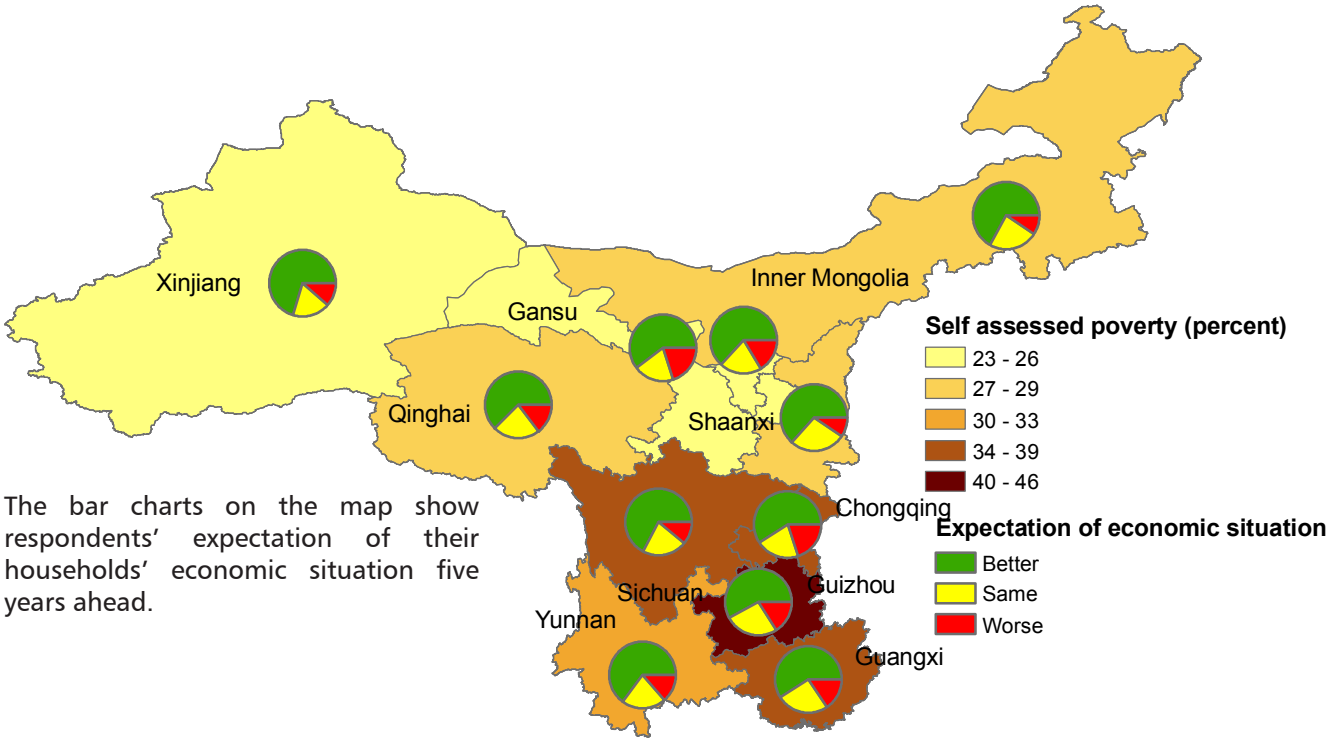
The map shows the proportion of people living on less than one dollar per day at purchasing power parity (corresponding to 2.55 RMB). The map has been constructed as described in the introduction.

Self assessment of economic situation



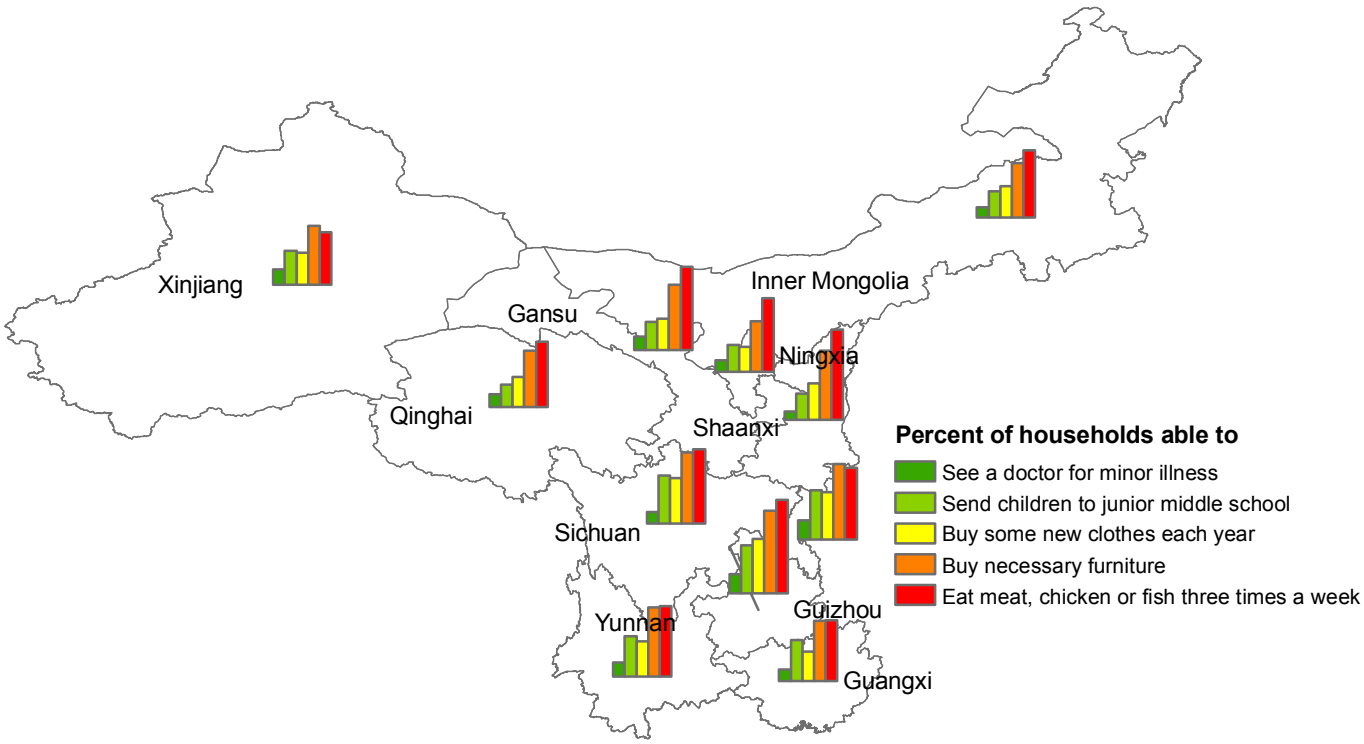
The map shows the proportion of households regarding themselves as poor. The bar charts on the map show respondents' self evaluation of current household economic situation compared to five years ago.

Expectation of future economic situation

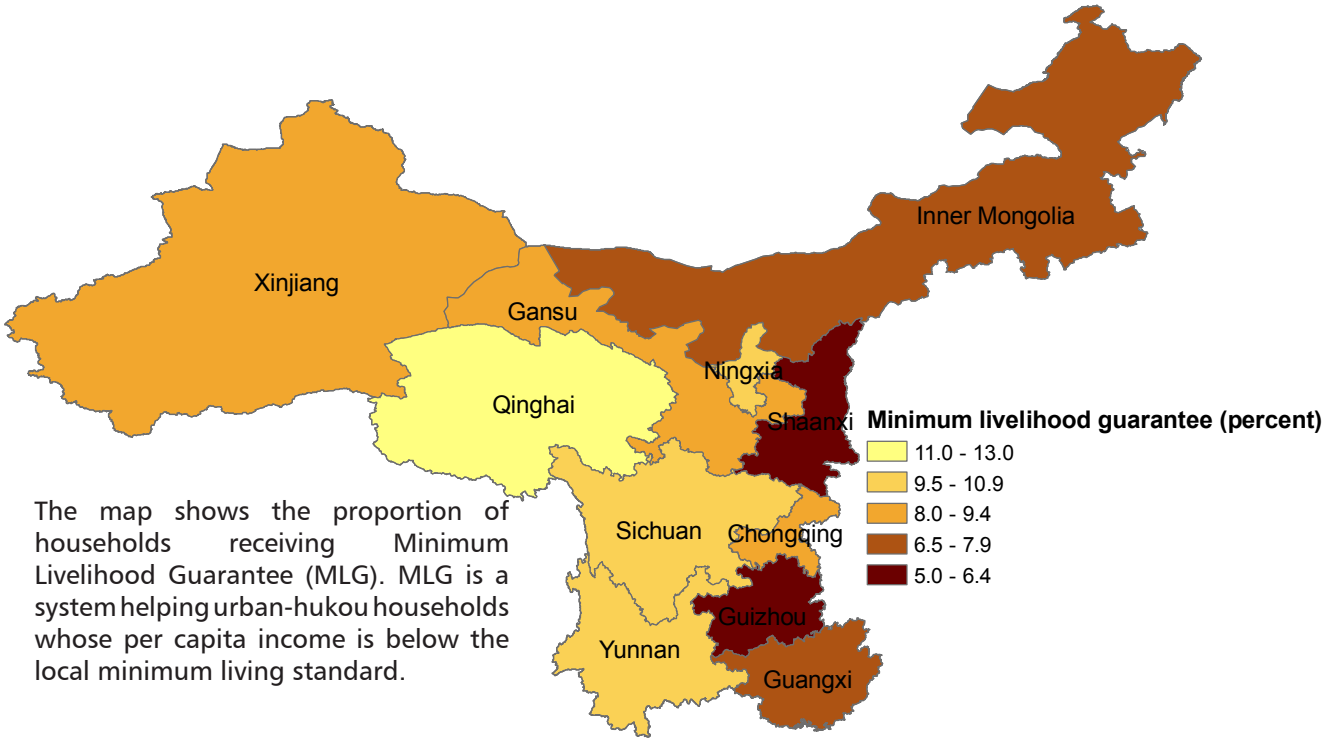


The bar charts on the map show respondents' expectation of their households' economic situation five years ahead.

Ability to afford some basic activities

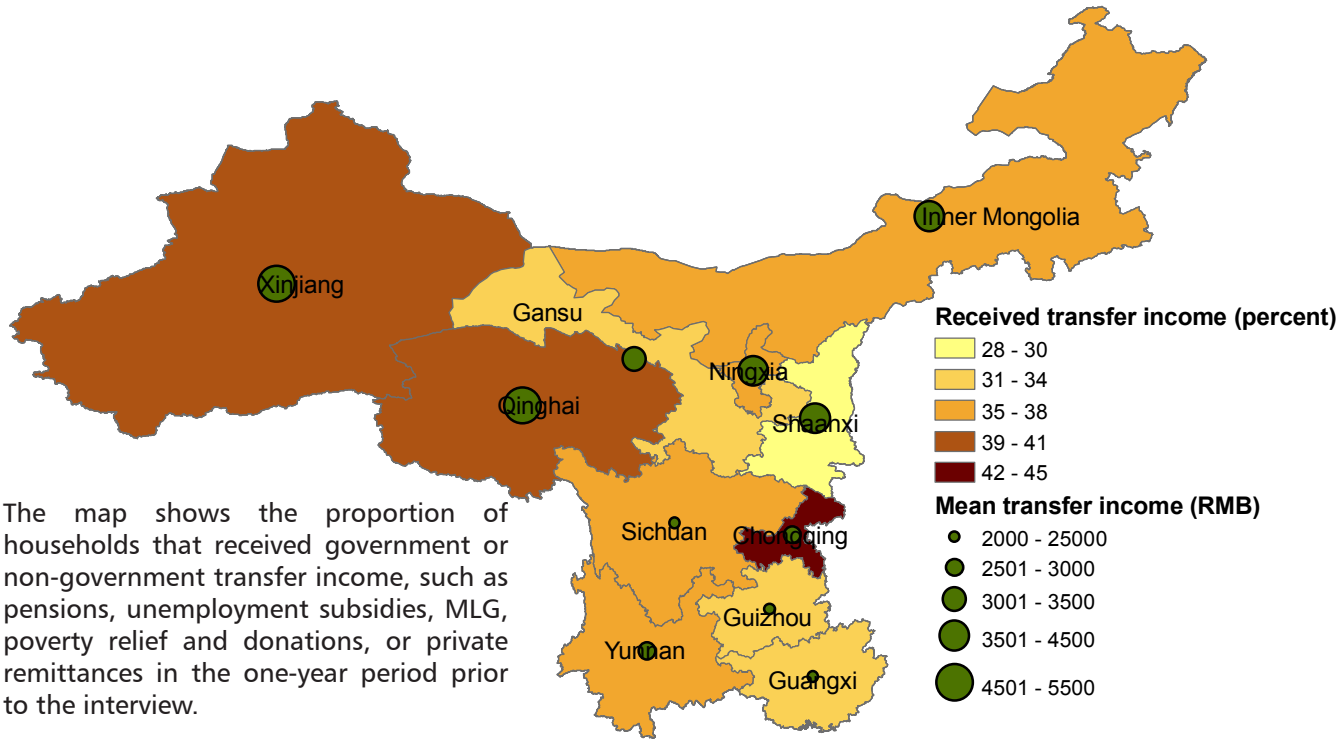


Received Minimum livelihood guarantee (MLG)



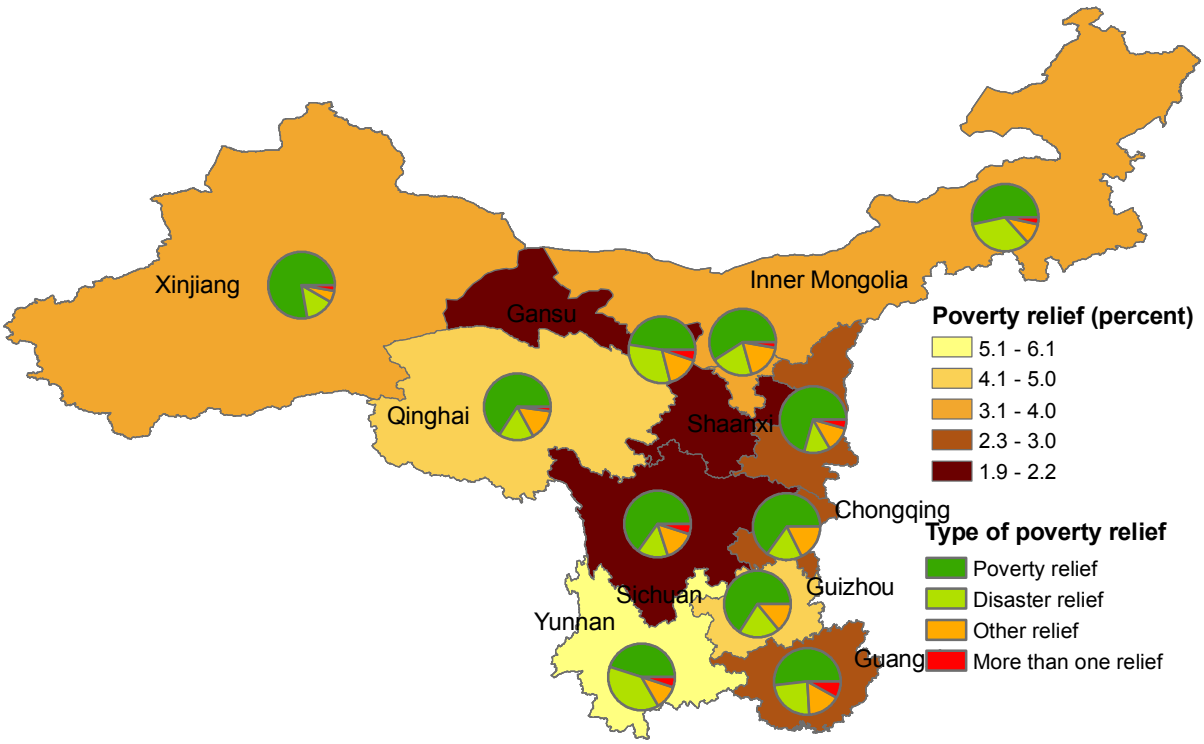
The map shows the proportion of households receiving Minimum Livelihood Guarantee (MLG). MLG is a system helping urban-hukou households whose per capita income is below the local minimum living standard.

Transfer income



The map shows the proportion of households that received government or non-government transfer income, such as pensions, unemployment subsidies, MLG, poverty relief and donations, or private remittances in the one-year period prior to the interview.

Poverty relief to households



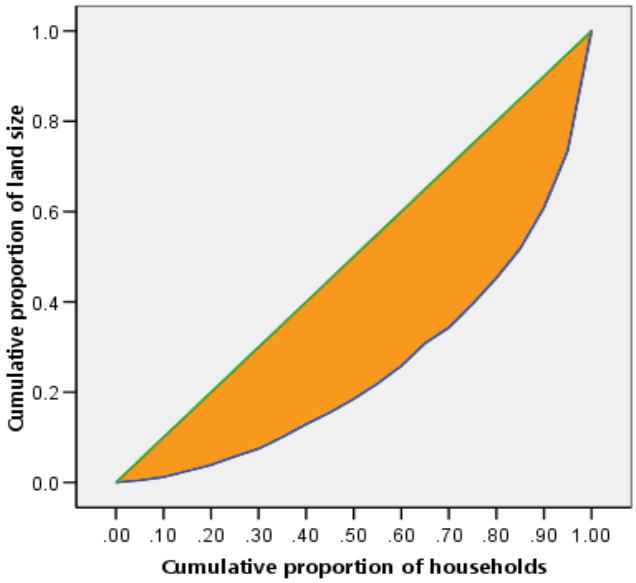
Agriculture

Land distribution

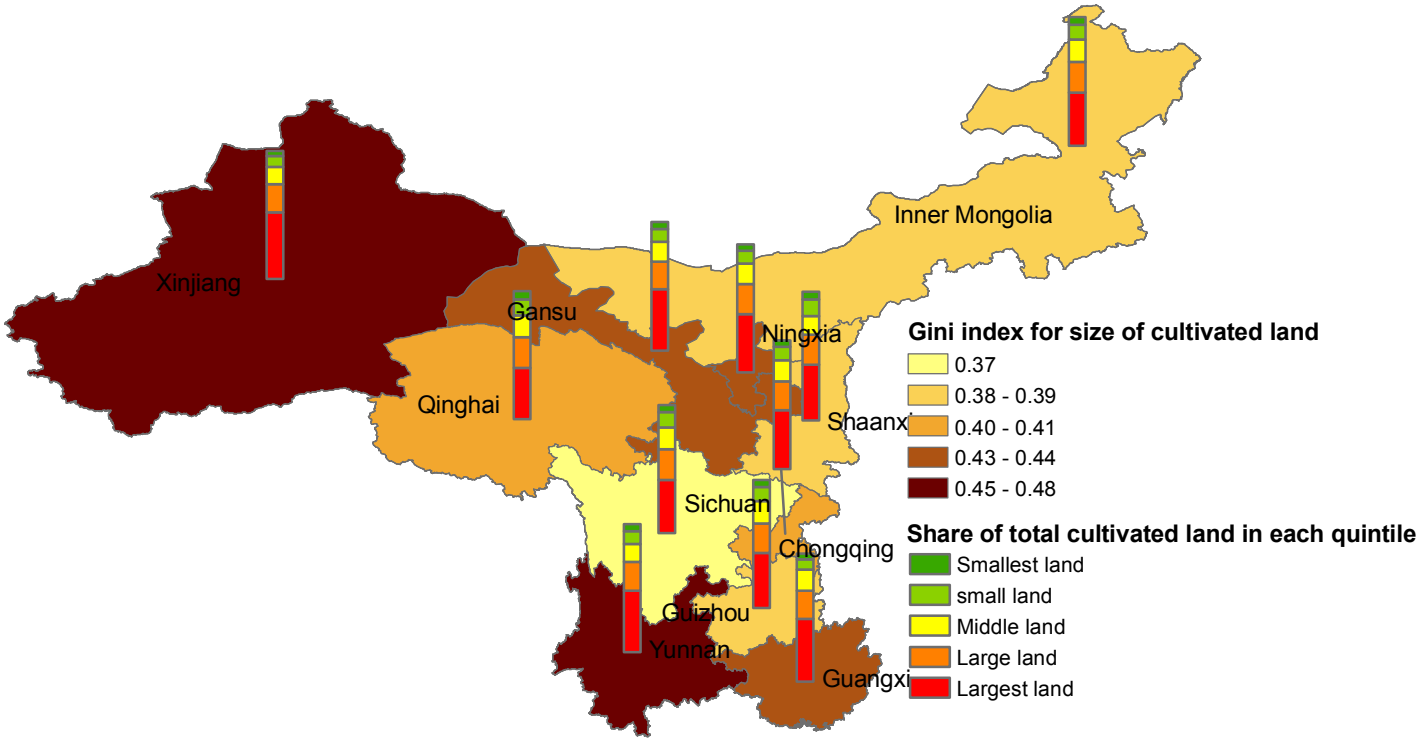
Land is distributed unequally in the Western Provinces in China. The Gini-coefficient was 0.495, when calculated based on total size of land cultivated by households. Total size of cultivated land included the land rented and cultivated by the households.

The graph on the right shows the lorenz-curve, which illustrates the cumulative proportion of households against the cumulative proportion of total area of land cultivated by the households. The larger the coloured area, the larger the inequality of land distribution.

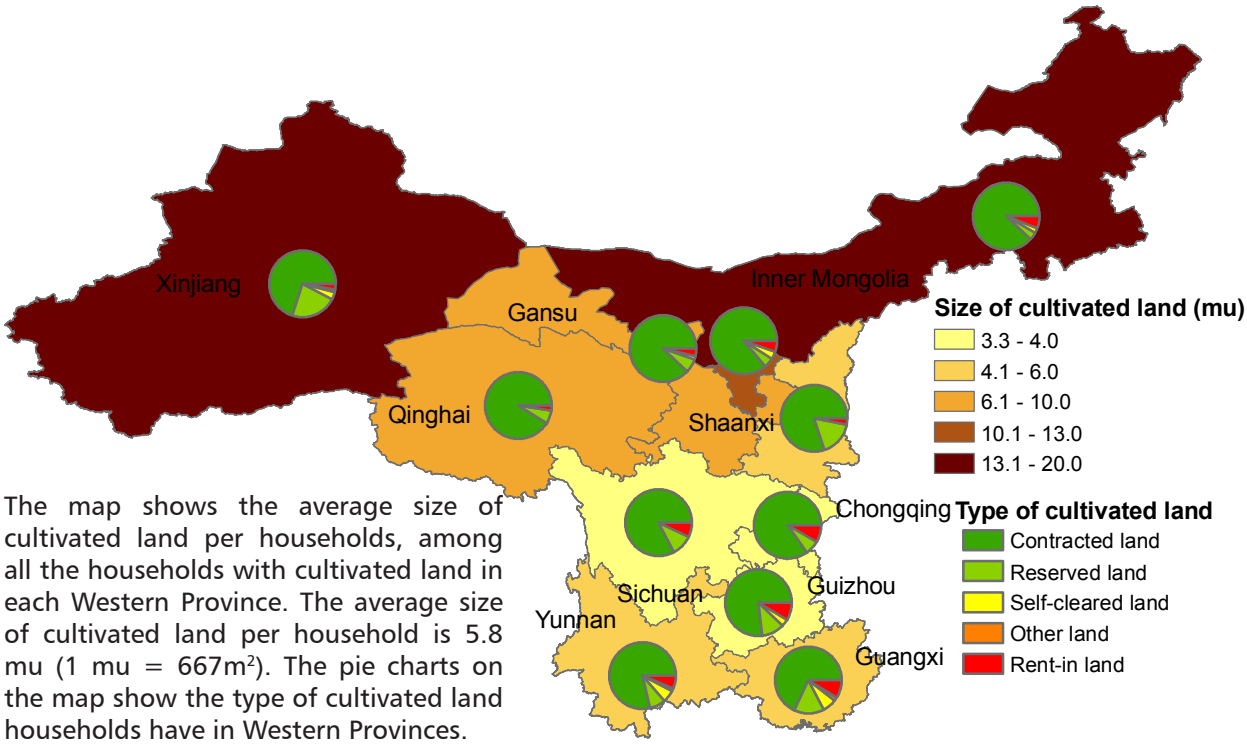
The map below shows the Gini-coefficient of cultivated land for each province, and the share of total cultivated land in each quintile. Households in the lowest quintile cultivated 5.8% of total land, while households in the highest quintile cultivated more than 40% of total land.



Gini-coefficient and share of cultivated land

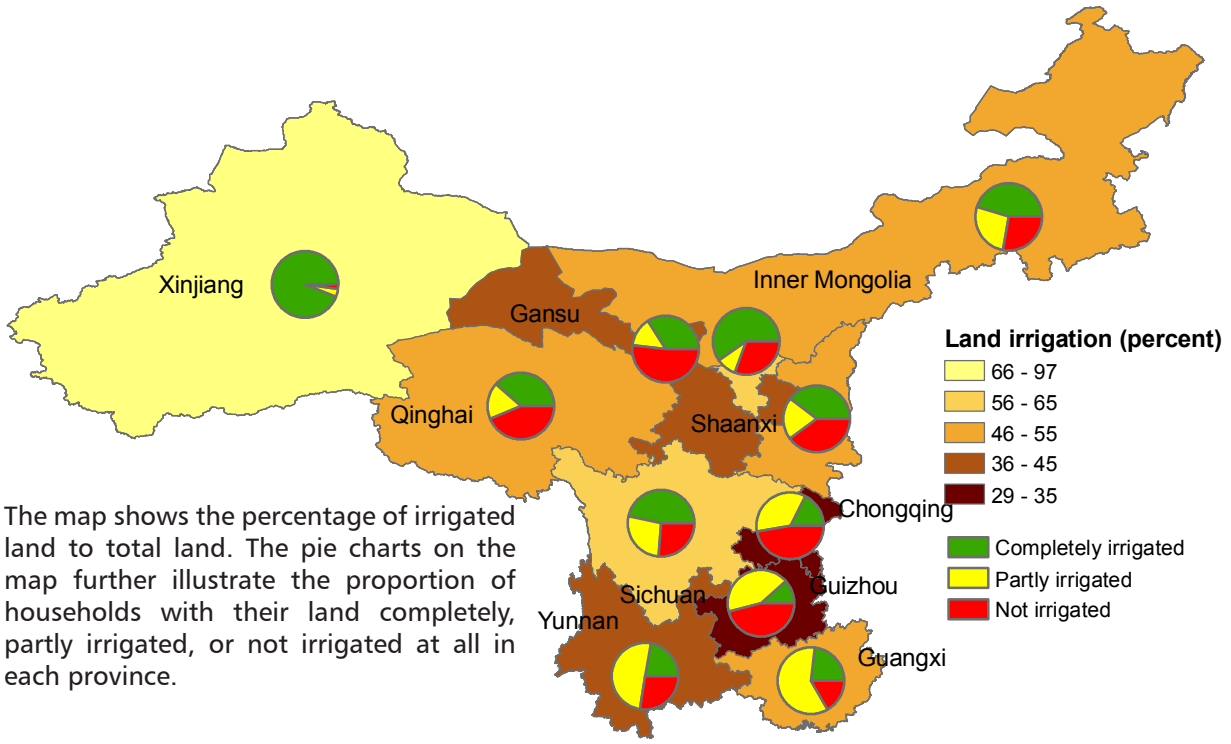


Size and type of cultivated land



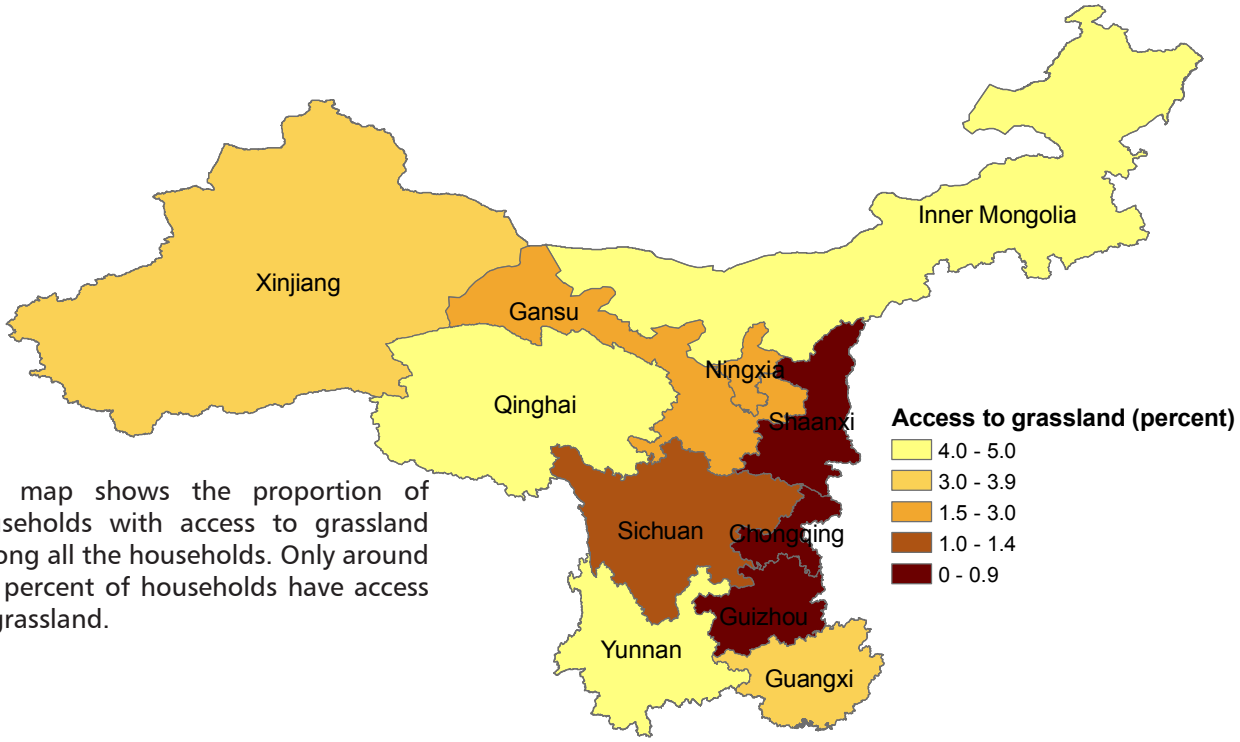
The map shows the average size of cultivated land per households, among all the households with cultivated land in each Western Province. The average size of cultivated land per household is 5.8 mu (1 mu = 667m^2). The pie charts on the map show the type of cultivated land households have in Western Provinces.

Irrigation of land



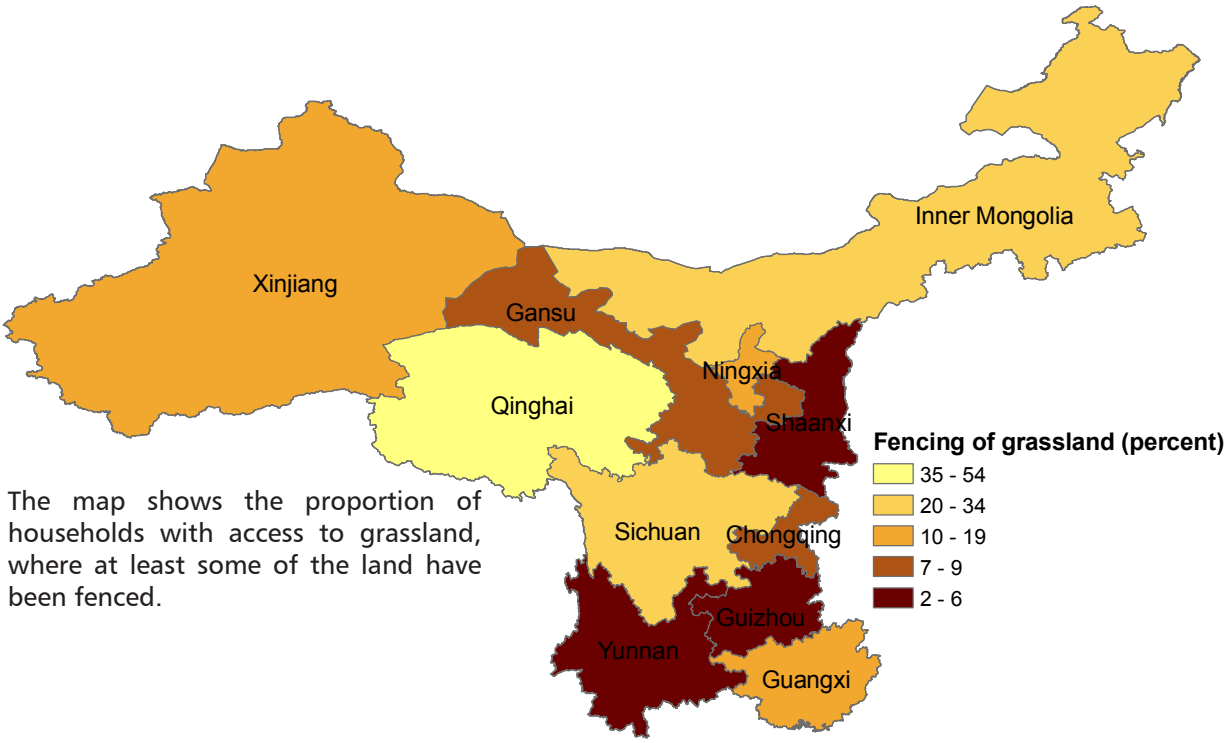
The map shows the percentage of irrigated land to total land. The pie charts on the map further illustrate the proportion of households with their land completely, partly irrigated, or not irrigated at all in each province.

Access to grassland



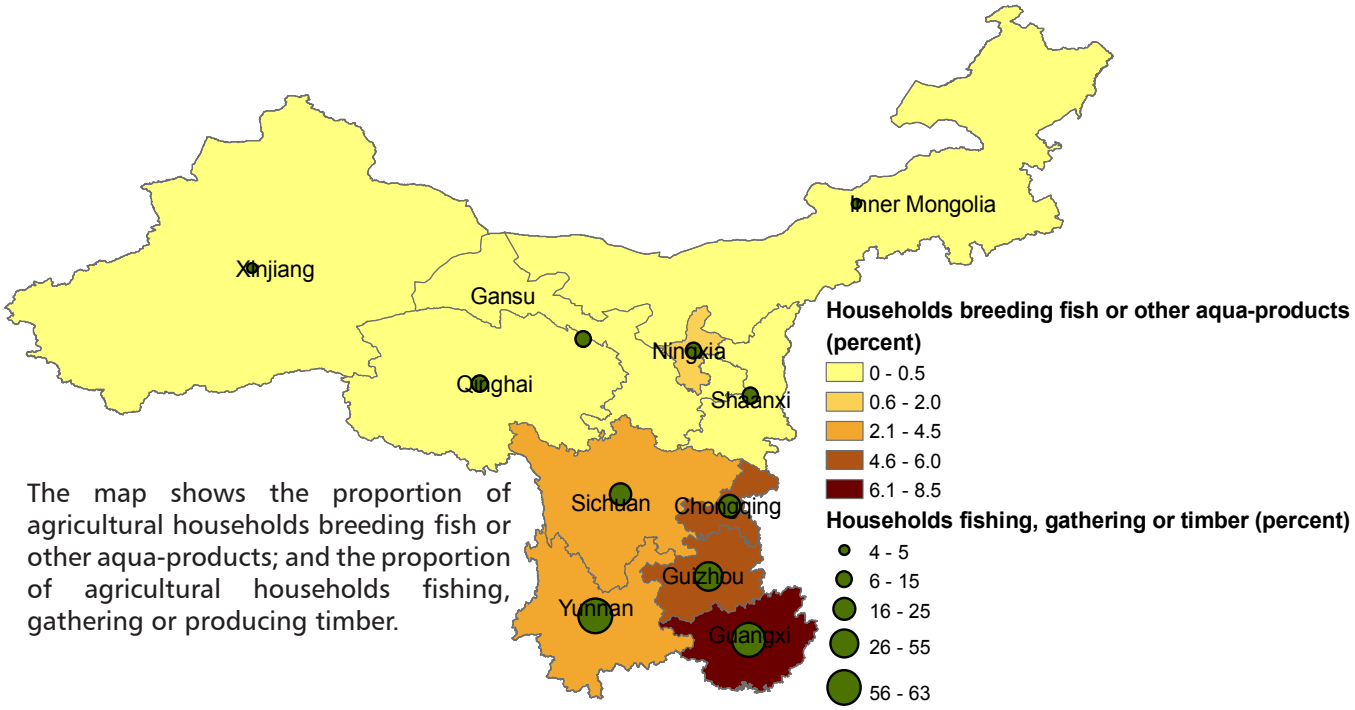
The map shows the proportion of households with access to grassland among all the households. Only around 2.1 percent of households have access to grassland.

Fencing of grassland



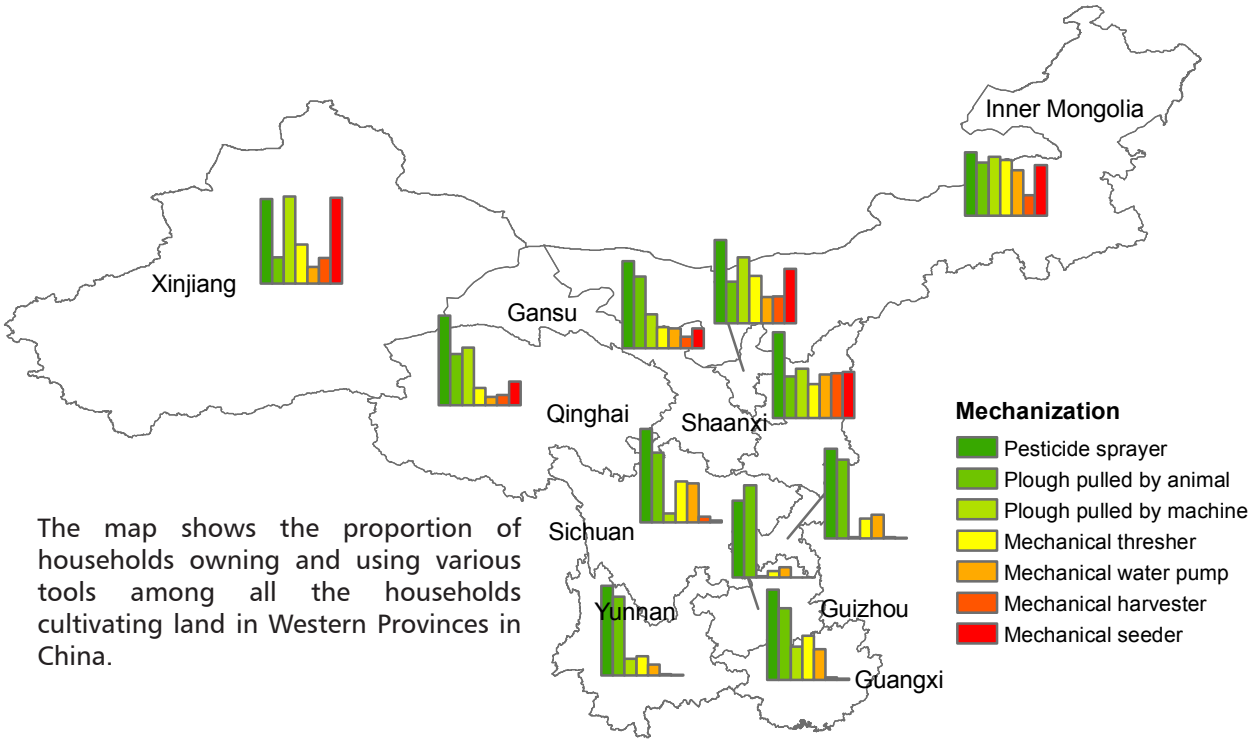
The map shows the proportion of households with access to grassland, where at least some of the land have been fenced.

Households conducting other agricultural activities



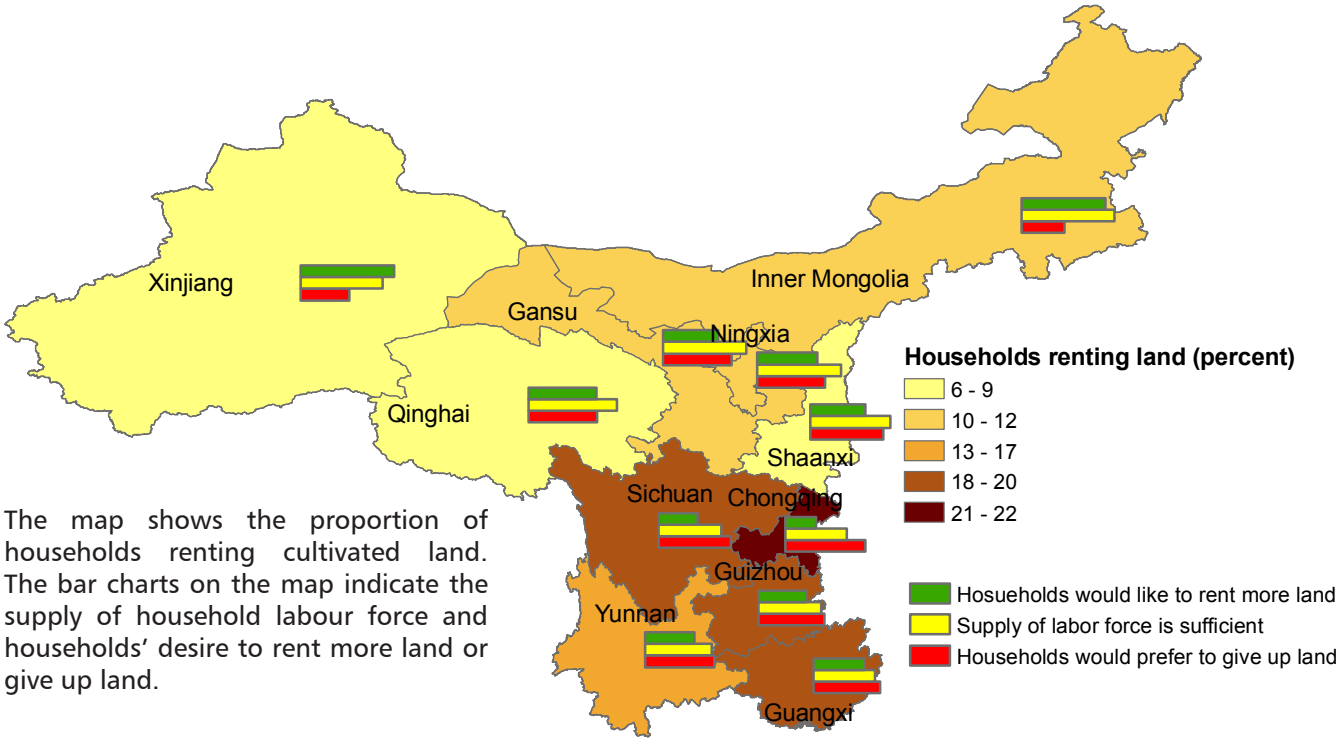
The map shows the proportion of agricultural households breeding fish or other aqua-products; and the proportion of agricultural households fishing, gathering or producing timber.

Mechanization



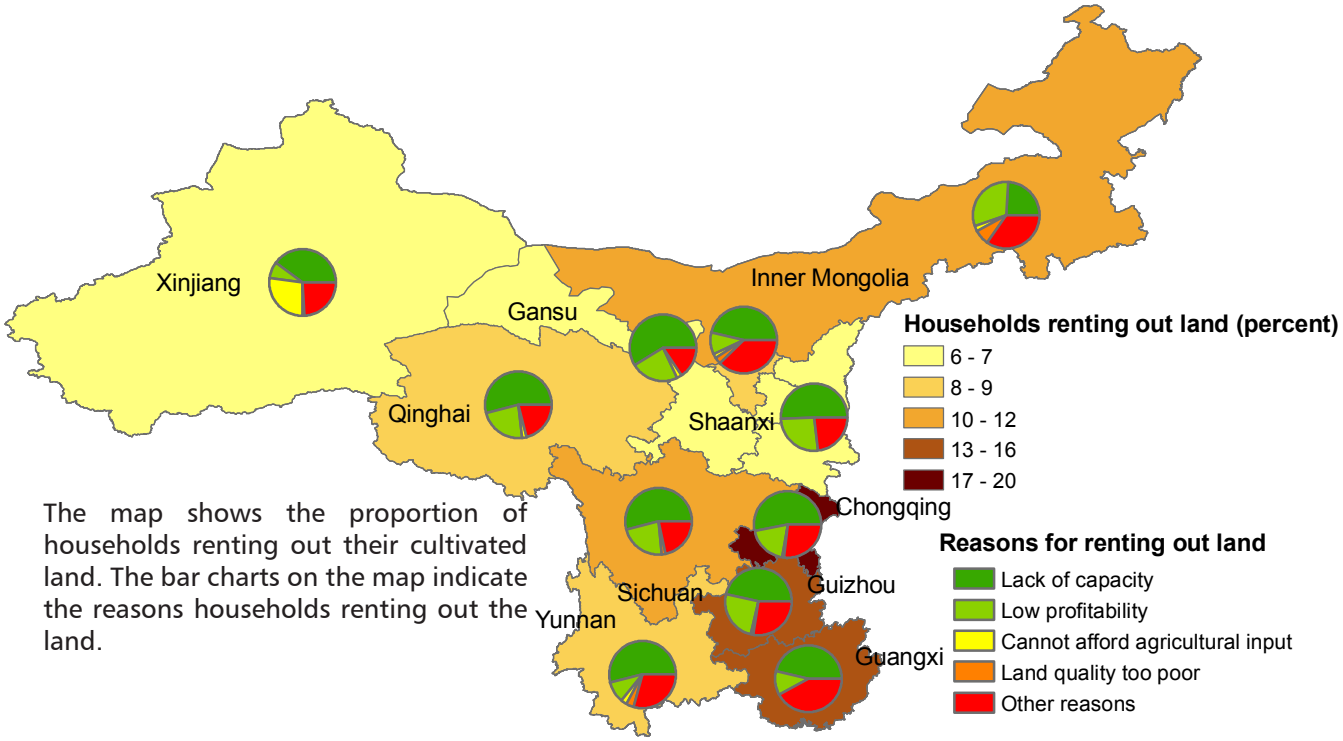
The map shows the proportion of households owning and using various tools among all the households cultivating land in Western Provinces in China.

Renting land



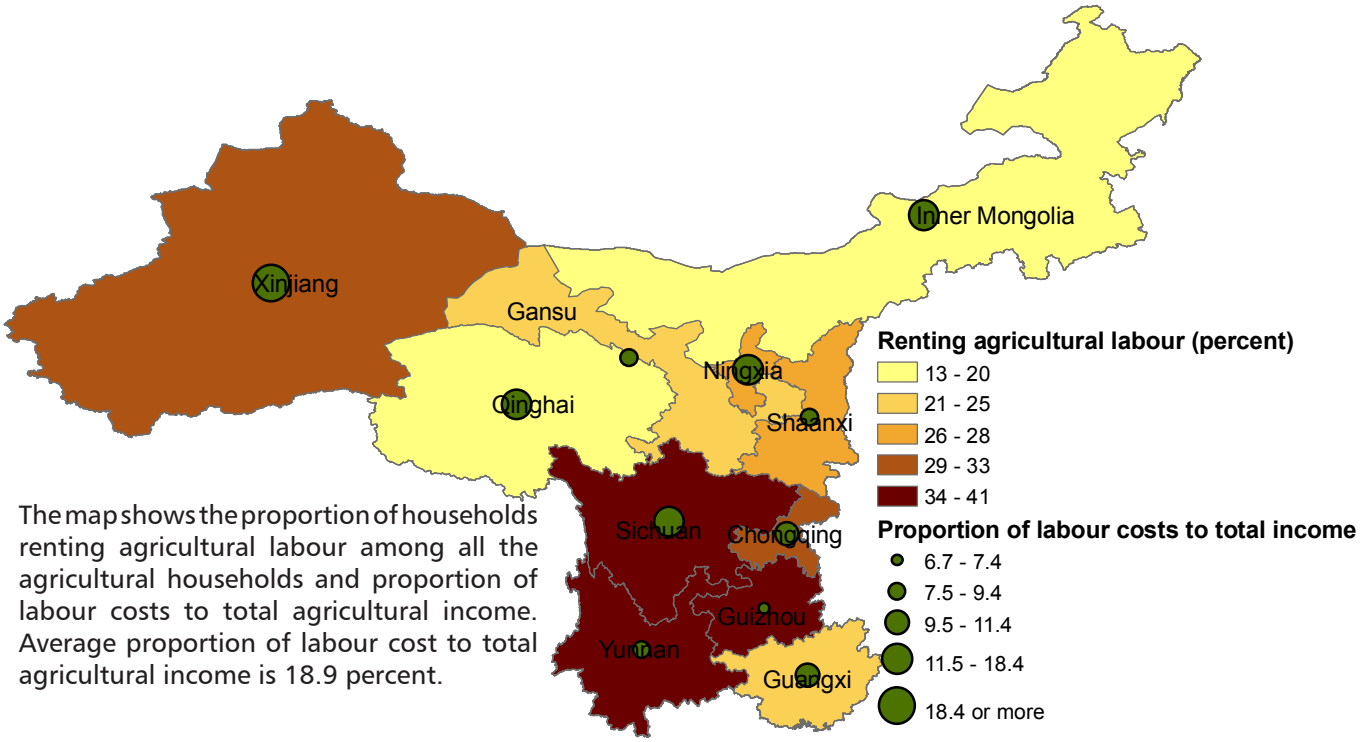
The map shows the proportion of households renting cultivated land. The bar charts on the map indicate the supply of household labour force and households' desire to rent more land or give up land.

Renting out land



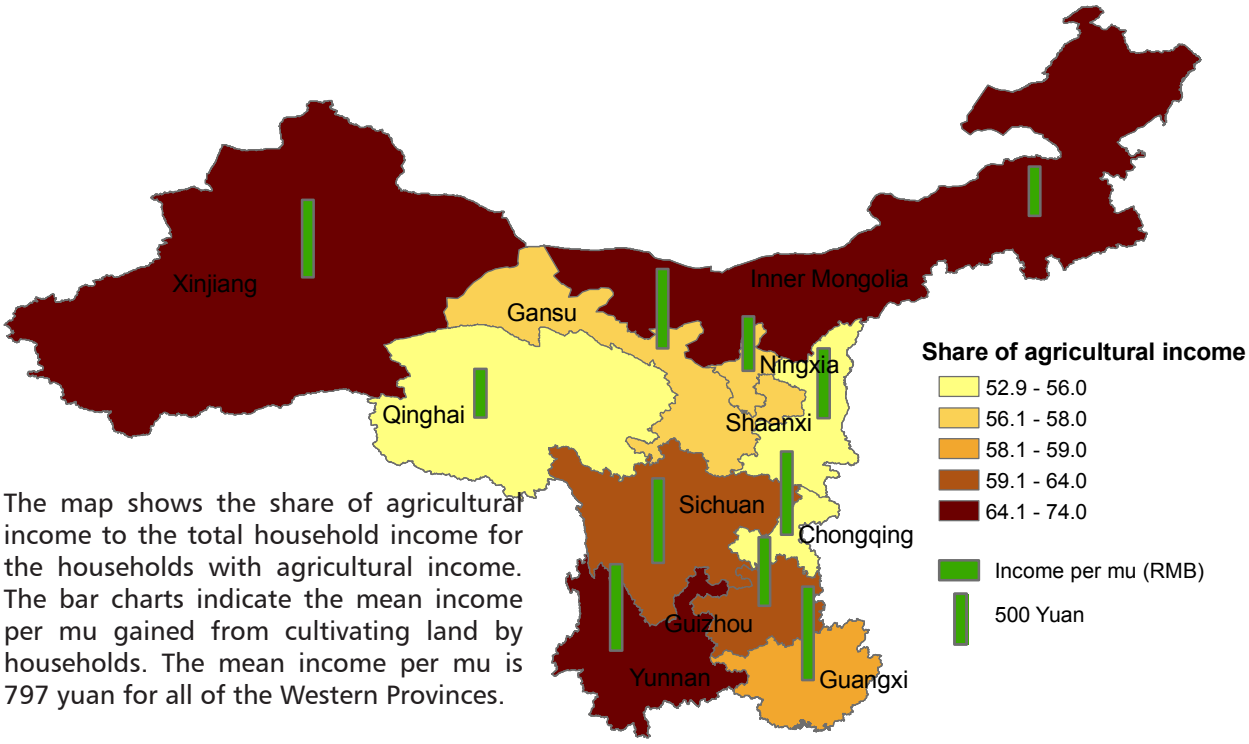
The map shows the proportion of households renting out their cultivated land. The bar charts on the map indicate the reasons households renting out the land.

Renting agricultural labour and labour cost



The map shows the proportion of households renting agricultural labour among all the agricultural households and proportion of labour costs to total agricultural income. Average proportion of labour cost to total agricultural income is 18.9 percent.

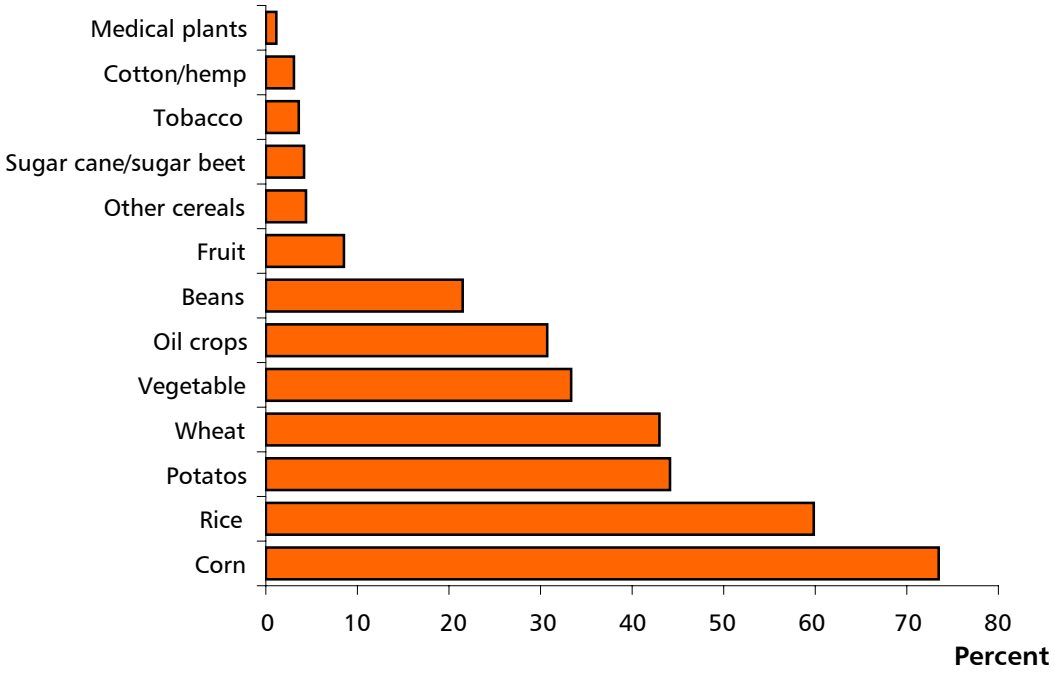
Agricultural income



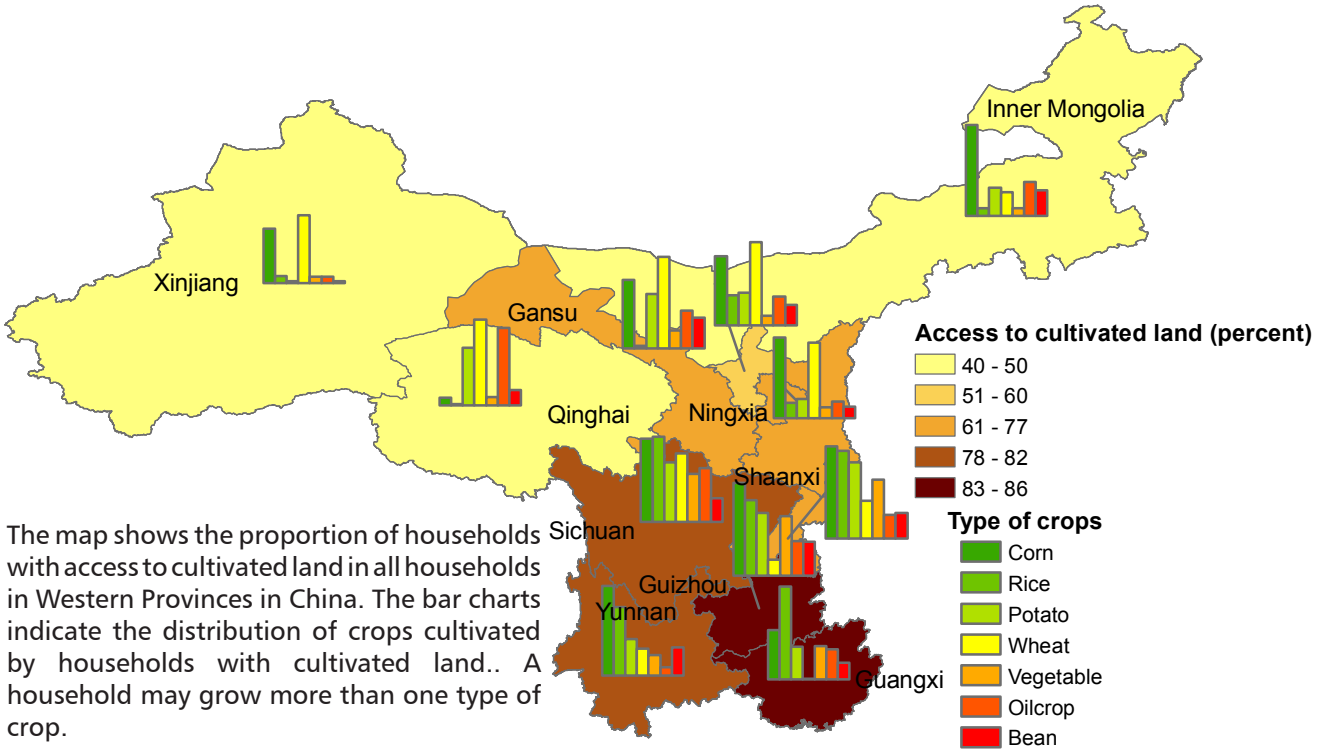
The map shows the share of agricultural income to the total household income for the households with agricultural income. The bar charts indicate the mean income per mu gained from cultivating land by households. The mean income per mu is 797 yuan for all of the Western Provinces.

Crops

The graph shows the overall percentage distribution of crops cultivated by households cultivating land. A household may grow more than one type of crop.

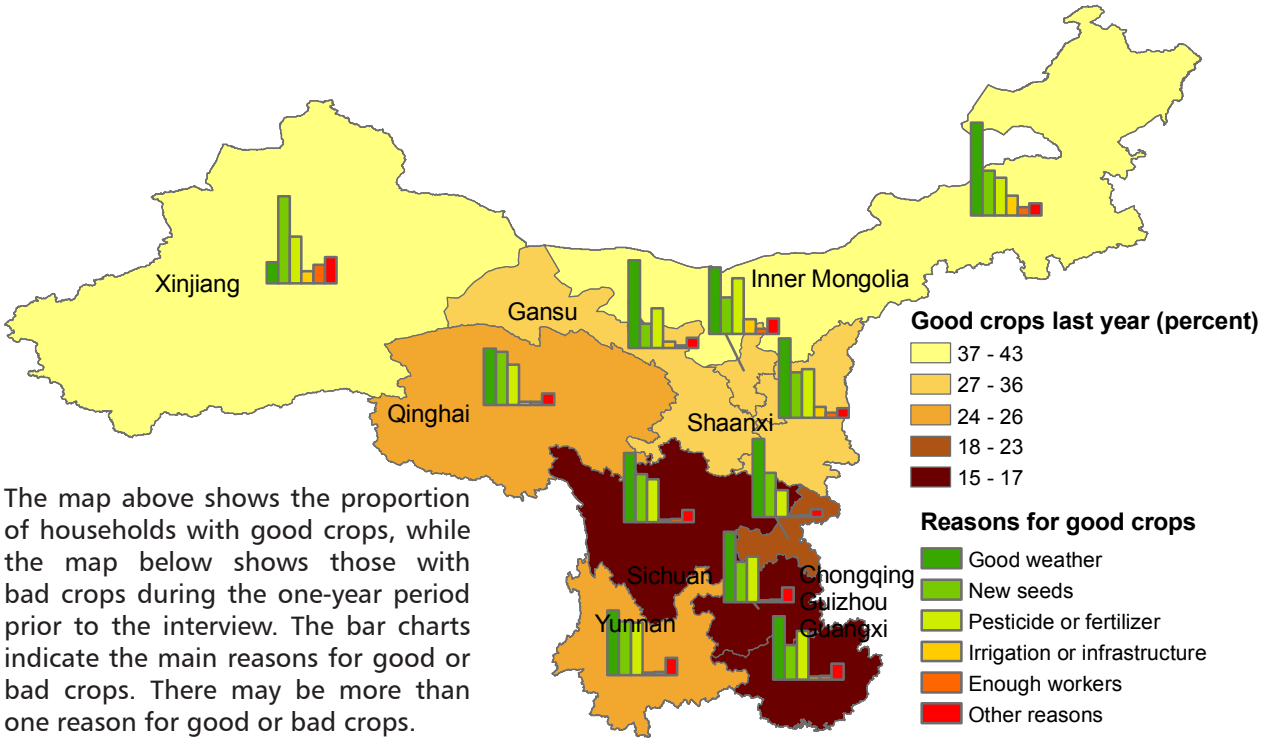


Access to cultivated land and type of crops



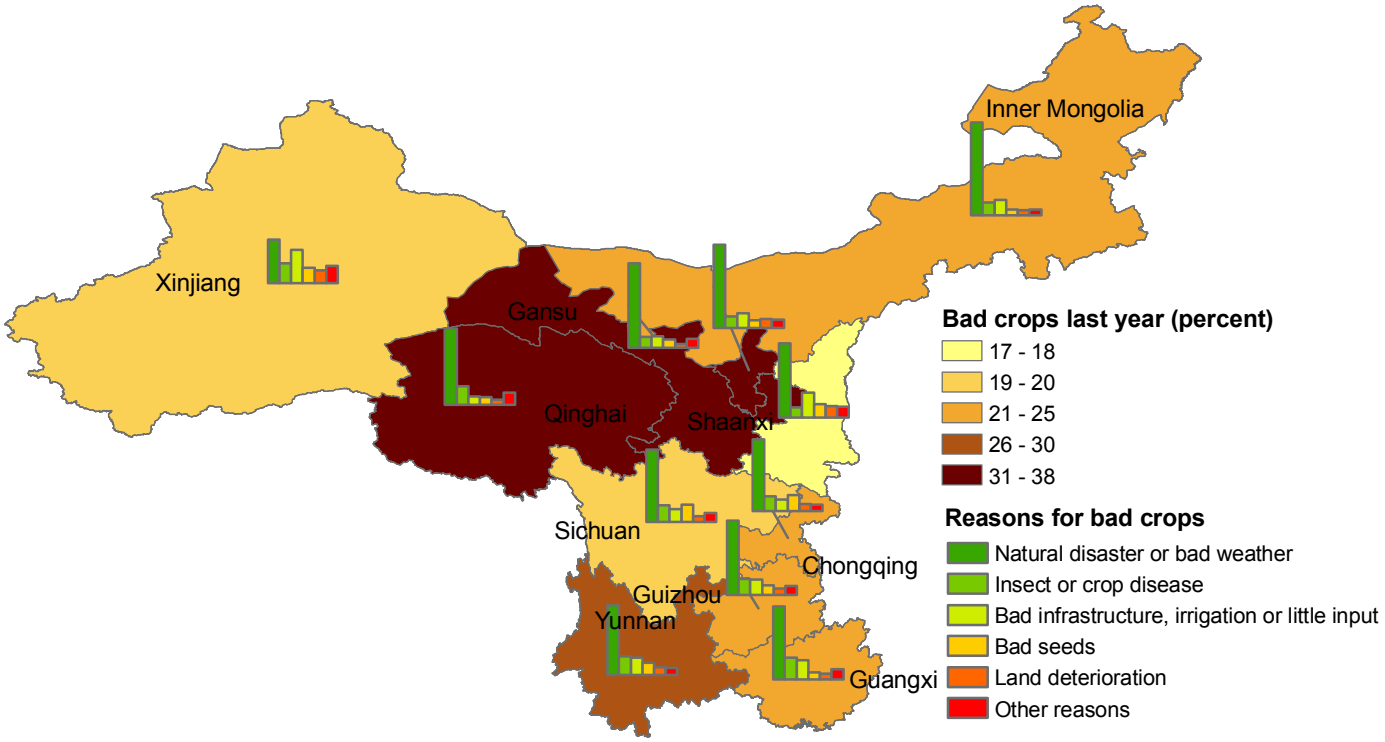
The map shows the proportion of households with access to cultivated land in all households in Western Provinces in China. The bar charts indicate the distribution of crops cultivated by households with cultivated land.. A household may grow more than one type of crop.

Good crops



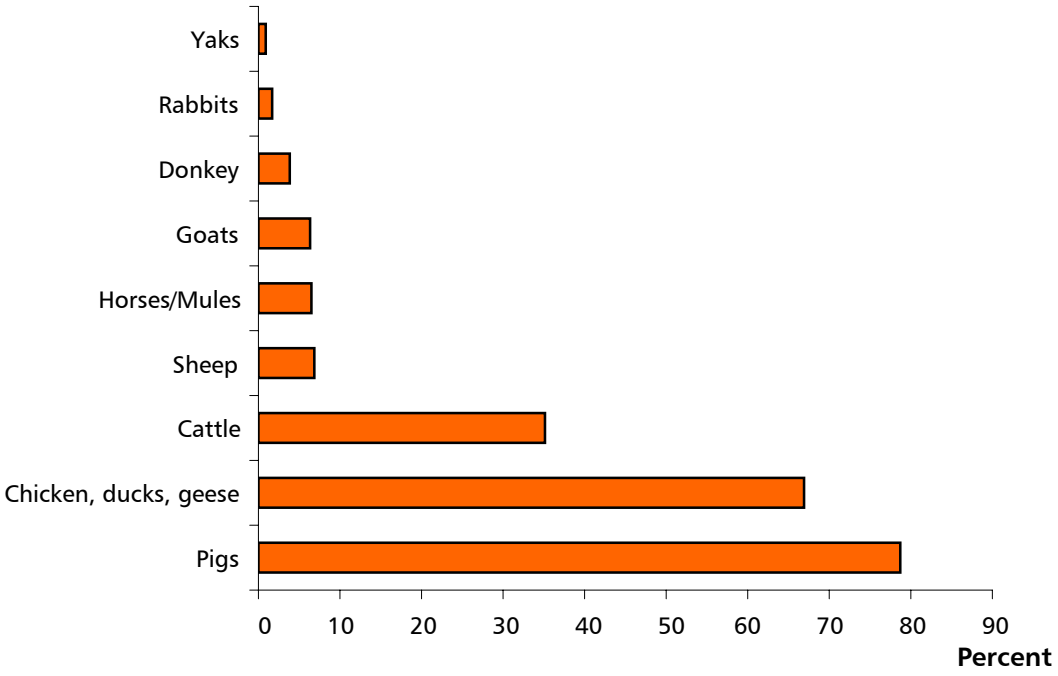
The map above shows the proportion of households with good crops, while the map below shows those with bad crops during the one-year period prior to the interview. The bar charts indicate the main reasons for good or bad crops. There may be more than one reason for good or bad crops.

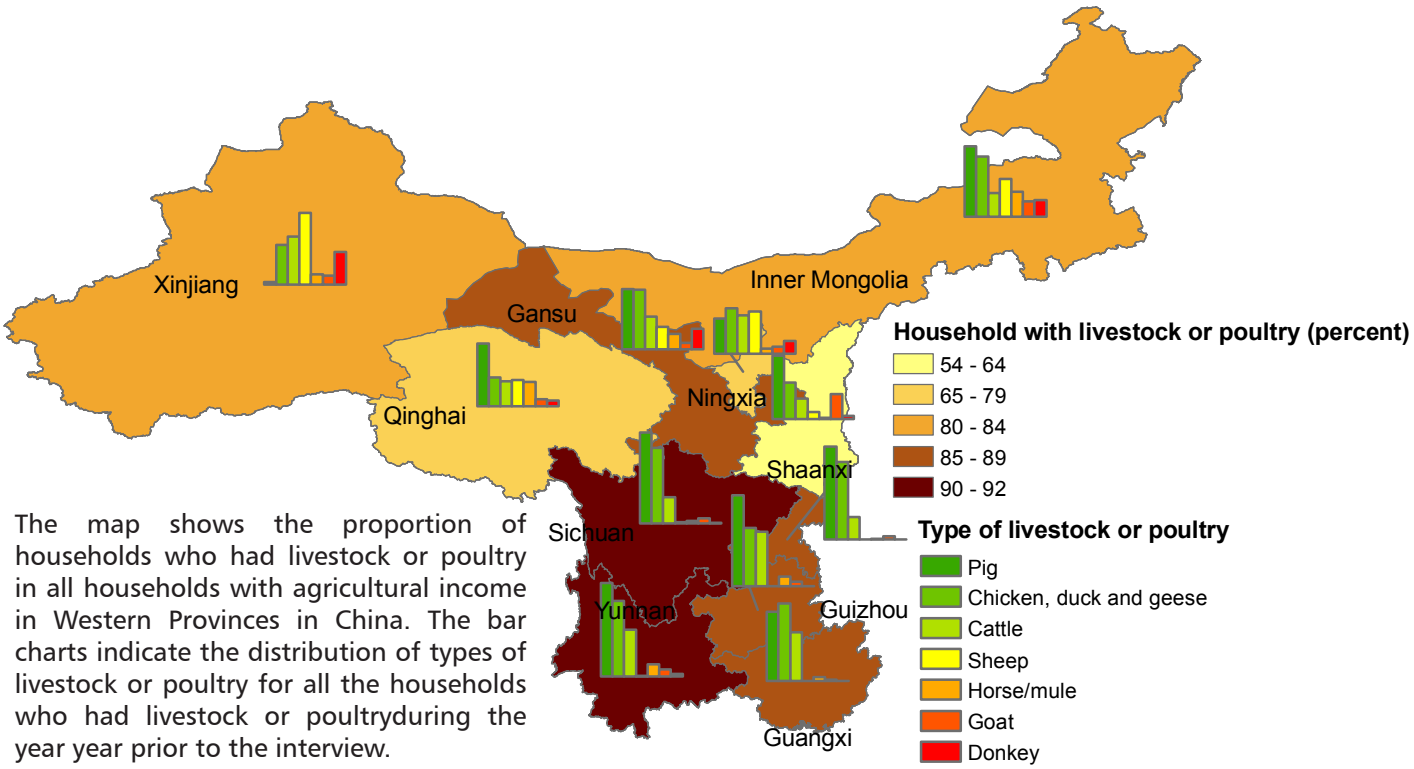
Bad crops



Livestock or poultry

The graph shows the percentage of household owning various domestic animals during the year preceding the interview. Only agricultural households with domestic animals included. In total 85 percent of the agricultural households own domestic animals.



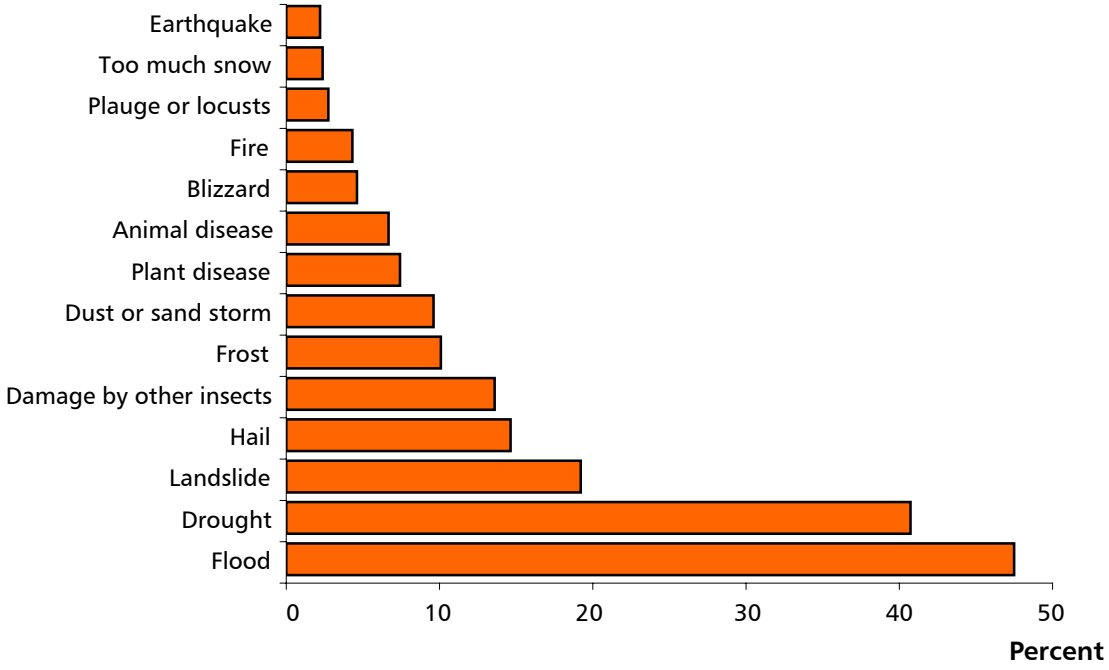


The map shows the proportion of households who had livestock or poultry in all households with agricultural income in Western Provinces in China. The bar charts indicate the distribution of types of livestock or poultry for all the households who had livestock or poultryduring the year year prior to the interview.

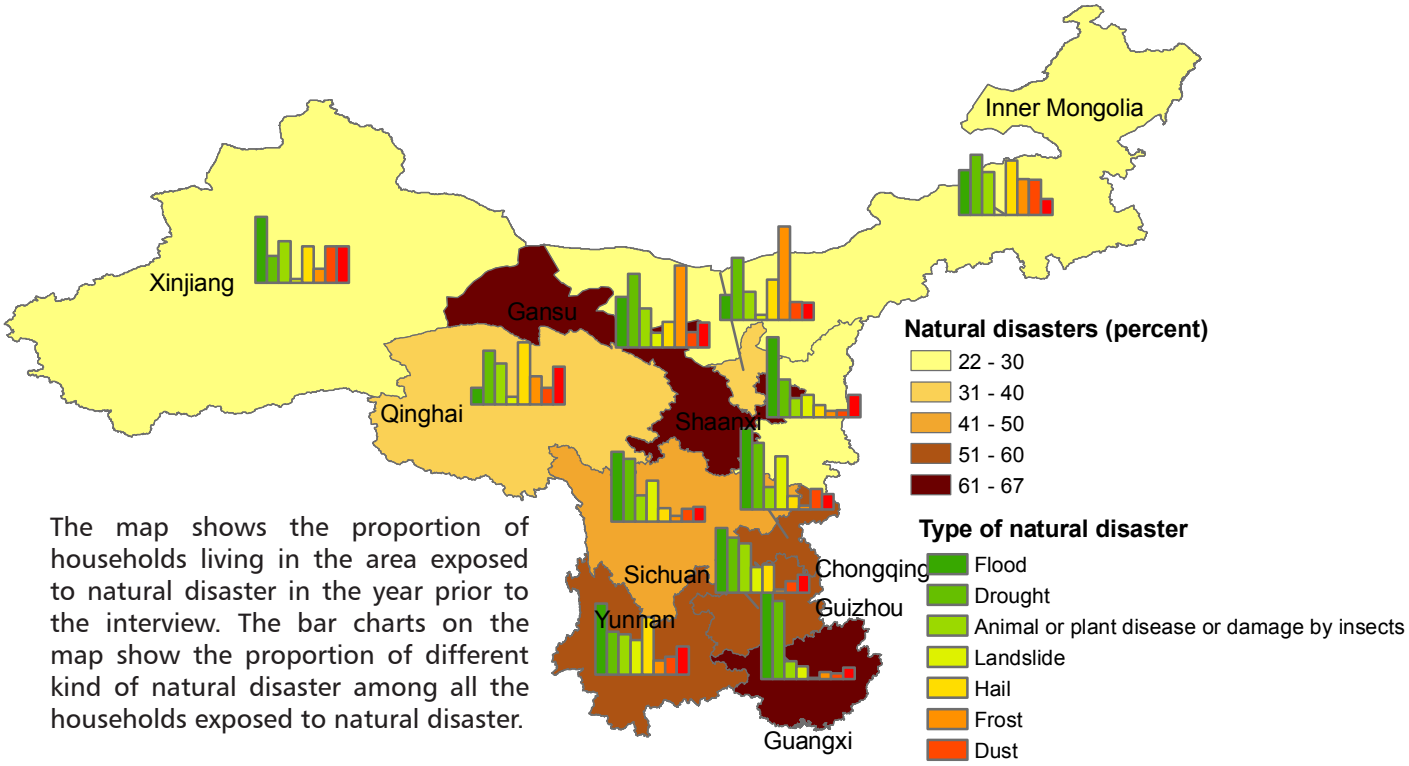
Environment

Nearly half of households (47 percent) are living in communities reporting occurences of natural hazards or disasters in the year prior to the interview. The chart below shows the distribution of the types of exposure, among those exposed to natural disaster..

Distribution of natural disasters

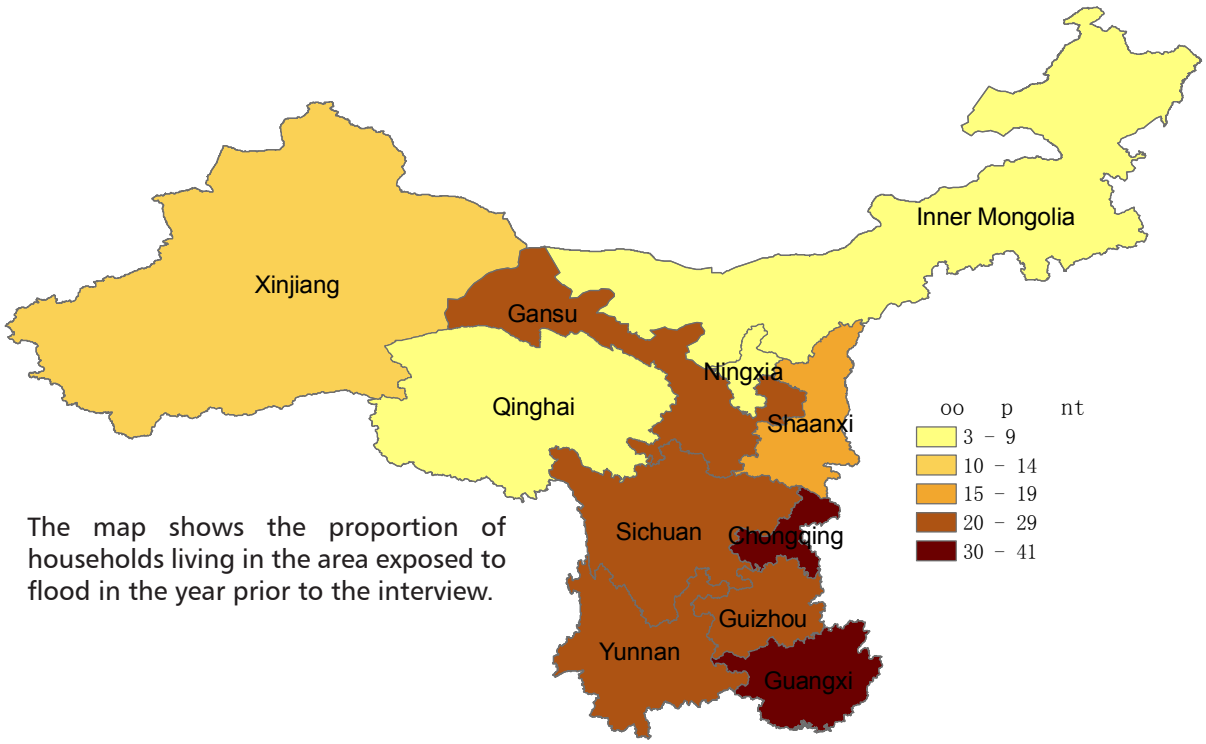


Natural disasters



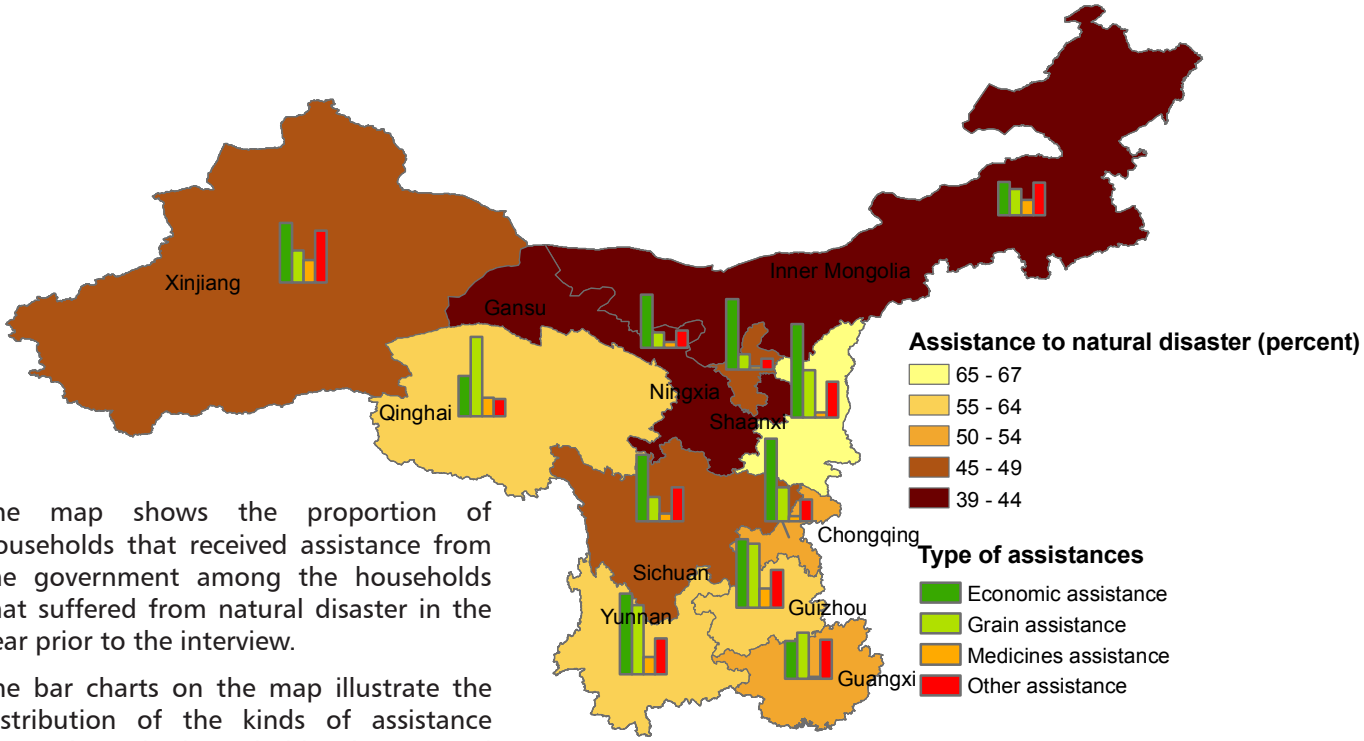
The map shows the proportion of households living in the area exposed to natural disaster in the year prior to the interview. The bar charts on the map show the proportion of different kind of natural disaster among all the households exposed to natural disaster.

Flood



The map shows the proportion of households living in the area exposed to flood in the year prior to the interview.

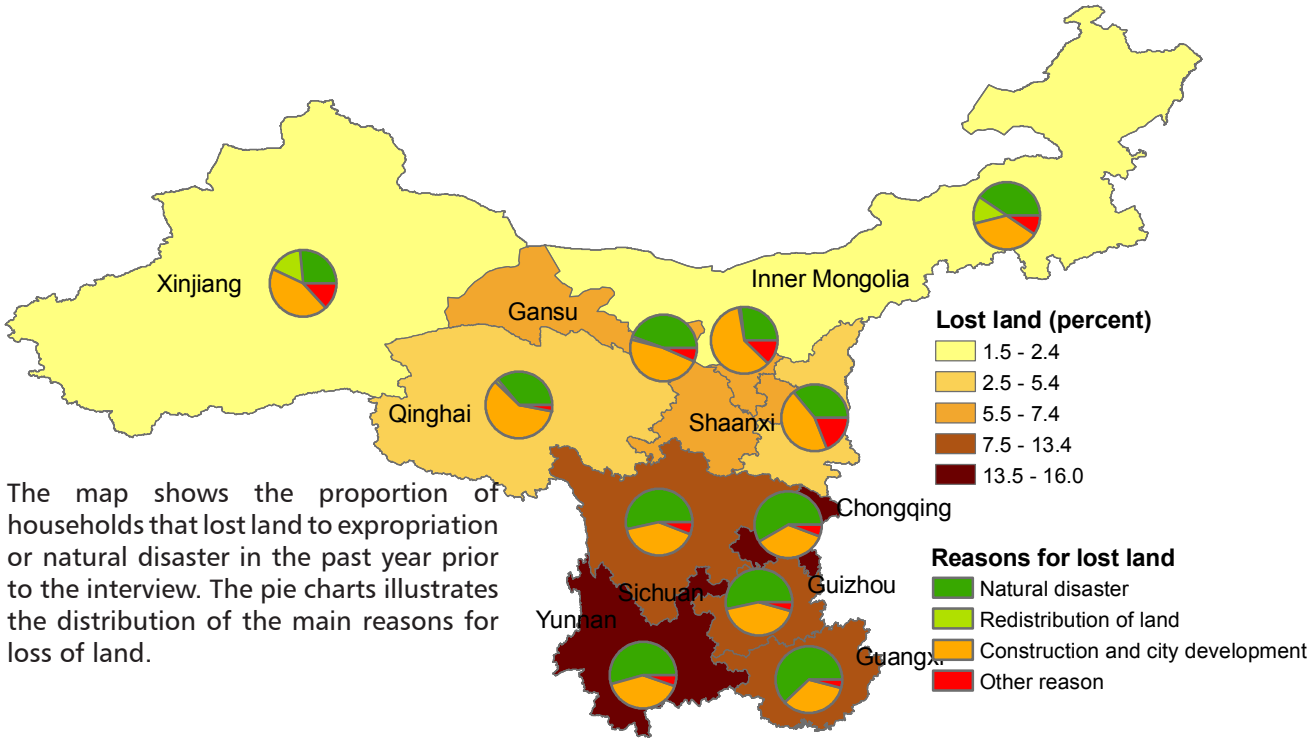
Natural disaster assistance from government



The map shows the proportion of households that received assistance from the government among the households that suffered from natural disaster in the year prior to the interview.

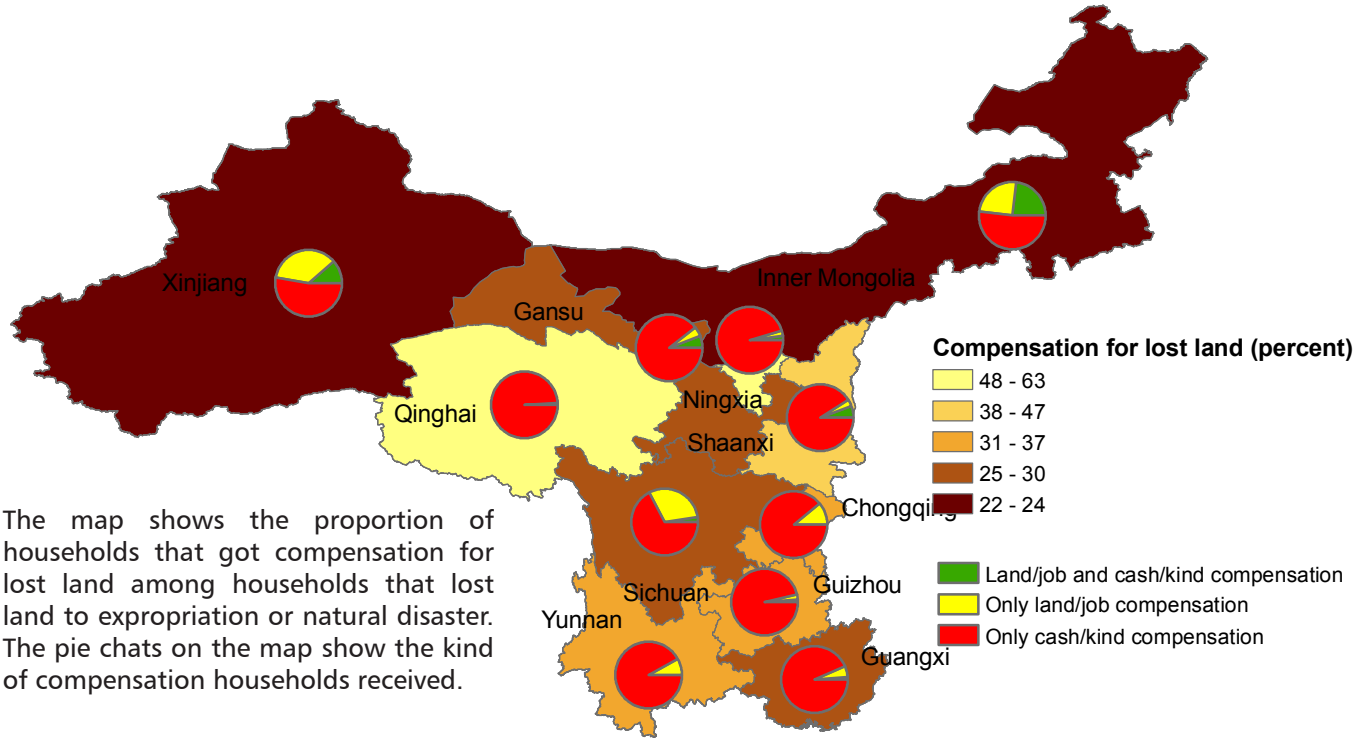
The bar charts on the map illustrate the distribution of the kinds of assistance received for the households who received assistance from the government. Each household may have received more than one kind of assistance.

Loss of land to expropriation or natural disaster



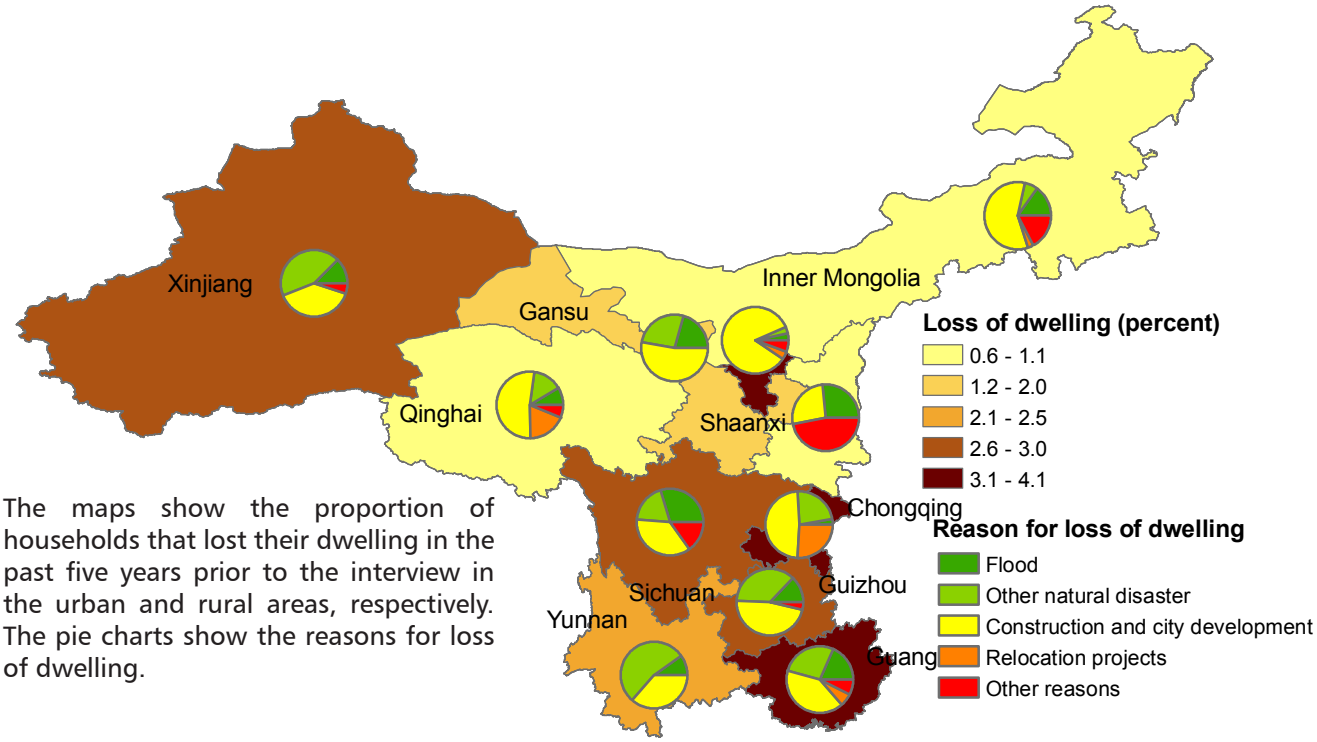
The map shows the proportion of households that lost land to expropriation or natural disaster in the past year prior to the interview. The pie charts illustrates the distribution of the main reasons for loss of land.

Compensation for lost land



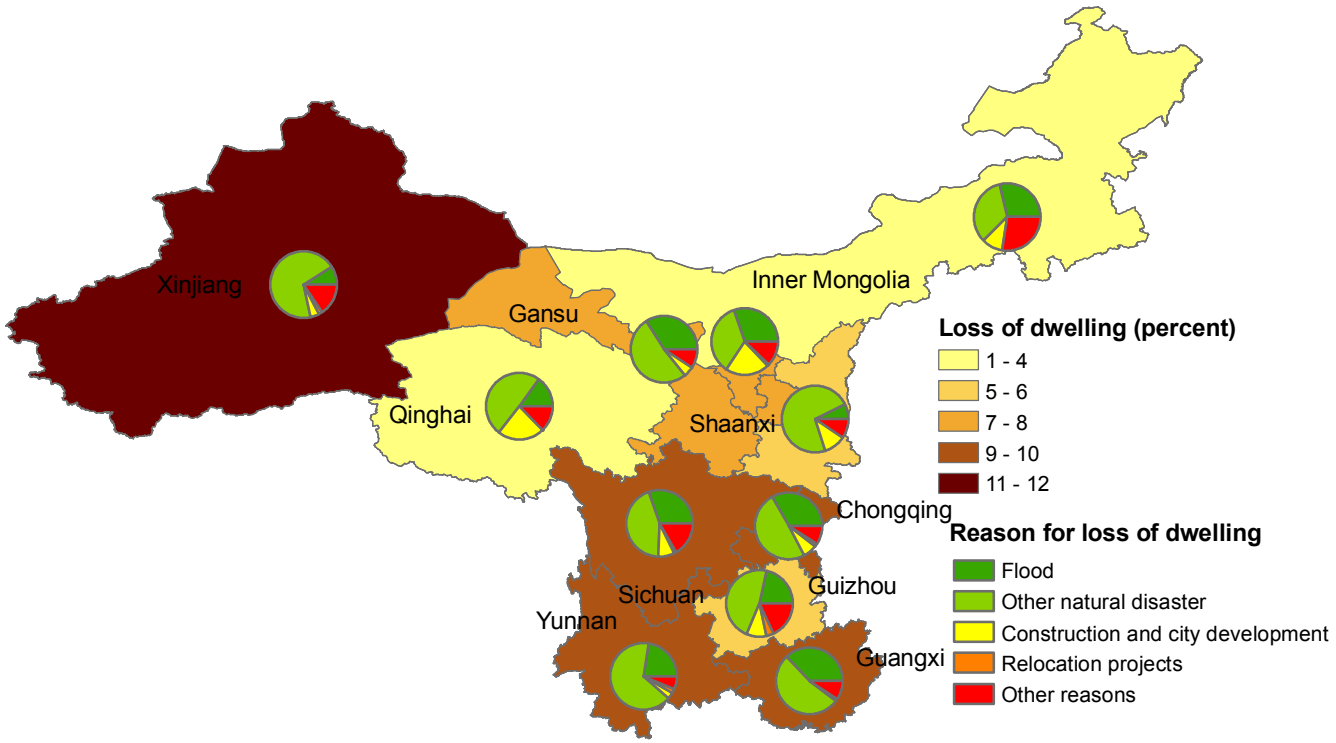
The map shows the proportion of households that got compensation for lost land among households that lost land to expropriation or natural disaster. The pie chats on the map show the kind of compensation households received.

Loss of dwelling (Urban area)

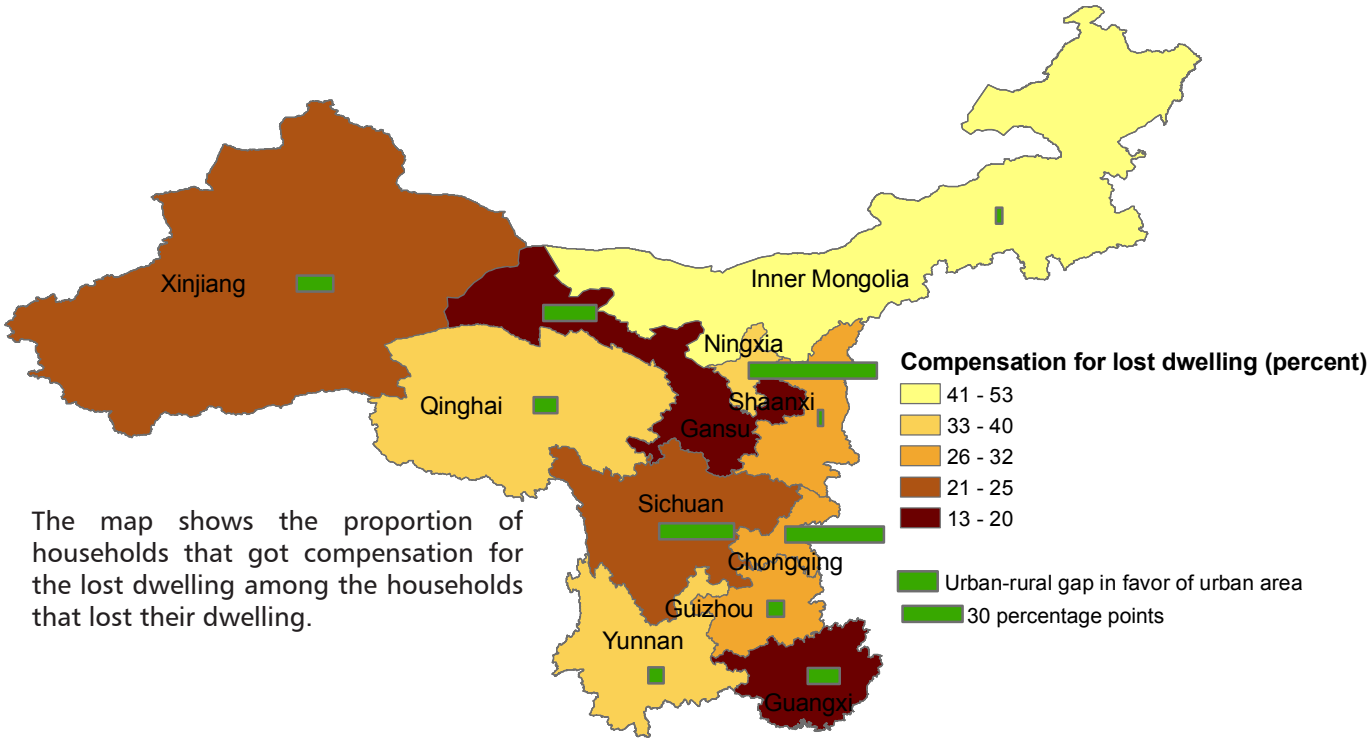


The maps show the proportion of households that lost their dwelling in the past five years prior to the interview in the urban and rural areas, respectively. The pie charts show the reasons for loss of dwelling.

Loss of dwelling (Rural area)

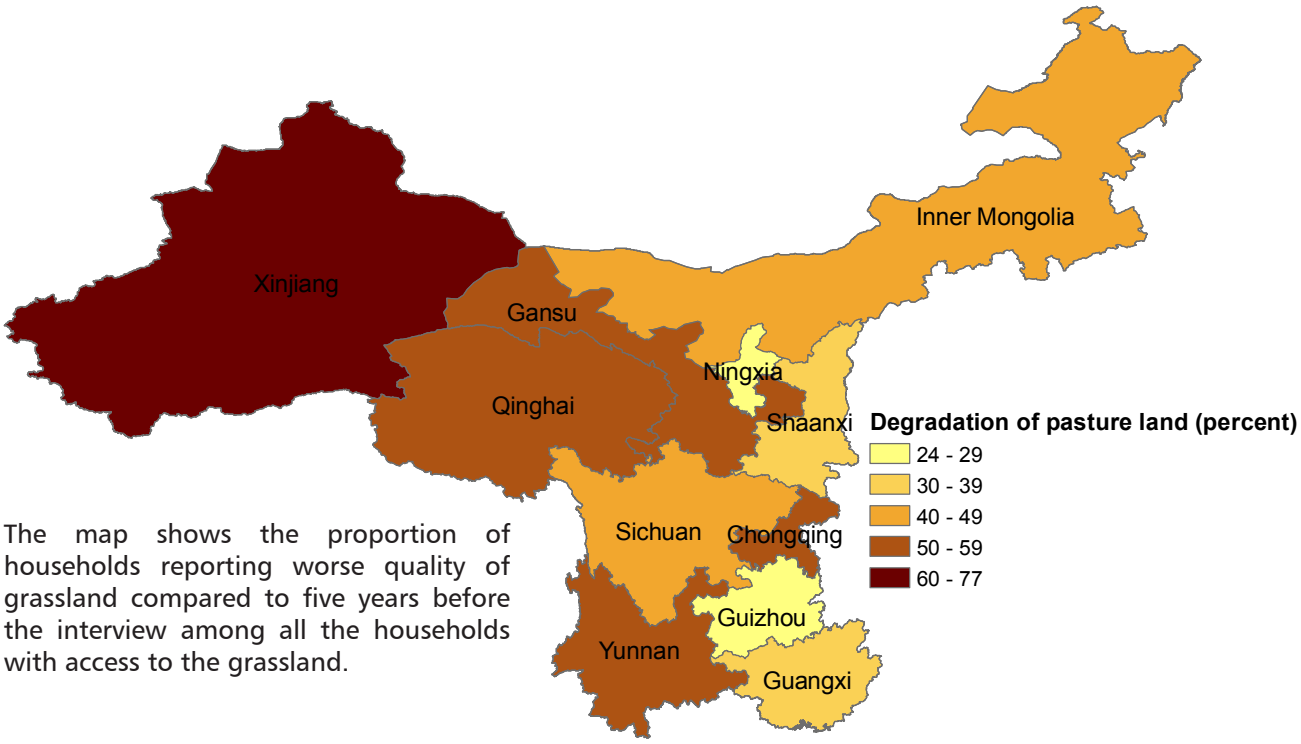


Compensation for lost dwelling



The map shows the proportion of households that got compensation for the lost dwelling among the households that lost their dwelling.

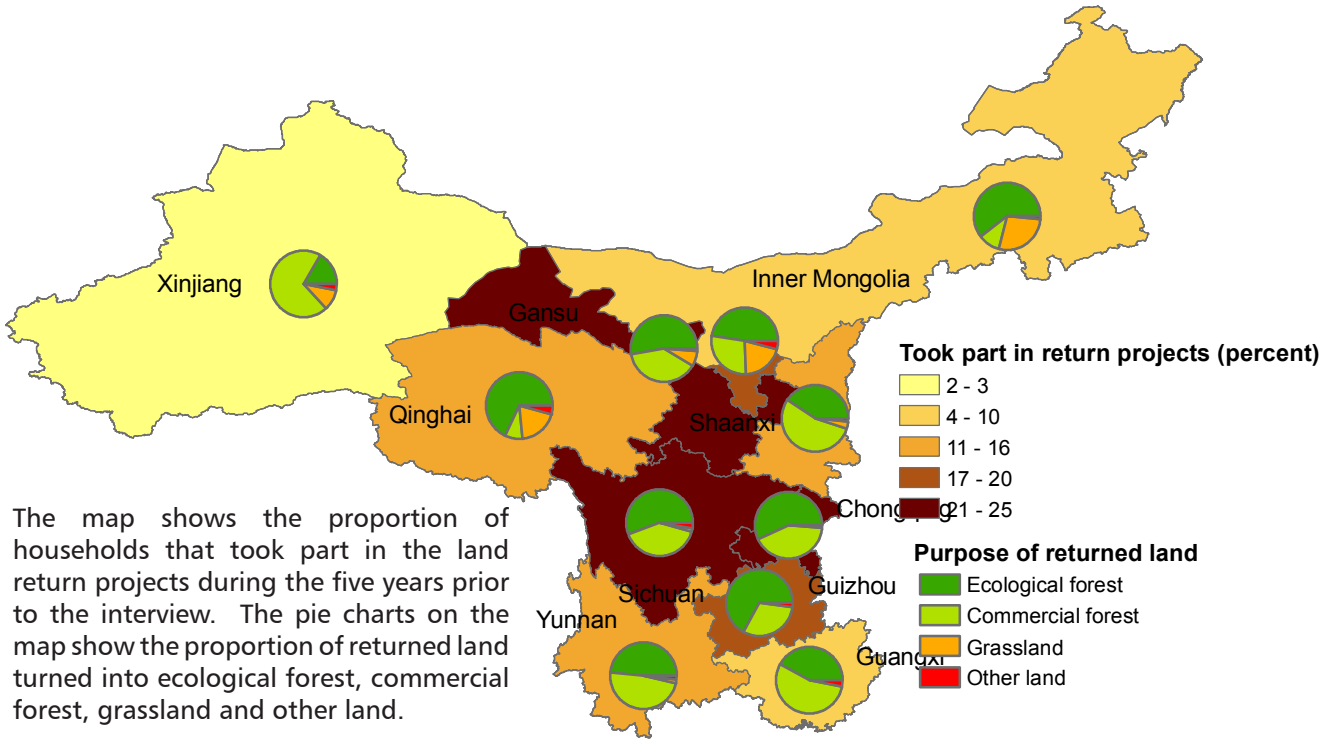
Degradation of grassland



The map shows the proportion of households reporting worse quality of grassland compared to five years before the interview among all the households with access to the grassland.

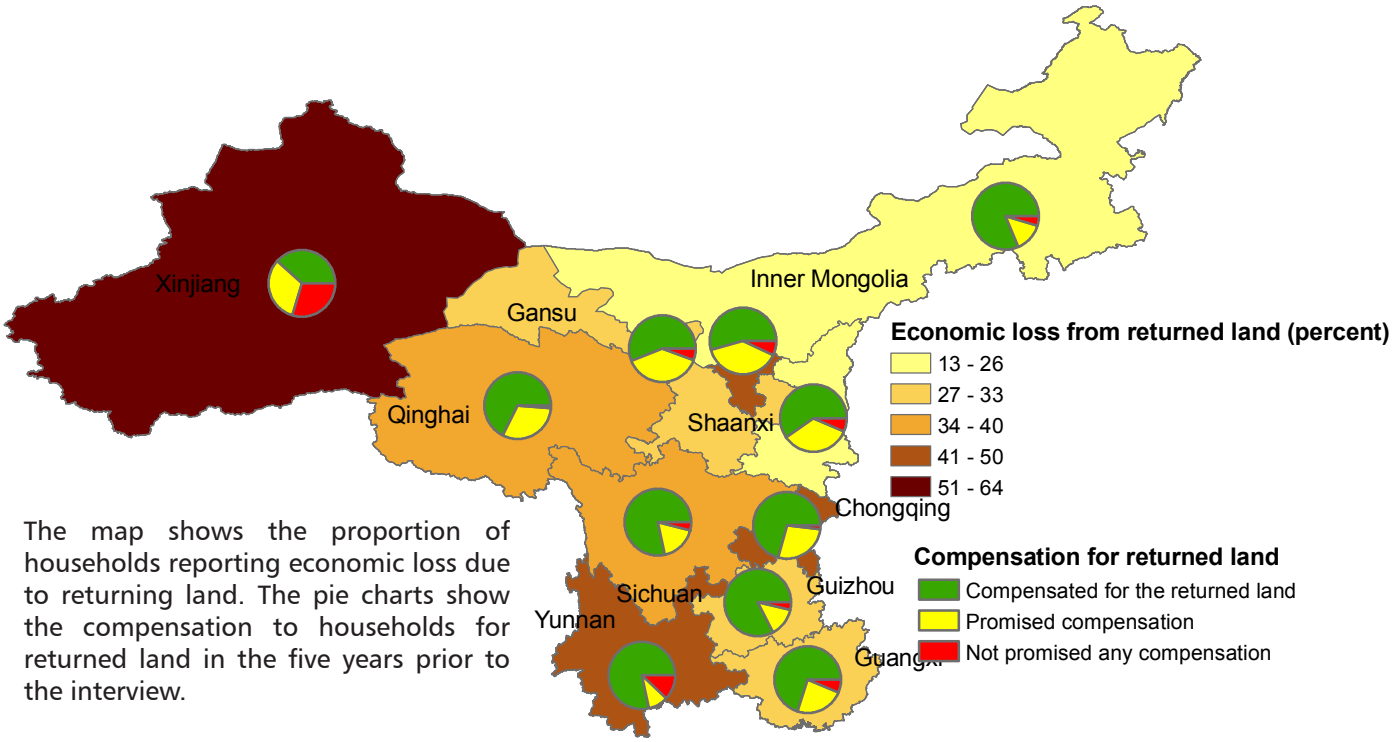
Land return project participation

Return land projects, i.e. 'Grain-for-green' projects started in 1999 in Sichuan, Shaanxi and Gansu, and involved 25 provinces in 2003. The grain-for-green project is aimed to help restore ecological balance in China's Western regions. Farmers were encouraged and subsidized to return their fragile and low-yielding cultivated land into forest and grassland.



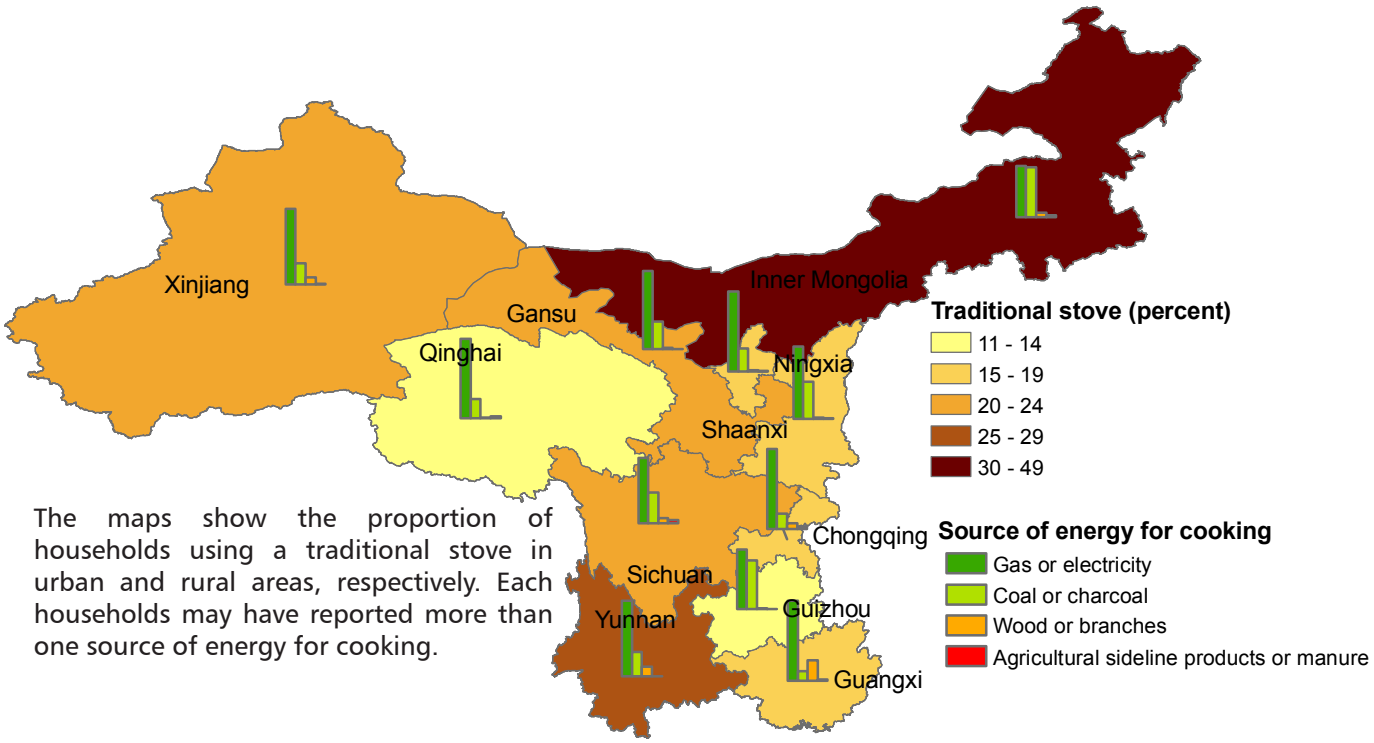
The map shows the proportion of households that took part in the land return projects during the five years prior to the interview. The pie charts on the map show the proportion of returned land turned into ecological forest, commercial forest, grassland and other land.

Economic loss and compensation from returning land



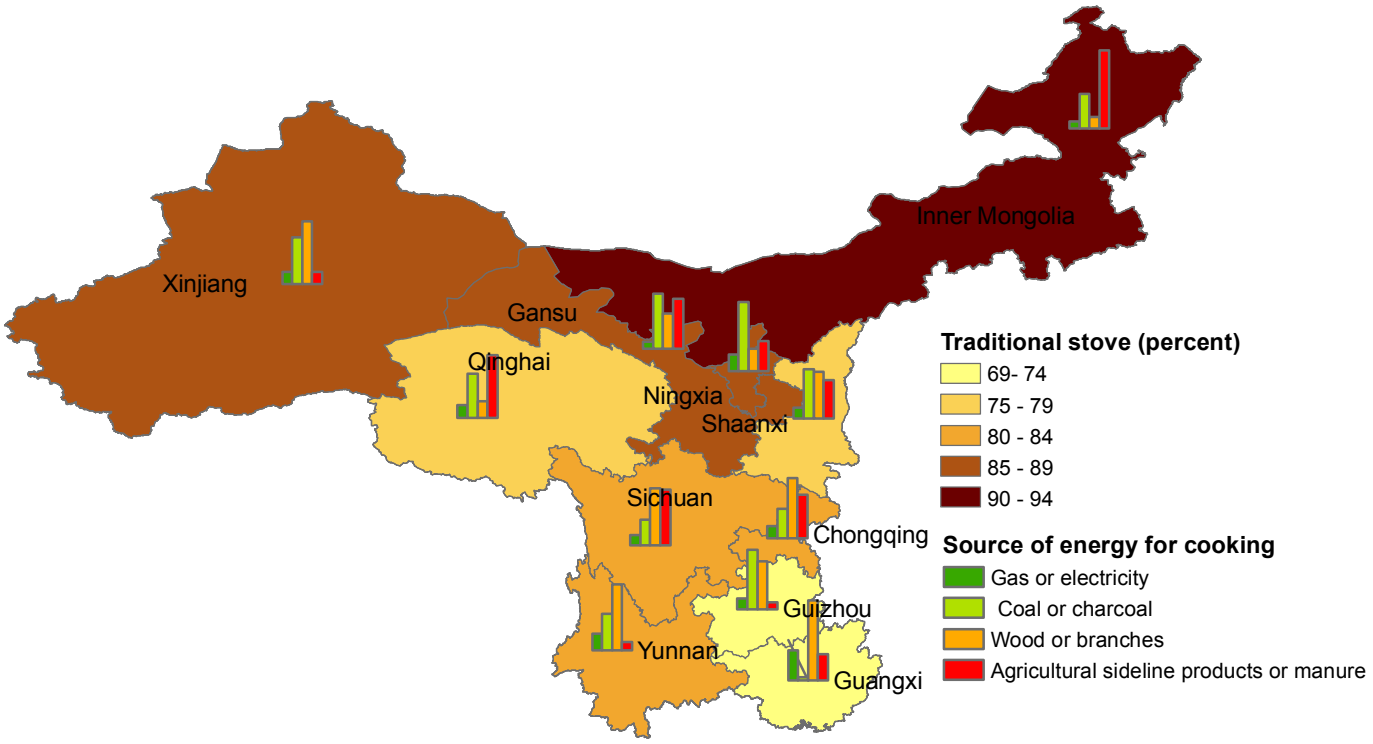
The map shows the proportion of households reporting economic loss due to returning land. The pie charts show the compensation to households for returned land in the five years prior to the interview.

Source of energy for cooking (Urban)

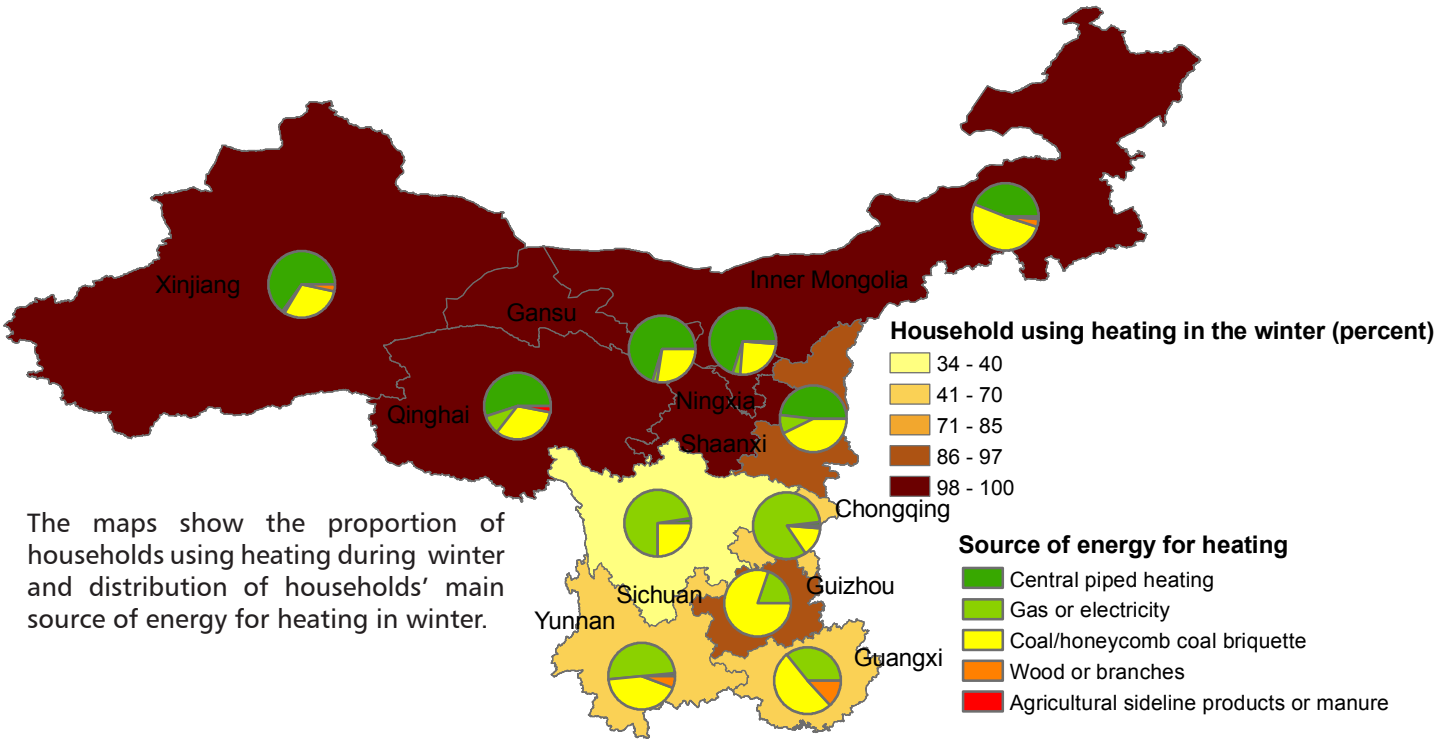


The maps show the proportion of households using a traditional stove in urban and rural areas, respectively. Each households may have reported more than one source of energy for cooking.

Source of energy for cooking (Rural)

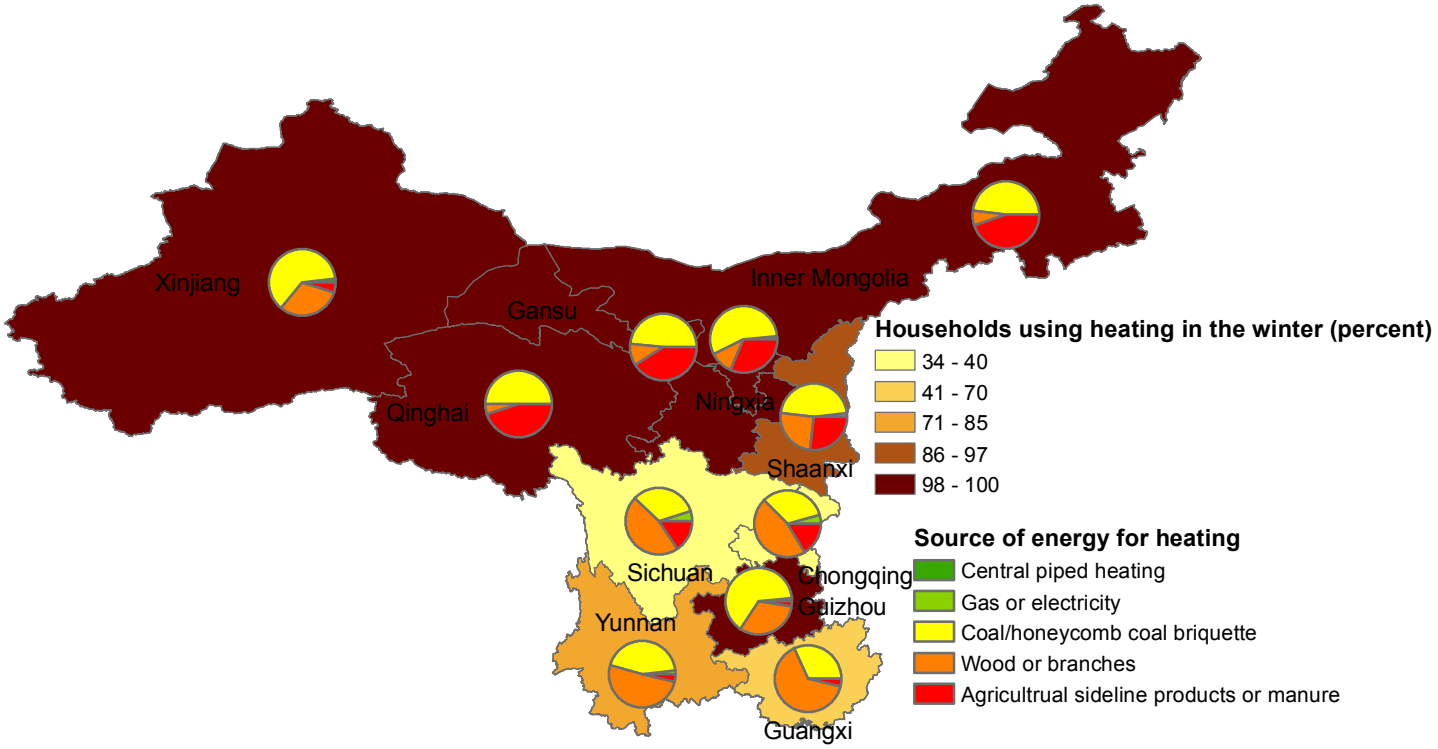


Source of energy for heating in the winter (Urban)

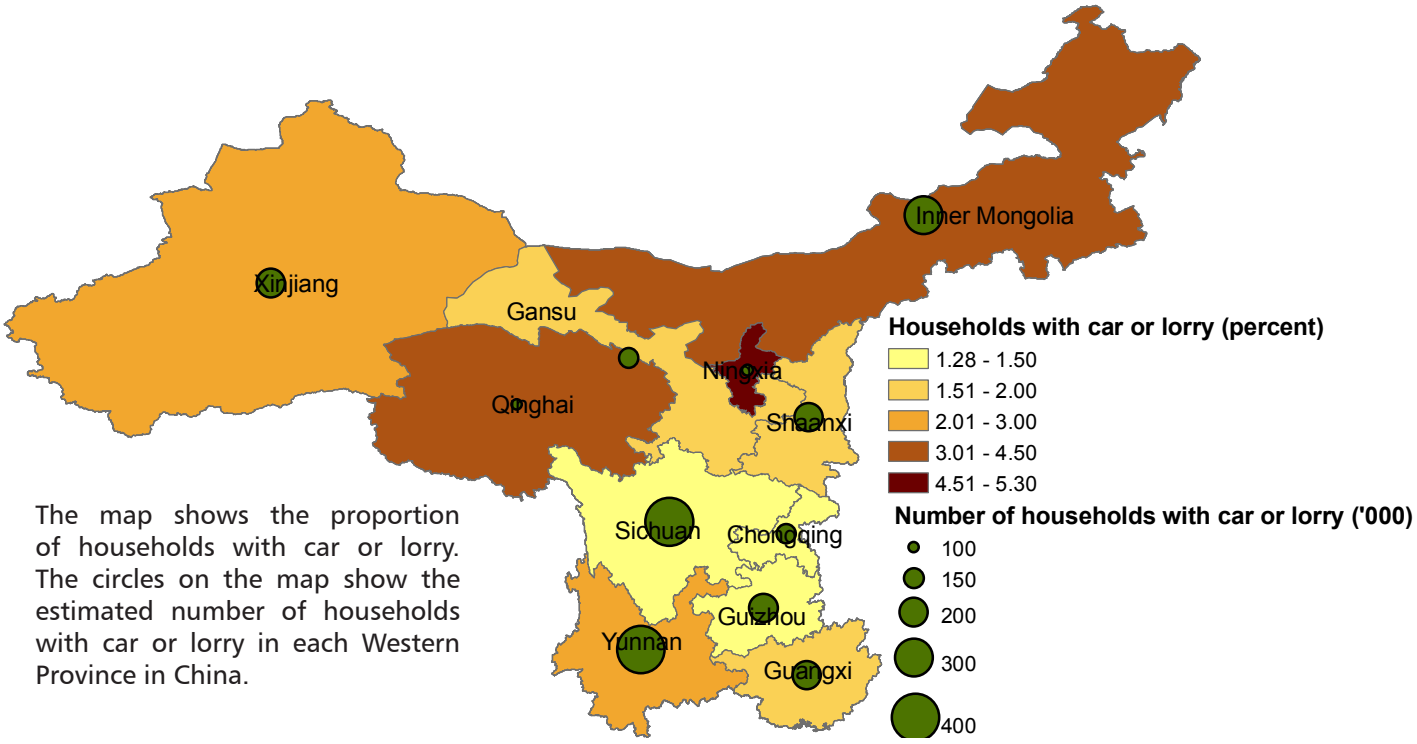


The maps show the proportion of households using heating during winter and distribution of households' main source of energy for heating in winter.

Source of energy for heating in the winter (Rural)

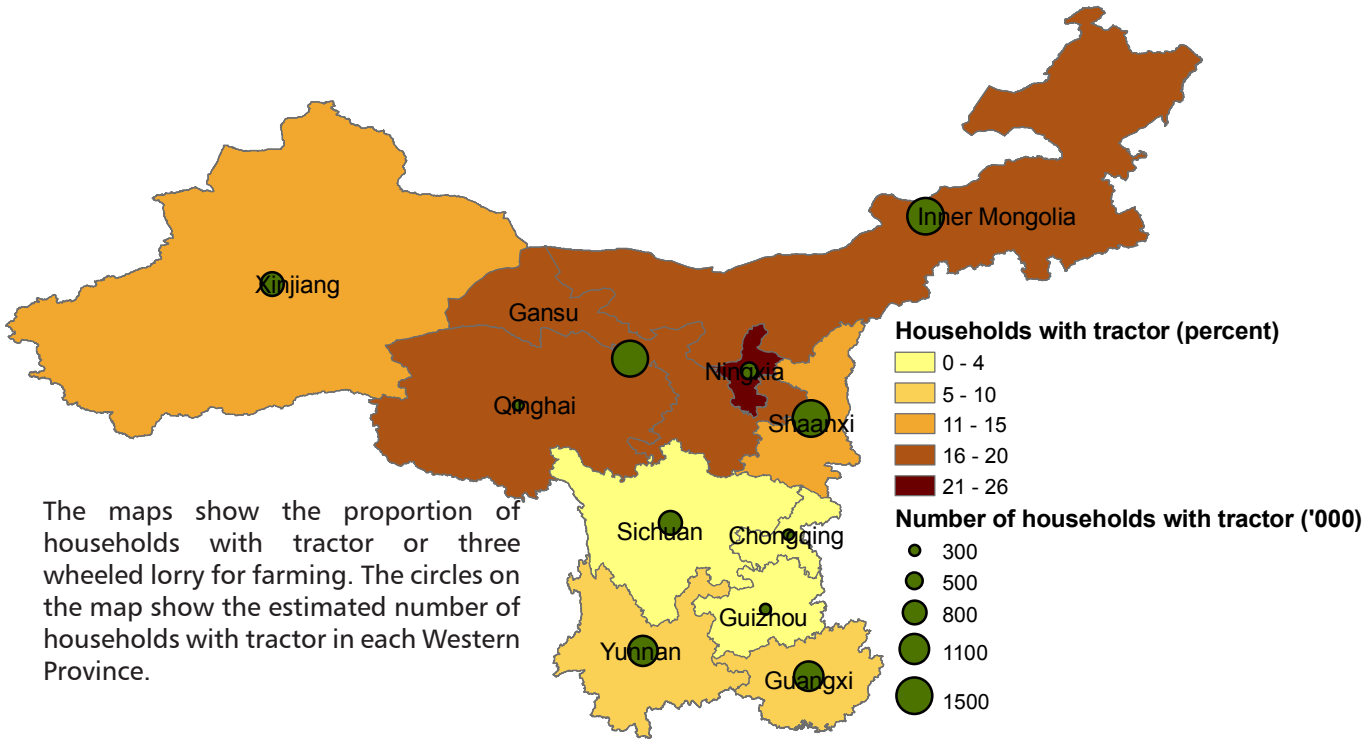


Car or lorry



The map shows the proportion of households with car or lorry. The circles on the map show the estimated number of households with car or lorry in each Western Province in China.

Tractor



The maps show the proportion of households with tractor or three wheeled lorry for farming. The circles on the map show the estimated number of households with tractor in each Western Province.

Appendix: Sample selection for the MEDOW survey

The MEDOW survey has a relatively standard household survey design. The following outlines the main features of the sampling procedures. Readers interested in further details may consult the report "Living conditions Survey for the Western Provinces of China: Sample design" (Pedersen and Tyldum 2003) and the "MEDOW Mapping and listing manual" (Pedersen and Tyldum 2004).

In areas as large as the Western regions of China, the more comprehensive the sample size is the better. Still the sample size in MEDOW, like most other surveys, was constrained by available funds. The target sample size was 44,000 households, and since reporting for each of the 11 provinces included in the survey was desired, each province was allocated equal sample size, i.e. 4,000 households.

Sampling stages

The sample was drawn in several stages. The basic sample frame for first stage selection was the list of neighborhood committees (in urban areas) and townships (in rural areas) as published by the National Bureau of Statistics of China (NBS) from the 2000 census of the PRC. The neighborhood committees are the second to last administrative unit in the Chinese administrative hierarchy in urban areas, the residence committee being the last and smallest unit. In rural areas the township corresponds to the neighborhood committee, and the administrative village to the residence committee. The term "administrative village" indicates the fact that such a unit may comprise one or more actual villages, that in some cases may be spread many kilometers apart.

The neighborhood committees and townships have widely varying sizes. In the selected sample, population size in terms of persons range from 491 to 260,535, with a median of 24,201. (With concern to households this respectively corresponds to approximately 144, 76,628 and 7118). The residence committees and administrative village also varied widely in size, from 18 to 14961 households, with a median of 474 households.

The neighborhood committees/townships were drawn with probability proportionate to size, using a linear systematic procedure. The frame was stratified by province, and implicitly stratified by urban rural status and geographic location. The reason for the relatively shallow stratification was that the sample was divided into 18 independent replicate samples, i.e. that the complete/total sample is constituted from18 independent draws from the sample frame (see Koop 1988 for a description of replicated sampling). This has two main benefits: One is that it makes variance estimates relatively straightforward, another is that the sample may easily be used as a master sample because subsets of the complete sample may easily be selected. However, the replicate structure of the sample makes more fine grained stratification rather cumbersome. Nevertheless, the implicit stratification proved to be quite effective.

In each of the replicates, 14 Primary Sampling Units (PSUs, i.e. neighborhood committees or townships) were drawn, resulting in 252 PSUs in each province, 2,772 in all of West China. The intended sample take of households for each PSU was 16. thus the total sample was planned to be 44,352 households. The final number of selected household differed from this due to both over sampling and non-response, this will be discussed further later.

When a neighborhood committee or township had been drawn, a list of residence committees or administrative villages was obtained from the Statistics Bureau and the secondary sampling unit (2SU) was selected. Again the selection was carried out with a based on probability proportionate to size, reusing the selection number used to select the PSU. The details of this procedure are described in Pedersen and Tyldum (2003). Considered together with the stratification and replicate structure of the sample, the main importance of the above mentioned procedure for drawing sampling units is that it ensures that, with very few exceptions, only one 2SU is selected in each PSU. With concern to variance, this effectively makes the sample similar to a two stage sample, rather than the three stage sample that it formally is.

Listing and mapping

When a residence committee or a village had been selected, two decisions had to be taken by supervisors of the mapping and listing teams. First; what kind of listing procedures that should be employed, and second; if the residence committee or village should be segmented.

The decision of which mapping and listing procedures to use, depended on the lists of households available in the residence committee or village. All residence committees and villages in Western China are obliged by the authorities to have complete lists of their permanent and temporary residents; however, how they fulfill this requirement varies. Some have complete lists, including lists of temporary migrants, these lists are updated weekly, monthly or sometimes on a real-time basis. Some have complete lists of all the residents and more long term migrants, others have good lists of formal residents (i.e. those who have their hukou registration in the residence committee or village) while they lack lists of more temporary resident. Yet others have very incomplete lists.

On the one hand, complete lists, especially those that include temporary migrants, are generally better than lists that can be made from mapping or listing procedures. On the other hand, a common error in surveys in China is to rely exclusively on lists from the residence committees often omitting migrants all together.

Therefore, when arriving at a new location, the first task of the listing and mapping teams were to determine the quality of the available household lists. If officials indicated that the lists were incomplete, new lists were always made through drawing sketch maps of the residence committee or village and listing all households. If the officials indicated that they considered the lists complete, this was ascertained through a procedure of systematic spot checks. The procedure consisted of checking whether all households in a group of adjacent houses were listed, if so-called "problem residences" were selected; listers checked whether all households within the residence were listed. "Problem residences" refer to newly constructed houses, tents of temporary workers, very poor housing conditions, and communal housing such as dormitories for workers. If households that could not be found in the village or residence committee's lists were discovered, the village or residence committee was consequently mapped and listed. In total, existing lists were used in 85 percent of the locations, complete mapping and listing was carried out in nine percent of the locations and partial mapping and listing in combination with existing lists were used in the remaining 6 percent of the locations.

After the establishment of household lists, the mapping and listing teams had to make the second decision, namely whether or not the residence committee or village should be segmented, i.e. divided into smaller geographic units that households would be selected from.

Several factors advocate the use of segmenting: Mapping and listing very large residence committees and villages is impractical and prone to errors. Moreover, administrative villages may consist of "natural villages" located far away from each other, thus interviewing in all "natural villages" would be very expensive and time consuming. Finally, some residence committees and villages have so many residents that copying all list would be very time consuming. In general, the target was to have segments of less than 150 households although larger units was accepted in the case of villages or residence committees with high quality lists, or where other practical considerations made it useful to have larger segments. Segmenting was achieved by dividing the residence committee or village into easily identifiable geographic units, further one unit was selected using procedures based on random selection with probability proportionate to size. In total 55 percent of the 2SUs were segmented.

In the final stage of the sampling, 16 households were selected from the 2SUs using linear systematic random sampling. In some urban areas (12 percent of the sample), where large non-response was expected, the number of selected households were increased to 18. In addition, a few 2SUs turned out to be smaller than 16 households, causing less than 16 household to be selected. In total 44,738 households were drawn from the sample.

When a household was selected, the overall research design called for an interview with a randomly selected person aged 15 or above. This person was selected by means of a "Kish-table" (Kish 1966). Eligible persons in the household were listed according to age and gender, further the Kish-table was used by the interviewer to identify which person to interview. The specific Kish-table to use was indicated on the questionnaires before interviewers received them.

Characteristics of the sample

In sum, the MEDOW sample has the following characteristics:

1. The sample is explicitly stratified by province, and implicitly stratified by urban rural status and geographic location.
2. It is selected as a replicated sample, with 18 independent replicates.
3. Each province has a sample of 4,000 household. Within each province the sample is approximately self weighting.

4. The measure of size used for the PSU selection is the 2000 census counts, and population estimate available in the administrative unit.
5. Within each province, administrative villages and residence committees are selected with probability proportionate to size (PPS). The selection was carried out in two stages.
6. The majority of administrative villages or residence committees are segmented, one of the segment is further selected by PPS.
7. A list of households is compiled for each administrative village/residence committee/ segment, based on existing administrative registers. Alternatively, when satisfactory lists do not exist, a sketch map should be made and all dwelling units should be listed.
8. Households should be selected from the updated lists using linear systematic sampling.
9. One respondent aged 15 or above should be identified through random selection (using the Kish table) for the "individual" questionnaire.

Inclusion probabilities and weights

It follows from the above that the sample has a variable number of stages. These are outlined in the chart below:

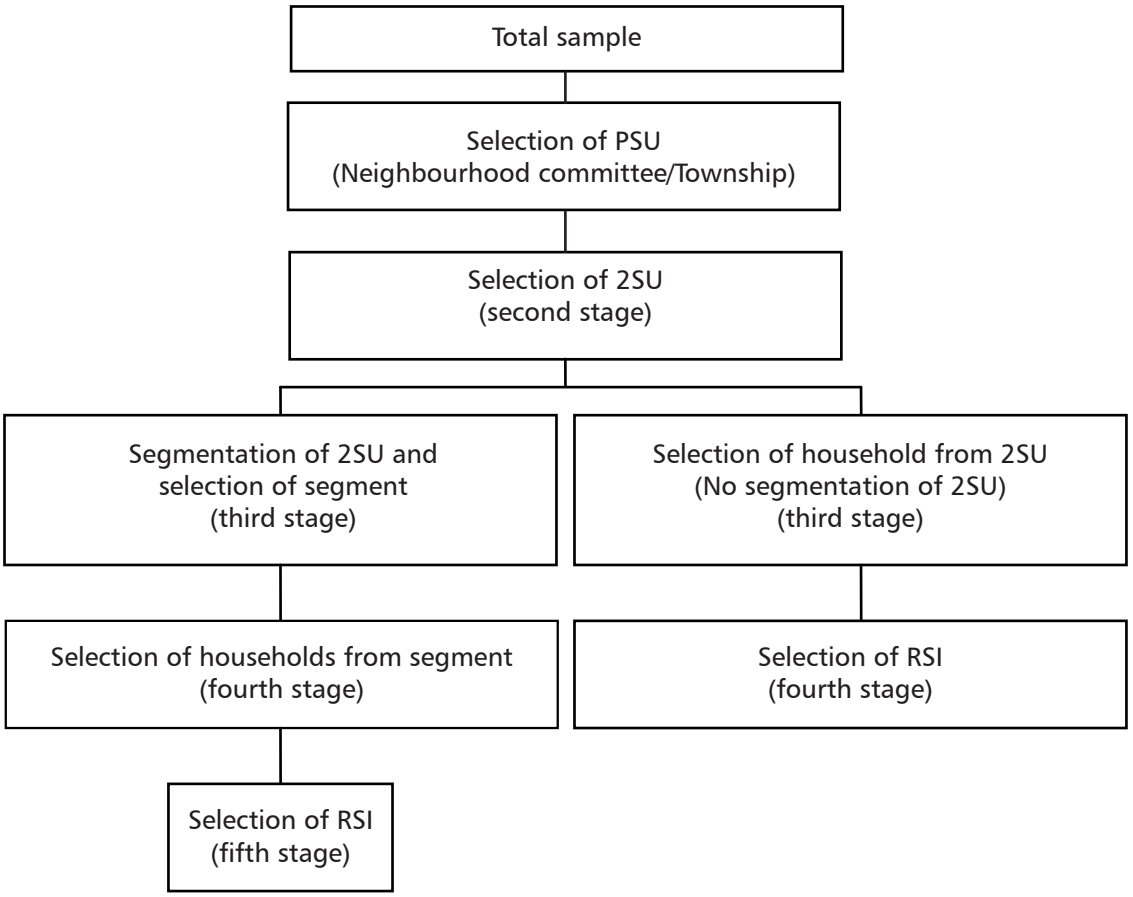
As can be seen, there are 2 distinct tracks by which households (and randomly selected individuals) can be selected. When households (and the individuals within the household) are the ultimate sampling unit the sample is a three to four stage one. In the case of Randomly Selected Individuals the sample is a four to five stage sample.

In order to describe the sample precisely and calculate inclusion probabilities we need to introduce some notation. This is done in Table 1

Table 1: Notation used

Symbol	Meaning
N	Household or individual count (initial estimate)
N^l	Count as listed
N^q	Count as quick-counted
n	Sample count (as per the sample allocation)
m	Sample number of PSUs
K	Number of 2SUs (count)
p	Inclusion probability
h	Index of stratum

Figure 1: The sample structure



Symbol	Meaning
c	Index of area units (either PSU,2SU, 3SU, 4SU (c is further sub indexed with 2,3,4 to indicate sampling stage (sub index 1 for the first stage is omitted)
k	Index of PSU used for simplification when the unit refers to one of c, c,c_2,
f and I	Index of household (f used to indicate household in the sampling stage, i for the list of all households from 1 to n in the sample)
d	Index of person within the household

Selection of PSUs, 2SUs and households

Below is the description of the inclusion probabilities for ***each*** of the 18 replica.

First stage:

The inclusion probabilities for a PSU *c* in stratum *h* is the following:

Equation 1:

$$p_1 = p_{s,c} = \frac{N_{h,c}}{N_h} \cdot m_h$$

This inclusion probability is valid for all first stage selections.

Second stage:

The second stage uses the same formulae as in the first stage, with the exception that m is always 1, thus it has been omitted in the equation.

Equation 2:

$$p_2 = p_{s,c,c_2} = \frac{N_{h,c,c_2}}{N_{h,c}}$$

Optional Third stage:

When PSUs are segmented the probability of inclusion of a segment is:

Equation 3:

$$p_3 = p_{h,c,c_2,c_3} = \frac{N^q_{h,c,c_2,c_3}}{N^q_{h,c,c_2}}$$

Where q indicates that the quick listed counts should be used.

The equation is a standard proportional to size selection equation with m (number of clusters selected) always being 1, thus m has been omitted from the equation.

Fourth/third stage:

Within each PSU a fixed number of households were selected. The inclusion probability for a household *f* within a PSU or segment *k (regardless of how many stages there has been in selecting the unit)* in stratum *h* is then the following:

Equation 4:

$$p_4 = p_f = \frac{n_{h,k}}{N^l_{h,k}}$$

The numbers of households derived from the mapping and listing exercises are used, rather than the initial estimates of individuals from the Census or from NBS.

Last stage of household selection:

The overall inclusion probability for household *i* then becomes:

Equation 5:

$p_i = p_1 p_2 p_f$ when there is no segmenting, or finally:

$p_i = p_1 p_2 p_3 p_f$ when the 2SU has been segmented.

Inclusion probabilities for individuals

In the case of the MEDOW survey a particular complication arises with concern to the calculation of the inclusion probabilities for individuals in the household. In general terms, the inclusion probabilities for individuals are the same as those of the whole households, since all individuals are selected together with the household. Nevertheless, there are two exceptions: The first is that of individuals residing in several households, the second exception regards the randomly selected individuals (RSI) from each household. We will deal with these in turn.

The problem of individuals residing in several households arises from the fact that the MEDOW survey put considerable emphasis on including

migrants. The inclusion of temporary migrants allows households to report members that live in other dwellings than that where the interview was conducted. This may encompass migrants that for most of the year live in the city, but returns to his or her native household occasionally. It also may pertain to nomads that for part of the year split their household. Various temporary members account for about 20 percent of the total recorded population.

Since persons may reside in more than one residence, they may, as long as both residences are located within the 11 western Provinces under study, in theory be selected more than once.

The probability of being included in the sample is the same as that of the household. The probability of being included in another location cannot be directly estimated, but is assumed to be the same as the average for the province. The total inclusion probability for individuals that reside in more than one dwelling is calculated from the compliment of them not being selected, based on the inclusion probability of the household and the average inclusion probability in the "other" province. The probability then becomes:

Equation 6:

$$p_{individual} = \begin{cases} p_i & \text{(More than one dwelling)} \\ 1-((1-p_i)(1-p_p)) & \text{(Otherwise)} \end{cases}$$

Where p_p is the average inclusion probability for the province where the extra dwelling for the individual is located.

Since only one RSI is selected from each household, the inclusion probability for RSI *d* within the N adults of household *f* is:

Equation 7:

$$p_r = p_d = \frac{1}{N^{\geq 15}_{f,d}}$$

The total inclusion probability for a RSI is then $p_{individual} p_{r.}$.

The probabilities for inclusion of other individuals (all women, all children etc.) that are not selected from the individuals with in the household, are thus the same as the household's inclusion probability.

Sampling weights

The expansion sampling weights create estimates equivalent to real numbers in the population, while the relative weights retain the sample size and merely adjust the relative contribution of each unit of analysis (household or individual).

The expansion weights are calculated as the inverse of the inclusion probabilities; while the relative weights are calculated as the expansion weight divided by the mean of all the expansion weights.

Thus, the expansion sampling weight for household *i* is:

Equation 8:

$$W_i^e = \frac{1}{p_i}$$

The sampling weights as such have not been used directly in estimations of survey results; this is due to that sampling weights are adjusted for non-response as will be discussed below.

Sampling weights for individuals and selected RSIs follow the same logic. There will thus be three sets of sampling weights; one for the households, one for individuals and one for the RSIs.

Non response

The results of the interviews or attempted interviews can be studied through a fairly detailed classification of non-response in the questionnaire, derived from Hidiroglou, Drew and Gray (1993). The response categories and the frequency of each category in the framework are given in **Error! Reference source not found.**.

The framework is built around the observation that an interview can be missing for two reasons:

- First, the selected household may not belong to the sampling frame. This is the case for instance for diplomats.
- Second, a selected household, which actually exists and is eligible, may refuse, or not be found at home.

In addition, the classification has to take into account that there will be some situations where the interviewer cannot determine if a household exists or not. Interviewers may also face the situation that the household is available for interview, but that no useful information can be obtained because the respondent is sick or otherwise incapable of answering.

Out of the 44,738 households selected for interview, the interviewers were able to conduct interviews with 41,695, of these 41,222 was successfully complete. The table below shows a breakdown of the response.

Table 3: Non response

Response category	Frequency	Percent
1- Interview completed	40,915	91.5
2- Refusal converted (initial refusal, but then interview carried out)	307	0.7
3- Partly completed	473	1.1
4- Status not determined	70	0.2
5- No useable information	132	0.3
6- Structure/dwelling does not exist	78	0.2
7- No household live in the structure/dwelling	538	1.2
8- Structure/dwelling under construction	5	0.0
9- Not eligible	124	0.3
10- Unable to get in contact with household	1,689	3.8
11- Refusal	407	0.9
Total	44,738	**100.0**

The response rate can be defined as the percentage households that responded to the questionnaire of the total number of eligible households. In MEDOW, 94 percent of all eligible households answered the questionnaires in a valid manner, thus, 41,222 out of 43,958 questionnaires could be used[1]. The refusal rate is the number of refused interviews divided by the number of households contacted for interviewing. A refusal rate of 0.96 percent clearly shows that the overwhelming reason for non-response in the MEDOW survey was not refusal, but listing errors or inability to get into contact with the household.

Weight adjustment and estimation weights

When there is unit non-response, direct use of the sampling weights will result in biased estimation. The biases generally take two forms:

- First; totals will be too small when estimated with sampling expansion weights. This is due to that non-response implies that units that should be added into the total are missing.
- Second; estimation may be biased because non-responding units can have particular characteristics.

One way to reduce the biases produced by unit non-response is to adjust the sampling weights. The method of correction of the weights for non-response used in the MEDOW survey is the so-called "adjustment cell method"(see for instance Lehtonen and Pahkinen 1995; Little and Rubin 1987). In this approach, households that are considered to be fairly similar are identified and the non-response rate is calculated for each group of households, called adjustment cells. In line with the description above, when non-response rates are calculated, only the non-response of those that could have responded but for some reason did not do so is considered.

The inverse of the non-response rate in each adjustment cell was then used to adjust the sampling weights (both expansion and relative) for each household. The result is the so-called estimation weights, both expansion and relative. As a result, the weighted sample size is the same as it would have been if all households had responded. Use of estimation weights also increase the relative contribution to the estimates of units that are similar to those missing.

In the MEDOW survey, adjustment cell groups were constructed using the province, district and the elevation above sea level as measured by GPS in the middle of the selected village or residence committee. Adjustment groups were divided into three equally sized groups according to elevation above sea level. In some cases, when the adjustment cell consisted of only one or two clusters they were merged with an adjacent cluster.

Using the notation in Table 3, the correction factor to the weights for non-response is given in **Error! Reference source not found.**.

Table 4: Notation for non-response adjustment

Symbol	Explanation
C	Adjustment (Correction) factor
a	Index of adjustment cell
h^r	Responding households
h^f	Non responding households

The number of possible interviews (i.e. the denominator in the non-response rate) is the sum of categories 1,2,3,5,10 and 11 in **Error! Reference source not found.**. The number of non-respondent units is the sum of the categories 3, 5, 10 and 11. The "Status not determined" category was distributed across the other categories.

Equation 9:

$$C_a = \frac{1}{\frac{h_a^r}{h_a^r + h_a^f}}$$

1 The total of 43,958 is all questionnaires less not eligible, vacant or non existing and houses under construction. Half of the households where status could not be determined are also subtracted.

The weights are then adjusted according to the following equations:

Equation 10:

$$W_i^{adjusted} = C_i W_i$$

The effect of the corrections is that the expansion weights are increased so that the sum of the estimation expansion weights corresponds to the sum of units in the sample frame (less non-existent or non-eligible units).

National Bureau of Statistics publishes estimates of the population of each of the provinces in China (NBS 2005). In order to make population estimates from the survey consistent with the estimates published by NSB, the estimation weights was adjusted so that the total population counts as estimated from the survey match the population counts as given by NBS. This is shown in the equation below, where P_p is the population of the province where person *i* lives.

Equation 11:

$$W_{p,i}^{estimation} = W_{p,i}^{adjusted} \frac{P_p}{\sum W_{p,i}^{adjusted}}$$

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Life in Western China

Socioeconomic atlas of the Western Provinces of China

Containing more than 150 maps and charts this atlas gives the reader a comprehensive cartographic overview of socioeconomic conditions in the Western Regions of China. Based on interviews with 44,000 households in 11 provinces it provides information on topics such as health, population, environment, education, household economy, labour market, housing and infrastructure.

The atlas is a product of the project "Monitoring Economic and Soical Development in the Western Provinces of China", which also includes a comprehensive tabulation report and an analytical report.

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