
# Access to Health Care and Associated Out-of-pocket Expenditures for People with Disabilities, People with Chronic Diseases and Older People in Cambodia

Analysis of Cambodia Socio-Economic Survey data from 2004, 2007, 2009, 2010, 2011, 2012 and 2013

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# Acronyms and Abbreviations

| | |
|---|---|
| CSES | Cambodia Socio-Economic Survey |
| HEF | Health equity fund |
| OD | Operational (health) district |
| PWCD | Person (people) with a chronic disease |
| PWD | Person (people) with a disability |
| WHO | World Health Organization |

# 1. Key Findings and Conclusions

## 1.1 People with disabilities

- About 3% of Cambodia's population is living with a disability. This rate has slowly decreased from 2009 – 2013, from 3.4% in 2009 to 2.7% in 2013. Between 13% and 14% of households in Cambodia had at least one member with a disability between 2004 and 2009. This rate decreased from 2009 onwards, to 11.2% in 2013. Households with a member with a disability are more common in rural areas and lower consumption quintiles.
- People with a disability (PWD) are almost three times more prone to illness than people without a disability. The incidence of illness for PWD declined from 2004 to 2011, from 62.6% to 43.1%, increased in 2012 to 57.1%, and decreased again in 2013 to 45.6%. Among PWD, older age groups, males, urban residents and those in households with higher consumption are more frequently sick.
- The rate of care-seeking for PWD has increased to over 95% in the last decade, up from 85% in 2004 and close to the rate of care-seeking for people without a disability. PWD more often seek care at a licensed medical provider than people without a disability; this rate has also increased in the last decade.
- PWD more often use public healthcare providers than people without a disability, who more often use non-medical providers. The utilisation of private providers is similar for both groups, and increases over the years studied to about 66% for PWD.
- The average out-of-pocket (OOP) expenditures on health for PWD are more than five times higher than for people without a disability. Older PWD (those 60 years old or older) spend more than other age groups, and PWD in high consumption quintiles also have higher OOP expenditures than PWD in lower quintiles. For those who seek care, PWD spend almost two times more than people without a disability.
- Although PWD accounted for less than 3% of the total population, they paid more than 12% of cumulative OOP expenditures in Cambodia in 2013. However, this proportion has decreased from its peak of 21.8% in 2009.
- PWD also spend significantly more on health-related transport than people without a disability; between five and 10 times more than people without a disability.
- Households with PWD report higher mean and median OOP expenditures than households without PWD, and the difference has increased since 2013. Households with PWD in urban areas and those in higher consumption quintiles have higher OOP expenditures. Average OOP expenditures per household with PWD have almost doubled from 2004 to 2013.
- The capacity to pay for health expenses among households with and without PWD was similar in 2013. OOP expenditures as a proportion of capacity to pay are about twice as high for households with PWD than for households without PWD, accounting for about 15% of capacity to pay in households with PWD in 2013. This proportion is higher for households with a PWD living in rural areas and those in higher consumption quintiles.
- Households with PWD are more likely to face catastrophic health expenditures, impoverishment through illness, and indebtedness through illness, than

households without PWD. Households with PWD in rural areas face these issues more often than households with PWD in urban areas. There are no indications that this has changed from 2004-2013.

## 1.2 Older people

- The share of older people in Cambodia has increased steadily from 2004, and is estimated to increase from 7.6% in 2013 to 21% in 2050, and to 28% in 2070. About one-in-four households have at least one member 60 years old or older.
- Older people (those age 60 and above) are sick more often than people under 60 years old. More than four-in-10 older people were reportedly sick in the month before the CSES survey interview in 2012 and 2013; the highest incidence in all survey years analysed. Among older people, females tend to have higher rates of illness than males.
- Care-seeking for older people with illness increased to more than 97% in 2013, up from about 90% in 2004. Older people also increasingly sought care at licensed medical providers, especially older people in urban areas and in higher consumption quintiles. Older people increasingly seek care at private providers, in comparison to non-medical providers a decade ago.
- Average OOP health expenditures for older people are significantly higher than for people under 60 years old; in most years about three times as much. Older people living in urban areas spend more on healthcare expenses than older people living in rural areas. In addition, the level of OOP expenditures for older people increases with household consumption across all years studied. The share of total OOP expenditures paid by older people is considerably higher than the share of older people in the population, but shows some signs of decreasing in 2011, 2012 and 2013.
- On average, older people also spend about two to three times more on health-related transportation per month than people under 60 years old. For those who sought care, older people spent more than their younger counterparts in 2009 and 2010, but younger people spent more than older people from 2011 to 2013.
- Households with older people report OOP expenditures that are, on average, about 1.5 times higher than households without older people, and the difference has increased in 2012 and 2013.
- The capacity to pay for health care for households with and without an older member is quite similar across the years studied. Capacity to pay has increased about 70% to 75% throughout these years. OOP expenditures on health as a share of capacity to pay are significantly higher for households with older people than for other households.
- In addition, households with older people experience catastrophic health expenditures and impoverishment due to healthcare payments more often than households without older people. Catastrophic health expenditures are more common among households with older people in rural areas and those in higher consumption quintiles. However, households with older people do not take on debts to pay for health services more frequently than households without older people.

## 1.3 People with chronic diseases

- About 3.7% of the population in Cambodia lived with a chronic disease for one year or longer in 2013; a rate that has increased since 2011. Chronic diseases are more common among females, people in rural areas and people in higher consumption quintiles.

- The large majority of people with a chronic disease (PWCD) are seeking care for their illness. PWCD are more likely to seek licensed medical care than people without a chronic disease. This rate is generally higher among PWCD in higher consumption quintiles. PWCD use public health providers more often than people without a chronic disease. Both groups use the services of private healthcare providers more than other types of providers.
- Average OOP expenditures for PWCD are more than 16 times higher than for people without a chronic disease; for those who sought care, OOP expenditures for PWCD are 2.5 times higher than for people without a chronic disease. Average OOP expenditures increase with consumption quintile.
- Average OOP expenditures among PWCD as a share of cumulative OOP has been rising since 2011, and in 2013 accounted for 38% of cumulative OOP expenditures.
- PWCD also spend more on health-related transportation per month than people without a chronic disease; more than 16 times the amount spent by people without a chronic disease. People with a chronic disease who seek care spend up to 3.5 times as much on health-related transportation per month than those without a chronic disease.
- Households with PWCD also show significantly higher average OOP expenditures than households without PWCD; between 4.5 and 7.0 times greater.
- The mean capacity to pay of households with PWCD is higher than the capacity to pay of households without PWCD. However, OOP expenditures as a share of capacity to pay are significantly higher for households with PWCD than for households without PWCD; in most years about four times higher. In 2013, OOP expenditures accounted for almost one-quarter of total capacity to pay for households with a PWCD.
- Households with PWCD are more likely to face catastrophic health expenditures, impoverishment through illness, and indebtedness through illness, than households without PWCD. These issues are more likely to occur in rural areas. The rate of impoverishment among households with PWCD shows signs of decreasing from 2009 to 2013.

## 1.4 Overlap between groups

- Many PWD are also 60 years old or older; between 30% and 40% in all survey years.
- More than one-third of PWCD are older than 60; this share has increased from 2004-2013.
- Between one-in-five and one-in-three PWD also report having a chronic disease.

## 1.5 Analysis of determinants

- The following household characteristics were found to significantly decrease the odds of reporting an illness: household size; having a male-headed household; households with older heads; living in an operational health district (OD) with a health equity fund (HEF); access to improved sanitation; and lower consumption quintile. Individual characteristics that increase the odds of reporting an illness are: low education; being female; old age; and, having a disability.
- The odds of seeking health care increases if an individual lives in a household that: has no access to HEF; lives in Phnom Penh; is in higher consumption quintiles; and whose head has low education (completion of primary grade six or less). At the individual level, the odds of seeking care are similar across age groups. PWD and PWCD have lower odds of seeking care when ill.

- Individuals living in Phnom Penh and people living in households with higher consumption are more likely to seek care at medical providers. Gender, education and age do not have a significant effect on the probability of seeking care at a medical provider. The effect of a disability on care-seeking at a medical provider is higher for individuals in higher consumption quintiles. The effect of a chronic disease on care-seeking is also higher for individuals in higher consumption quintiles, and for individuals living outside Phnom Penh.
- Living in a large household, living in a male-headed household, living with an older household head, living with a household head with more than primary education, and living in an OD with HEF all decrease the probability of reporting positive OOP expenditures. Households with higher consumption are more likely to report positive OOP expenditures. People with low education, children younger than five years old and people in the two oldest age groups (45-59 and ≥60 years) are more likely to report positive OOP expenditures. Having a disability and having a chronic disease increase the odds of reporting positive OOP expenditures.
- The amount of OOP expenditures is positively associated with living with in a male-headed household, living outside Phnom Penh, and in a household with higher consumption. Males spend somewhat more than females. People under 15 years old spend significantly less than their older counterparts. After accounting for selection bias and interaction effects, the main effects of having a disability or a chronic illness are not significantly related to the amount of healthcare expenditures. Having a severe illness, however, significantly increases health spending.
- People living in households with fee exemptions are more likely to report receiving free health care. Females and younger people are less likely to report free health care, but PWD and PWCD had higher odds of reporting free health care.
- Households with a head that has completed primary school or less, households with an older head, households with one or more children under five years old, households living in rural areas outside Phnom Penh, and richer households are more likely to report catastrophic health expenditures. Households with PWD and households with PWCD have higher odds of catastrophic expenditures, but the effect decreases if both PWD and PWCD are present in the same household.
- The odds of impoverishment increase with household size, and in households whose head has low education. Furthermore, having a member with a mild illness, severe illness, chronic disease or disability all increase the odds of impoverishment.
- Households whose head has low education and households with one or more children under five years old are more likely to have a debt to pay for medical expenses. Having an older member, a member with a severe illness, or PWCD increases the likelihood of indebtedness for medical expenses. The effect of having a PWCD decreases when there is also a PWD in the same household.

# 2. Introduction

Coming from decades of civil war and internal conflicts, Cambodia has seen considerable economic growth and stability since the 1990s, and has been one of the fastest growing economies in the last decade. As a result of economic growth driven by increased agricultural productivity, the garment industry, tourism and construction, poverty rates have dropped significantly, from 50.2% in 2004 to 20.5% in 2011.[1] However, despite the impressive growth and poverty reduction, Cambodia remains a low income country according to international standards, and in 2014 ranked 136th on the Human Development Index.[2]

Cambodia's population has shown steady growth over the last decade, from about 13 million people in 2004 to over 15 million in 2013. Cambodia's GDP per capita has also exhibited strong growth over the same period, increasing from USD 406 to more than USD 1,000 in 2013. Based on this strong growth, Cambodia will likely reach lower middle income status within the next few years.

Just as other countries in the region and the world, the demographic composition of Cambodia will change in the next 50 years. With life expectancy quickly increasing, the share of people aged 60 or older in Cambodia is expected to rise to over 20% in 2060.[3]

Besides life expectancy, other health outcomes also exhibit the progress Cambodia has made over the last decade. Infant mortality has more than halved, from 95 to 45 per 1,000 live births from 2000 to 2010. In addition, the mortality rate among children under five years old has considerably improved, from 124 to 54 per 1,000 live births, and the maternal mortality rate has decreased from 437 to 206 per 100,000 live births in the same period.[4]

1 The World Bank (2013). Where Have All The Poor Gone? Cambodia Poverty Assessment 2013. World Bank, Washington, DC.
2 UNDP (2014). 2014 Human Development Report. UNDP.
3 United Nations. (2013). World Population Prospects: The 2012 Revision. United Nations.
4 See Cambodia Demographic and Health Surveys 2000, 2005 and 2010.

# 3. Methodology

This report uses data from the Cambodia Socio-Economic Survey (CSES). The CSES is a nationally representative household survey designed to collect information on the social and economic conditions of households in Cambodia. The survey contains modules on household production and cash income, household level and structure of consumption including: poverty and nutrition; education and access to schooling; health and access to medical care; transport and communications; housing and amenities; and, family and social relations. The CSES was conducted periodically in 1993-1994, 1996, 1997, 1999 and 2004, and then annually from 2007 onwards. This report uses data from the surveys in 2004, 2007, and 2009 to 2013. The sample size for each survey round is about 3,600 households, with the exception of 2004 and 2009 which had samples of about 12,000 households each.

The analysis in this report closely follows the previous analysis on CSES 2004, 2007 and 2009 published in April 2014.[5] The additions in this report extend the timeframe to include data from the most recent years (2010 – 2013) and the specific focus on three vulnerable groups: older people (people 60 years or older); people with a disability (PWD); and, people with a chronic disease (PWCD).

## 3.1 Incidence of illness, health-seeking behaviour, and choice of health provider

The health module of the CSES contains questions on the illnesses and injuries of household members, and their health-seeking behaviour. The incidence of illness is based on the number of individuals who reported having an illness or injury in the 30 days prior to the survey. Health-seeking behaviour is defined as the percentage of people who reported an illness or injury and sought any kind of care or treatment, including care at a provider or self-care.

Individuals that reported seeking care or treatment were then asked what kind of provider they visited. In CSES 2004 and 2007, only the main provider in the 30 days prior to the survey was asked. In CSES 2009 and in all following years, the type of health care provider first visited and, if more than one visit, the kind of healthcare provider for the last visit was recorded. The analysis combined all healthcare providers into eight categories, comparable across all years. These categories are: public health centres; public hospitals; private hospitals; private clinics; pharmacies and other stores selling drugs; home care; traditional healers; and, other providers. In addition to these eight categories, the results can also be categorised in a broader sense into public healthcare providers (public health centres and hospitals), private providers (private hospitals, pharmacies and clinics), and non-medical providers (drug shops, home care, traditional healers and other providers).

Respondents were classified as seeking medical care if they went to any public or private medical provider, therefore excluding the non-medical sector. As up to two providers were recorded in survey data from 2009 to 2013, if respondents went to a public or private medical provider for either visit then they were considered to have sought medical care.

## 3.2 Expenditures on health and transportation

CSES records the total health expenditures for each household member who reported an

5 Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) (2014). *Out-of-Pocket and Catastrophic Expenditure on Health in Cambodia. Cambodian Socio-Economic Surveys 2004, 2007 & 2009 Analysis.*

illness and sought care in the 30 days prior to the survey. The sum of all household members' expenditures is calculated as the household's health expenditures. It is assumed that all payments are made out-of-pocket (OOP). Respondents also report any expenditures for health-related transport in the 30 days prior to the survey. All values are converted to monthly values (at 30.4 days per month).

The contribution of the three vulnerable groups (older people, PWD and PWCD) to total OOP is calculated by estimating the weighted sum of the health expenditures of each of the vulnerable groups as a share of the total weighted health expenditures of the population.

## 3.3 Household consumption, capacity to pay, catastrophic health expenditures, impoverishment and indebtedness

In order to estimate the burden of health expenditures on households, a number of household indicators were estimated, following the methodology described by Xu (2005).[6]

However, first a consistent method of calculating household consumption was required, as the consumption modules in CSES have been updated several times since 2004. In particular, CSES 2012 and CSES 2013 did not employ a diary method to record household consumption, and the recall section of CSES 2004 included fewer items than in subsequent years. In order to arrive at a consistent estimate of household consumption, the analysis closely follows the methodology suggested by the Cambodian Ministry of Planning (2009).[7] This method sums the monthly household consumption of 20 food items, 13 non-food items and six housing costs, all based on respondents' recall. This method was employed for all seven years of CSES data, with the following exceptions:

- For CSES 2004, some non-food items are not in the recall section, so they are taken from the diary section (transportation, communication, personal care, domestic salaries and gambling);
- For CSES 2007 – 2011, the 13 recall items are used, with the exception of education and health expenditures, which are calculated based on their respective modules and not based on the recall section.
- CSES 2012 and 2013 were calculated similarly to CSES 2007 – 2011, but excluded the last two items (taxes) from non-food expenditures, as it is believed that these items may not have been included in the miscellaneous items in the previous years.

Following the WHO method, a food share-based reference was used to estimate household subsistence expenditures. This reference line is defined as the weighted average of equalised food expenditures of the households whose food expenditures as a share of total household expenditures are between the 45th and 55th percentile of the population.

A household's capacity to pay for medical care was defined as a household's non-subsistence spending, which equals the monthly household consumption minus subsistence expenditures. For households with food expenditures lower than their subsistence spending, non-food expenditures were used as non subsistence spending.

The poverty lines used in this report were adopted from the Ministry of Planning's 2009 poverty level, and adjusted for inflation to estimate individual poverty lines per year. Poverty levels for three separate areas (Phnom Penh, rural areas, and other urban areas) were used (Table 1).

6 Xu, K. (2005). "Distribution of health payments and catastrophic expenditures Methodology". WHO, Geneva.
7 Ministry of Planning. (2013). Poverty in Cambodia – A New Approach. Redefining the poverty line. MOP, Phnom Penh.

**Table 1: Poverty level in Cambodia, 2004 – 2013 (in 2013 KHR per day).**

| | 2004 | 2007 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|
| **Phnom Penh** | 4,023 | 4,715 | **6,347** | 6,385 | 6,640 | 7,006 | 7,209 |
| **Other urban** | 2,759 | 3,233 | **4,352** | 4,378 | 4,553 | 4,804 | 4,943 |
| **Rural** | 2,220 | 2,601 | **3,502** | 3,523 | 3,664 | 3,865 | 3,978 |

*Note: Poverty levels for 2009 are taken from Ministry of Planning (2013). Poverty lines for other years are based on the 2009 poverty line, adjusted for inflation.*

Catastrophic health expenditures occur when a household's total OOP health payments equal or exceed 40% of that household's capacity to pay, or non-subsistence spending.

A non-poor household is impoverished by health payments when it becomes poor after paying for health services. In other words, if a non-poor household falls below the poverty line after deducting health expenditures, the household is considered impoverished due to health payments.

Indebtedness due to health payments is defined as a household that has at least one active loan that was taken with the main purpose of paying for an illness, injury or accident.

Table 2 summarises the main indicators used in this report.

**Table 2: Summary and definition of main indicators.**

| Indicator | Numerator | Denominator | Format |
|---|---|---|---|
| Incidence of illness | Number of people reporting an illness or injury in the 30 days before the survey | Total population | % |
| Healthcare-seeking | Number of people who reported an illness or injury and sought care for that illness in the 30 days before the survey | Number of people reporting an illness or injury in the 30 days before the survey | % |
| Medical care-seeking | Number of people who reported an illness or injury, and sought care at a public or private medical provider for that illness in the 30 days before the survey | Number of people reporting an illness or injury in the 30 days before the survey | % |
| Mean out-of-pocket health expenditures per month | Total out-of-pocket health expenditures per month | Total population | 2013 KHR |
| Mean out-of-pocket health expenditures per month, for those who sought care | Total out-of-pocket health expenditures per month | Number of people who reported an illness or injury and sought care for that illness in the 30 days before the survey | 2013 KHR |

| Indicator | Numerator | Denominator | Format |
|---|---|---|---|
| Mean out-of-pocket health expenditures per month, for those with positive OOP | Total out-of-pocket health expenditures per month | Number of people who reported positive out-of-pocket health expenditures in the 30 days before the survey | 2013 KHR |
| Share of [subgroup] of cumulative out-of-pocket health expenditures | Total out-of-pocket health expenditures per month paid by subgroup | Total out-of-pocket health expenditures per month | % |
| Mean health-related transportation expenditures per month | Total health-related transportation expenditures per month | Total population | 2013 KHR |
| Mean health-related transportation expenditures per month, for those who sought care | Total health-related transportation expenditures per month | Number of people who reported an illness or injury and sought care for that illness in the 30 days before the survey | 2013 KHR |
| Mean out-of-pocket health expenditures per household per month | Total out-of-pocket health expenditures per month | Total number of households | 2013 KHR |
| Share of household within [subgroup] of cumulative out-of-pocket health expenditures | Total out-of-pocket health expenditures per month paid by households within *[subgroup]* | Total out-of-pocket health expenditures per month | % |
| Mean household capacity to pay per month | Total capacity to pay | Total number of households | 2013 KHR |
| Mean share of out-of-pocket health expenditures, as share of capacity to pay | Sum of the share of out-of-pocket health expenditures, as share of household capacity to pay | Total number of households | % |
| Mean rate of catastrophic health expenditures | Number of households with catastrophic health expenditures (OOP/capacity to pay of 40% or greater) | Total number of households | % |
| Mean rate of impoverishment | Number of households impoverished due to health payments | Total number of households | % |
| Mean rate of indebtedness | Number of households indebted due to health payments | Total number of households | % |

## 3.4 Definition of people with a disability, people with a chronic disease and older people

The CSES questionnaires include questions to identify the presence and type of disability of each household member. Because the way to define and measure disability is an often contested topic among researchers, the format of these questions has changed slightly over the years, but is reasonably comparable. In 2004 and 2007, the disability question was, "Does [name of household member] have a disability?" After the respondent answered yes or no, the interviewer was instructed to probe for the specific type of disability according to nine coding categories:

1. Difficulty seeing;
2. Difficulty hearing;
3. Difficulty speaking;
4. Difficulty moving;
5. Difficulties in feeling or sensing;
6. Psychological or behavioural difficulties;
7. Learning difficulties;
8. Seizures;
9. Other (specify).

For CSES 2009 and subsequent years, the question was changed slightly to, "Does [name of household member] have any of the following…?" followed by the same list of nine types of disabilities. In all years, up to three types of disabilities for each household member could be recorded.

For the definition of disability in this report, a person was considered disabled if they reported having one or more disability. However, seeing difficulties were excluded as a type of disability for all years, because the incidence of seeing disabilities was inconsistently high in 2009 (Table 3). Based on this definition of disability, the disability rate in Cambodia ranged between 3.4% and 2.7% from 2004 – 2013, and has been slowly declining since 2009 (Table 3).

Chronic diseases have been measured in the CSES since 2009 by a follow-up question if a household member was reportedly sick in the 30 days before the survey. The follow-up question is, "Did [name of household member] have this illness for more than one year already?" There is no information on the types of chronic diseases in the CSES surveys. The share of PWCD was 2.9% in 2009, decreased to 2.3% in 2011, and increased again to 3.7% in 2013 (Table 3).

Older people are defined as people age 60 years old or older. The share of older people in the Cambodian population has increased from 5.3% in 2004 to 7.6% in 2013 (Table 3), and is expected to rise to over 20% by 2060.

**Table 3: Percentage of PWD (including and excluding seeing difficulties), PWCD and older people, among the total population.**

| | 2004 | 2007 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|
| **People with a disability (excluding seeing difficulties)** | 3.1% | 3.0% | 3.4% | 3.1% | 2.8% | 2.7% | 2.7% |
| **People with a disability (any)** | 4.0% | 3.8% | 6.3% | 5.1% | 4.3% | 4.3% | 4.0% |
| **People with a chronic disease (> 1 year)** | – | – | 2.9% | 2.7% | 2.3% | 3.4% | 3.7% |
| **Older people (60 or above)** | 5.3% | 6.5% | 6.9% | 6.7% | 6.8% | 6.9% | 7.6% |

*Source: Estimates based on available data from CSES 2004, 2007, 2009, 2010, 2011, 2012 and 2013.*

## 3.5 Analysis

Most of the analysis in this report is descriptive, and average (mean) values are reported for the relevant groups. In general, PWD are compared to people without a disability, older people are compared to people under 60, and PWCD are compared to people without a chronic disease.

All monetary data is transformed into 2013 values to account for inflation over the period of interest (Table 4).

**Table 4: Inflation rate and inflation adjustment index, 2004 – 2013.**

| | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Inflation rate (from previous year)** | | 3.9% | 6.3% | 6.1% | 7.7% | 25.0% | 0.6% | 4.0% | 5.5% | 2.9% |
| **Index** | 55.8 | 58.0 | 61.6 | 65.4 | 70.4 | 88.0 | 88.6 | 92.1 | 97.2 | 100 |

*Source: World Bank World Development Indicators. Index calculated based on the following formula: (((poverty line in year X – poverty line 2013)/poverty line 2013)*100) + 100.*

Section 3.3 presents results from multivariate analysis on the determinants of variables of interest. For this analysis, multivariate logistic models were conducted on data from CSES 2009.

Stata version SE/12.1 was used for all analysis in this report. Sampling weights were used for all estimates to determine nationally representative estimates. For the determinant analysis, Stata's 'svy' settings were used to account for the complex sampling method of the CSES surveys.

## 3.6 Limitations

In some instances, subgroups had too few cases to present a reliable estimate; especially among PWD and PWCD in the younger age groups. Therefore, age groups have been converted to only three groups: 0-44 years old; 45-59 years old; and 60 years old and above.

There is no common definition of disability. Disability is defined differently in different countries, and various methods have been proposed internationally to describe and categorise impairments and disabilities. CSES uses a rather simple way of measuring disability, by listing potential disabilities and asking if household members suffer from these disabilities. This method relies heavily on a person's own perception of having difficulty doing something.

CSES provides no details on the types of chronic illnesses that respondents suffer from, only that the household member had the illness for more than a year. The analysis could therefore not go into detail about differences among types of chronic diseases, such as diabetes or heart disease.

The CSES records only the total health expenditures in the 30 days prior to the survey, and the first and last healthcare provider visited for each incident. Since individuals can visit health providers multiple times during the reference period (the last month before the interview), it is not possible to link health expenditures to provider groups.

# 4. Findings

## 4.1 People with a disability

Table 5 presents the disability rate among the total population by various factors. The findings indicate that a disability is more common among older age groups than among younger age groups. The rate of disability for people between 45 and 59 years old ranged between 6.7% (2009) and 4.4% (2013), and between 19.1% (2007) and 14.5% (2012) for older people. The data shows, in general, a decreasing rate of disability for all age groups.

With the exception of 2007 and 2012, males tend to have slightly higher rates of disability than females, but the differences are generally small. In addition, the disability rate for people living in rural areas is somewhat higher than for people living in urban areas. Furthermore, the rate of disability is higher for people in the first consumption quintile (those with less wealth) than for people in higher quintiles; the disability rate tends to decrease with consumption across all years analysed.

**Table 5: Percentage of PWD among total population, disaggregated by age, sex, place of residence and consumption quintile.**

| | 2004 | 2007 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|
| Age | | | | | | | |
| Under 5 years | 1.1% | 0.9% | 0.5% | 0.4% | 0.2% | 0.7% | 0.4% |
| 5 – 14 years | 1.0% | 1.0% | 1.1% | 1.0% | 1.0% | 1.2% | 0.8% |
| 15 – 44 years | 2.4% | 1.8% | 2.1% | 2.0% | 1.6% | 1.5% | 1.7% |
| 45 – 59 years | 6.4% | 5.2% | 6.7% | 6.5% | 5.0% | 5.1% | 4.4% |
| 60 and above | 18.1% | 19.1% | 17.7% | 16.0% | 16.4% | 14.5% | 14.7% |
| Sex | | | | | | | |
| Female | 3.0% | 3.3% | 3.3% | 3.0% | 2.6% | 2.7% | 2.6% |
| Male | 3.1% | 2.7% | 3.5% | 3.2% | 2.9% | 2.7% | 2.9% |
| Place of residence | | | | | | | |
| Rural | 3.2% | 3.0% | 3.6% | 3.3% | 3.1% | 2.8% | 2.9% |
| Urban | 2.3% | 3.0% | 2.5% | 2.2% | 1.6% | 2.2% | 2.1% |
| Consumption | | | | | | | |
| First quintile | 3.6% | 3.0% | 4.1% | 3.7% | 4.0% | 3.3% | 3.7% |
| Second quintile | 3.1% | 3.2% | 3.3% | 3.4% | 2.8% | 2.7% | 2.6% |
| Third quintile | 3.1% | 3.1% | 3.3% | 2.6% | 2.3% | 2.7% | 2.8% |
| Fourth quintile | 2.9% | 3.2% | 3.2% | 3.4% | 2.7% | 2.2% | 2.5% |
| Fifth quintile | 2.6% | 2.7% | 2.9% | 2.4% | 2.2% | 2.6% | 2.0% |

*Source: Estimates based on available data from CSES 2004, 2007, 2009, 2010, 2011, 2012 and 2013.*

Table 6 shows the share of households with at least one member with a disability in Cambodia. Between 13% and 14% of households in Cambodia had at least one member with a disability between 2004 and 2009. From 2009, the rate steadily decreases to 11.2% in 2013. Households in rural areas are somewhat more likely to have a member with a disability than households in urban areas. In addition, a higher percentage of households in lower consumption quintiles have a member with a disability than households in higher consumption quintiles. The difference between the lowest and highest consumption quintiles has increased over the years analysed.

**Table 6: Percentage of households with at least one member with a disability, among all households in Cambodia, and by place of residence and consumption quintile.**

| | 2004 | 2007 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|
| **Cambodia** | **13.5%** | **13.0%** | **14.0%** | **12.9%** | **12.0%** | **12.0%** | **11.2%** |
| Place of residence | | | | | | | |
| Rural | 13.9% | 13.0% | 14.7% | 13.6% | 13.2% | 12.7% | 11.8% |
| Urban | 11.4% | 12.8% | 10.8% | 9.6% | 7.1% | 9.5% | 8.7% |
| Consumption | | | | | | | |
| First quintile | 15.4% | 12.7% | 16.3% | 15.4% | 17.1% | 14.1% | 14.2% |
| Second quintile | 14.1% | 13.5% | 13.8% | 13.3% | 11.3% | 11.5% | 10.8% |
| Third quintile | 13.5% | 14.0% | 13.7% | 11.2% | 10.1% | 12.7% | 11.6% |
| Fourth quintile | 13.2% | 13.1% | 13.8% | 14.4% | 11.7% | 10.5% | 10.5% |
| Fifth quintile | 11.3% | 11.5% | 12.3% | 10.0% | 9.6% | 11.0% | 8.6% |

*Source: Estimates based on available data from CSES 2004, 2007, 2009, 2010, 2011, 2012 and 2013.*

### 4.1.1 Incidence of illness and health-seeking behaviour

#### *Incidence of illness*

PWD consistently report a higher incidence of illness than people without a disability (Table 7).The incidence of illness is between 2.5 and 3.5 times higher for PWD than for people without a disability across the time period of this analysis. Among PWD, older age groups in general have a higher incidence of illness than younger age groups, especially in more recent years. In addition, women with a disability are sick more often than men with a disability, and PWD living in urban areas have a higher incidence of illness than PWD living in rural areas. Furthermore, PWD living in wealthier households are more often sick than PWD living in poorer households.

**Table 7: Incidence of illness in the total population, and disaggregated by disability and age group, sex, place of residence and consumption quintile.**

| | 2004 | 2007 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|
| **Population** | **18.0%** | **15.3%** | **14.4%** | **19.1%** | **15.8%** | **19.5%** | **17.7%** |
| People without disability | 16.6% | 14.2% | 13.3% | 18.2% | 15.0% | 18.5% | 16.9% |
| People with disability | 62.6% | 49.1% | 45.6% | 47.0% | 43.1% | 57.1% | 45.6% |
| Age | | | | | | | |
| 0 – 44 years | 60.7% | 49.0% | 34.6% | 32.9% | 30.9% | 39.3% | 22.3% |
| 45 – 59 years | 66.7% | 54.9% | 43.4% | 57.1% | 41.0% | 61.9% | 46.7% |
| 60 and above | 62.8% | 46.3% | 59.1% | 55.9% | 55.6% | 72.7% | 66.2% |
| Sex | | | | | | | |
| Female | 66.6% | 48.5% | 50.1% | 50.3% | 48.3% | 66.8% | 53.7% |
| Male | 58.3% | 49.8% | 41.1% | 43.7% | 38.2% | 47.1% | 37.9% |
| Place of residence | | | | | | | |
| Rural | 62.5% | 50.6% | 44.9% | 46.4% | 41.7% | 57.1% | 44.5% |
| Urban | 63.3% | 42.4% | 49.8% | 51.0% | 54.0% | 56.8% | 51.0% |
| Consumption | | | | | | | |
| First quintile | 57.4% | 31.0% | 40.3% | 42.4% | 32.2% | 46.1% | 49.0% |
| Second quintile | 62.2% | 55.1% | 40.4% | 44.6% | 51.5% | 54.6% | 40.8% |
| Third quintile | 63.1% | 50.3% | 42.0% | 49.5% | 30.5% | 65.1% | 32.1% |
| Fourth quintile | 63.4% | 51.4% | 52.3% | 47.4% | 46.7% | 54.8% | 40.9% |
| Fifth quintile | 68.3% | 55.4% | 54.8% | 53.9% | 61.3% | 66.6% | 69.6% |

*Source: Estimates based on available data from CSES 2004, 2007, 2009, 2010, 2011, 2012 and 2013*

### *Healthcare seeking*

Table 8 reports the rate of care-seeking for people who reported being ill in the 30 days before the interview. The rate of care-seeking has increased over the years for both people with and without a disability, to become almost universal (i.e., nearly 100% of people surveyed sought care in the last month). There are few differences between age groups or gender, but PWD in lower consumption quintiles have a lower rate of care-seeking than PWD in the highest consumption quintile across all years analysed.

**Table 8: Percentage of people who sought care for an illness, disaggregated by disability and age group, sex, place of residence and consumption quintile.**

| | 2004 | 2007 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|
| **Population** | **90.3%** | **91.5%** | **91.4%** | **95.2%** | **96.6%** | **98.1%** | **98.6%** |
| People without disability | 90.9% | 91.6% | 91.9% | 95.4% | 96.7% | 98.2% | 98.8% |
| People with disability | 85.4% | 91.0% | 87.6% | 92.2% | 96.4% | 96.2% | 95.0% |

| | 2004 | 2007 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|
| Age | | | | | | | |
| 0 – 44 years | 84.5% | 90.2% | 82.8% | 92.2% | 100.0% | 93.8% | 96.7% |
| 45 – 59 years | 85.3% | 92.6% | 89.6% | 86.9% | 94.3% | 94.8% | 99.0% |
| 60 and above | 86.8% | 90.7% | 89.7% | 96.3% | 95.4% | 98.3% | 93.0% |
| Sex | | | | | | | |
| Female | 85.5% | 89.3% | 88.6% | 94.5% | 98.0% | 96.9% | 95.4% |
| Male | 85.3% | 93.1% | 86.4% | 89.6% | 94.3% | 95.2% | 94.4% |
| Place of Residence | | | | | | | |
| Rural | 85.5% | 90.0% | 87.4% | 93.8% | 95.8% | 95.8% | 94.1% |
| Urban | 84.9% | 96.0% | 88.9% | 83.2% | 100.0% | 97.9% | 98.8% |
| Consumption | | | | | | | |
| First quintile | 72.9% | 72.8% | 78.9% | 94.0% | 91.1% | 96.2% | 84.7% |
| Second quintile | 88.1% | 83.2% | 86.0% | 86.8% | 92.6% | 94.0% | 98.8% |
| Third quintile | 87.3% | 96.1% | 90.5% | 89.3% | * | 98.3% | 96.5% |
| Fourth quintile | 89.3% | 95.5% | 87.8% | 95.6% | 100.0% | 95.9% | 100.0% |
| Fifth quintile | 90.5% | 98.4% | 94.5% | 95.1% | 100.0% | 96.0% | 100.0% |

*An asterisk (*) indicates that the estimate is based on 25 or less unweighted cases and has been suppressed.*
*Source: Estimates based on available data from CSES 2004, 2007, 2009, 2010, 2011, 2012 and 2013.*

In addition to seeking care for an illness, it is useful to analyse the share of people with an illness who seek care at licensed medical providers, as opposed to unlicensed, home-based or traditional providers. Table 9 presents the results for all people, and disaggregated by those with and without a disability. Care-seeking at a medical provider increased across the total population in the years analysed. Except in 2004 and 2009, PWD sought care for an illness at a licensed medical provider more often than people without a disability, with the rate increasing over time for both groups. There is no general trend visible across age groups. In some years (2007, 2009, 2012 and 2013), females with a disability more often seek care at medical providers than males with a disability, but this is switched in other years (2004, 2010 and 2011). PWD in lower consumption groups tend to seek care at medical providers less often than PWD in higher consumption groups.

**Table 9: Percentage of people who sought care for an illness at a medical provider, disaggregated by disability, age group, sex, place of residence and consumption quintile.**

| | 2004 | 2007 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|
| **Population** | **52.4%** | **55.2%** | **68.6%** | **66.8%** | **65.0%** | **77.2%** | **80.8%** |
| People without disability | 52.7% | 54.2% | 68.8% | 66.5% | 64.2% | 76.9% | 80.6% |
| People with disability | 49.9% | 63.7% | 67.1% | 70.8% | 74.7% | 80.2% | 83.7% |
| Age | | | | | | | |
| 0 – 44 years | 53.3% | 71.1% | 62.4% | 71.1% | 70.3% | 79.9% | 86.1% |
| 45 – 59 years | 46.0% | 56.7% | 70.9% | 69.2% | 83.3% | 82.3% | 83.3% |
| 60 and above | 47.2% | 63.0% | 68.2% | 71.8% | 73.4% | 79.2% | 83.2% |

| | 2004 | 2007 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|
| Sex | | | | | | | |
| Female | 49.5% | 67.9% | 68.2% | 69.9% | 72.4% | 84.0% | 86.2% |
| Male | 50.4% | 58.3% | 65.7% | 71.8% | 77.6% | 74.7% | 80.5% |
| Place of Residence | | | | | | | |
| Rural | 48.8% | 63.3% | 64.6% | 71.6% | 72.2% | 78.3% | 81.6% |
| Urban | 58.0% | 65.6% | 80.2% | 66.3% | 89.8% | 89.2% | 93.1% |
| Consumption | | | | | | | |
| First quintile | 36.7% | 59.7% | 49.1% | 67.7% | 68.4% | 71.1% | 71.6% |
| Second quintile | 40.6% | 65.1% | 54.0% | 61.4% | 59.2% | 74.4% | 88.1% |
| Third quintile | 47.8% | 62.0% | 71.0% | 62.4% | 65.9% | 82.2% | 78.4% |
| Fourth quintile | 54.2% | 63.5% | 71.0% | 78.9% | 78.9% | 83.2% | 95.4% |
| Fifth quintile | 72.2% | 65.8% | 87.1% | 83.4% | 97.8% | 88.7% | 90.1% |

*Source: Estimates based on available data from CSES 2004, 2007, 2009, 2010, 2011, 2012 and 2013.*

### *Type of healthcare provider*

The type of healthcare provider by disability status is reported in Table 10. PWD more often use public providers than people without a disability, who in turn more often use non-medical providers, particularly in more recent years. The use of private providers was higher for people without a disability from 2004 to 2010, but has been similar across the two groups since 2011. Although the use of public providers has remained quite stable across the years, the use of private providers has increased considerably for both groups, and the use of non-medical providers has declined.

**Table 10: Use of health care provider type, among all reported treatments, disaggregated by disability status.**

| | 2004 | 2007 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|
| **Public** | | | | | | | |
| Population | 11.9% | 14.9% | 20.0% | 16.8% | 15.2% | 18.6% | 15.7% |
| People without disability | 11.7% | 13.7% | 19.4% | 15.8% | 14.4% | 18.0% | 15.2% |
| People with disability | 14.2% | 26.4% | 25.5% | 28.3% | 24.3% | 25.2% | 21.7% |
| **Private** | | | | | | | |
| Population | 34.2% | 43.9% | 54.1% | 52.7% | 52.3% | 59.3% | 66.0% |
| People without disability | 34.8% | 44.0% | 54.6% | 53.1% | 52.4% | 59.4% | 66.1% |
| People with disability | 29.4% | 42.7% | 49.8% | 48.3% | 51.6% | 58.3% | 65.3% |
| **Non-medical** | | | | | | | |
| Population | 53.9% | 41.2% | 25.9% | 30.5% | 32.5% | 22.1% | 18.3% |
| People without disability | 53.6% | 42.3% | 26.1% | 31.1% | 33.2% | 22.6% | 18.7% |
| People with disability | 56.4% | 30.8% | 24.7% | 23.4% | 24.1% | 16.4% | 13.1% |

*Note: For years 2009 – 2013, the type of provider for the first visit is reported.*
*Source: Estimates based on available data from CSES 2004, 2007, 2009, 2010, 2011, 2012 and 2013.*

### 4.1.2 Healthcare expenditures

PWD spend considerable more on health care than people without a disability (Table 11). Compared to 2004, PWD spent about 75% more on health care per month in 2013, and almost twice as much in 2012, showing a clear upward trend across the years. Mean OOP health expenditures also vary by subgroups among PWD. Older PWD generally tend to spend more on health care than younger PWD. In the three most recent years, females with a disability spent more than males with a disability, but in 2004, 2007 and 2010, males with a disability spent more than females with a disability. Except in 2010 and 2012, PWD living in urban areas generally have higher health costs than PWD living in rural areas. Looking at consumption quintiles, it is evident that PWD in higher consumption households spend much more money on health care than PWD in lower consumption households. This finding is consistent across all years.

**Table 11: Mean out-of-pocket health expenditures per person per month, by disability status, age group, sex, place of residence and consumption quintile (in 2013 KHR).**

| | 2004 | 2007 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|
| **Population** | **8,696** | **7,089** | **10,728** | **11,982** | **8,156** | **16,777** | **16,983** |
| People without disability | 7,553 | 5,800 | 8,683 | 10,321 | 6,777 | 14,792 | 15,303 |
| People with disability | 44,784 | 48,383 | 69,506 | 63,805 | 56,597 | 88,378 | 77,280 |
| Age | | | | | | | |
| 0 – 44 years | 35,191 | 33,750 | 51,022 | 48,505 | 37,099 | 39,679 | 53,755 |
| 45 – 59 years | 60,327 | 44,661 | 84,732 | 109,832 | 31,695 | 108,782 | 102,277 |
| 60 and above | 50,084 | 63,937 | 79,034 | 47,066 | 88,635 | 126,543 | 85,929 |
| Sex | | | | | | | |
| Female | 40,975 | 46,969 | 76,929 | 54,553 | 87,150 | 104,451 | 79,937 |
| Male | 48,735 | 50,214 | 62,119 | 73,064 | 27,298 | 71,968 | 74,773 |
| Place of residence | | | | | | | |
| Rural | 36,699 | 43,527 | 64,777 | 66,491 | 53,854 | 94,193 | 68,965 |
| Urban | 104,853 | 68,934 | 97,200 | 47,035 | 77,669 | 61,398 | 119,855 |
| Consumption | | | | | | | |
| First quintile | 6,025 | 5,613 | 7,717 | 8,065 | 4,654 | 11,242 | 13,166 |
| Second quintile | `13,129 | 15,351 | 16,342 | 15,858 | 10,038 | 17,437 | 29,054 |
| Third quintile | 21,261 | 15,310 | 25,689 | 28,492 | 14,241 | 46,524 | 28,687 |
| Fourth quintile | 43,050 | 46,877 | 55,918 | 40,226 | 50,104 | 71,168 | 64,747 |
| Fifth quintile | 162,320 | 146,685 | 267,389 | 287,549 | 261,150 | 317,500 | 329,318 |

*Source: Estimates based on available data from CSES 2004, 2007, 2009, 2010, 2011, 2012 and 2013*

Table 12 presents the results for those who sought care, and those with positive OOP expenditures (excluding people with free health care, such as HEF members). Again, PWD spend more money on their healthcare needs than people without a disability. When seeking care, PWD spend between two and 2.5 times as much as people without a disability in most years. This is also true among people with positive OOP expenditures.

**Table 12: Mean out-of-pocket health expenditures per person per month, disaggregated by care-seeking, positive out-of pocket expenditures and disability status (in 2013 KHR).**

| | 2004 | 2007 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|
| **Mean OOP among those who sought care** | | | | | | | |
| Population | 53,529 | 49,073 | 76,562 | 64,704 | 52,539 | 86,354 | 96,783 |
| People without disability | 50,128 | 43,076 | 66,497 | 58,286 | 45,935 | 80,272 | 90,925 |
| People with disability | 83,825 | 105,418 | 167,781 | 145,587 | 133,012 | 159,144 | 178,579 |
| **Mean OOP among those with positive OOP** | | | | | | | |
| Population | 54,873 | 50,510 | 77,225 | 67,566 | 54,770 | 89,554 | 99,705 |
| People without disability | 51,351 | 44,126 | 66,909 | 60,637 | 47,757 | 83,017 | 93,458 |
| People with disability | 86,543 | 113,639 | 173,064 | 159,605 | 143,335 | 170,708 | 189,980 |

*Source: Estimates based on available data from CSES 2004, 2007, 2009, 2010, 2011, 2012 and 2013.*

Using the health expenditure data in the CSES, the percentage of cumulative OOP health expenditures in the population paid by PWD was estimated. Results are presented in Table 13, which shows that this share increased from 15.8% in 2004 to 21.8% in 2009, and then decreased dramatically to 12.3% in 2013. As the share of PWD in the population in most years is only around 3%, this indicates that PWD pay a disproportionately large share of cumulative OOP health expenditures.

**Table 13: Percentage of total out-of-pocket health expenditures paid by people with a disability.**

| | 2004 | 2007 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|
| Share of total OOP paid by PWD | 15.8% | 20.7% | 21.8% | 16.5% | 19.2% | 14.2% | 12.3% |

### *Transportation expenses*

From CSES 2009 onwards, the health-related transportation expenses were recorded for household members who made at least one healthcare visit in the last month. Examining this data by disability status, mean transportation expenditures are between five and 10 times higher for PWD than for people without a disability (Table 14). For those who sought care, PWD also spend considerably more on transportation to health providers than people without a disability. The transportation expenses are quite consistent across years.

**Table 14, Mean health-related transportation expenditures per person per month, disaggregated by care-seeking and disability status (in 2013 KHR).**

| | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|
| **Mean transportation expenditures per month** | | | | | |
| Population | 1,253 | 1,174 | 867 | 1,972 | 1,614 |
| People without disability | 1,023 | 979 | 688 | 1,712 | 1,437 |
| People with disability | 7,877 | 7,264 | 7,162 | 11,364 | 7,967 |

| | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|
| **Mean transportation expenditures per month for those who sought care** | | | | | |
| Population | 8,109 | 6,235 | 5,375 | 10,140 | 9,190 |
| People without disability | 6,991 | 5,443 | 4,434 | 9,277 | 8,530 |
| People with disability | 18,241 | 16,215 | 16,831 | 20,464 | 18,411 |

*Source: Estimates based on available data from CSES 2004, 2007, 2009, 2010, 2011, 2012 and 2013.*

### *Household out-of-pocket expenditures*

The mean OOP health expenditures for households with and without PWD are presented in Table 15. Households with PWD spend between two to three times more on healthcare expenditures than households without PWD. In addition, households with PWD in urban areas in general spend more on health than households with PWD in rural areas, except in 2010 and 2012. Similar to individuals, households with PWD in higher consumption quintiles have considerably higher health expenditures than households with PWD in the lower quintiles. For all groups, mean monthly household OOP expenditures for health have almost doubled from 2004 to 2013.

**Table 15: Mean out-of-pocket health expenditures among households, disaggregated by households with and without at least one person with a disability, place of residence and consumption quintile (in 2013 KHR).**

| | 2004 | 2007 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|
| **All households** | **44,424** | **32,638** | **51,709** | **56,087** | **38,360** | **80,099** | **78,058** |
| Households without PWD | 38,273 | 26,974 | 39,993 | 49,253 | 31,564 | 68,548 | 67,858 |
| Households with PWD | 83,893 | 70,690 | 123,849 | 102,332 | 88,290 | 164,979 | 159,310 |
| Place of residence | | | | | | | |
| Rural | 72,084 | 67,974 | 117,987 | 105,272 | 86,582 | 178,749 | 142,119 |
| Urban | 164,692 | 89,190 | 160,355 | 84,342 | 101,220 | 101,041 | 247,729 |
| Consumption | | | | | | | |
| First quintile | 11,329 | 12,451 | 16,312 | 13,050 | 12,436 | 31,281 | 23,824 |
| Second quintile | 26,204 | 29,288 | 33,477 | 44,535 | 24,145 | 38,022 | 64,508 |
| Third quintile | 41,755 | 37,615 | 58,547 | 54,718 | 39,880 | 93,285 | 85,526 |
| Fourth quintile | 78,557 | 75,565 | 114,575 | 78,466 | 90,809 | 131,157 | 141,058 |
| Fifth quintile | 307,745 | 218,465 | 450,940 | 404,858 | 346,295 | 583,932 | 625,119 |

*Source: Estimates based on available data from CSES 2004, 2007, 2009, 2010, 2011, 2012 and 2013.*

Table 16 presents the percentage of cumulative OOP health expenditures paid by households with PWD. In most years, households with PWD pay about a quarter of cumulative OOP health expenditures in Cambodia. In 2009, this rate was higher, with about one-third of cumulative OOP. The rate shows a decreasing trend since 2009, from 33.5%, to 22.8% in 2013.

**Table 16: Share of total cumulative out-of-pocket health expenditures paid by households with at least one person with a disability**

| | 2004 | 2007 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|
| Share of total OOP paid by households with PWD | 25.5% | 28.1% | 33.5% | 23.5% | 27.6% | 24.7% | 22.8% |

### 4.1.3 Capacity to pay, catastrophic health expenditure, impoverishment and indebtedness

Capacity to pay is the total consumption of a household minus its subsistence expenditures. Table 17 shows that the capacity to pay for households with and without PWD are in the same range across the years studied. Among households with PWD, those in rural areas have a lower capacity to pay than households in urban areas. Not surprisingly, the capacity to pay also increases with consumption quintile. Capacity to pay has almost doubled among all households since 2004.

**Table 17: Capacity to pay among households, disaggregated by disability, place of residence and consumption quintile (in 2013 KHR).**

| | 2004 | 2007 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|
| **All households** | **406,781** | **464,707** | **626,682** | **623,271** | **610,804** | **694,684** | **707,644** |
| Households without PWD | 410,463 | 467,512 | 625,738 | 629,993 | 617,660 | 697,494 | 705,068 |
| Households with PWD | 383,161 | 445,870 | 632,493 | 577,782 | 560,427 | 674,032 | 728,168 |
| Place of residence | | | | | | | |
| Rural | 318,463 | 377,394 | 505,457 | 474,186 | 477,714 | 621,204 | 615,411 |
| Urban | 825,833 | 912,280 | 1,423,634 | 1,211,625 | 1,186,624 | 919,332 | 1,308,129 |
| Consumption | | | | | | | |
| First quintile | 76,646 | 84,643 | 152,619 | 180,617 | 188,197 | 210,352 | 252,935 |
| Second quintile | 130,155 | 161,680 | 246,095 | 286,269 | 288,488 | 348,015 | 393,346 |
| Third quintile | 206,969 | 252,322 | 395,242 | 411,069 | 430,591 | 527,172 | 579,115 |
| Fourth quintile | 398,954 | 469,450 | 694,328 | 647,651 | 666,261 | 800,518 | 828,918 |
| Fifth quintile | 1,293,064 | 1,388,024 | 1,897,232 | 1,664,499 | 1,549,628 | 1,657,663 | 2,014,691 |

*Source: Estimates based on available data from CSES 2004, 2007, 2009, 2010, 2011, 2012 and 2013.*

Table 18 reports the average percentage of OOP health expenditures as a proportion of a household's capacity to pay. This is a measure of the burden of health expenditures on the household budget. The share of OOP in the capacity to pay for households with PWD is about two times as high as for households without PWD. This proportion decreased from 2004 to 2011, but increased again in the last years analysed (2012 and 2013). Furthermore, this proportion is higher for households with PWD who live in rural areas, and is also higher for households in higher consumption quintiles.

**Table 18: Out-of-pocket health expenditures as a share of capacity to pay among households, disaggregated by households with and without PWD, place of residence and consumption quintile.**

| | 2004 | 2007 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|
| **All households** | **8.7%** | **7.3%** | **7.1%** | **6.7%** | **5.2%** | **9.5%** | **8.9%** |
| Households without PWD | 7.4% | 6.2% | 6.1% | 5.9% | 4.5% | 8.4% | 8.0% |
| Households with PWD | 16.7% | 14.5% | 13.6% | 12.4% | 10.6% | 17.0% | 15.7% |
| Place of residence | | | | | | | |
| Rural | 17.1% | 15.0% | 14.3% | 13.3% | 11.3% | 18.5% | 16.1% |
| Urban | 13.9% | 10.8% | 8.8% | 6.6% | 5.8% | 10.3% | 13.7% |
| Consumption | | | | | | | |
| First quintile | 12.2% | 11.4% | 9.7% | 5.9% | 5.8% | 13.8% | 8.5% |
| Second quintile | 16.1% | 19.5% | 11.9% | 12.6% | 8.1% | 10.3% | 15.0% |
| Third quintile | 17.8% | 13.4% | 12.7% | 12.1% | 8.3% | 17.3% | 14.5% |
| Fourth quintile | 18.6% | 14.4% | 15.3% | 12.4% | 15.1% | 16.6% | 16.7% |
| Fifth quintile | 19.6% | 13.5% | 19.6% | 22.2% | 19.1% | 28.3% | 28.8% |

*Source: Estimates based on available data from CSES 2004, 2007, 2009, 2010, 2011, 2012 and 2013.*

Catastrophic health expenditures occur when the proportion of OOP is equal to or exceeds 40% of a household's capacity to pay. Catastrophic health expenditures occur more often in households with PWD (Table 19). Catastrophic health expenditures decreased from 2004 to 2011, but increased again in 2012 and 2013. In addition, catastrophic health expenditures are more common in households with PWD living in rural areas. They are also more common in higher consumption households.

**Table 19: Catastrophic health expenditures among households, disaggregated by households with and without PWD, place of residence and consumption quintile.**

| | 2004 | 2007 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|
| **All households** | **7.1%** | **5.6%** | **5.2%** | **4.3%** | **3.4%** | **6.9%** | **6.3%** |
| Households without PWD | 5.8% | 4.6% | 4.0% | 3.4% | 2.7% | 5.9% | 5.4% |
| Households with PWD | 15.0% | 12.8% | 12.2% | 10.7% | 8.2% | 14.1% | 13.4% |
| Place of residence | | | | | | | |
| Rural | 15.3% | 13.7% | 13.4% | 11.9% | 9.2% | 16.3% | 14.2% |
| Urban | 13.4% | 6.8% | 5.1% | 3.1% | 0.9% | 3.6% | 9.2% |
| Consumption | | | | | | | |
| First quintile | 8.0% | 9.8% | 6.4% | 3.7% | 2.4% | 11.0% | 3.3% |
| Second quintile | 14.3% | 21.1% | 11.4% | 13.0% | 3.3% | 5.4% | 9.7% |
| Third quintile | 15.4% | 11.1% | 10.6% | 9.9% | 9.4% | 14.4% | 12.2% |
| Fourth quintile | 18.2% | 11.9% | 13.9% | 5.0% | 12.9% | 13.8% | 16.1% |
| Fifth quintile | 21.3% | 9.3% | 21.0% | 27.2% | 17.6% | 26.9% | 33.0% |

*Source: Estimates based on available data from CSES 2004, 2007, 2009, 2010, 2011, 2012 and 2013.*

Households can become impoverished due to healthcare spending, if the household moves below the poverty line after deducting monthly health expenditures. Households with PWD have a consistently higher rate of impoverishment than households without PWD (Table 20). However, the rate of impoverishment has more than halved from 2004 to 2013. Households with PWD in rural areas are more prone to impoverishment than households with PWD in urban areas, except in 2004. The rate of impoverishment also varies by consumption quintile. In 2004, the highest rate of impoverishment occurred in the fourth quintile, but from 2011 – 2013 the highest rate of impoverishment occurred in the first quintile. This may be due to the decreasing number of households living below the poverty line over these years.

**Table 20: Impoverishment due to health expenditures among households, disaggregated by households with and without PWD, place of residence and consumption quintile.**

| | 2004 | 2007 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|
| **All households** | **3.5%** | **2.9%** | **2.5%** | **2.2%** | **1.8%** | **2.7%** | **1.4%** |
| Households without PWD | 3.1% | 2.4% | 2.1% | 1.7% | 1.7% | 2.5% | 1.2% |
| Households with PWD | 6.5% | 6.4% | 4.8% | 5.5% | 2.5% | 4.2% | 2.8% |
| Place of residence | | | | | | | |
| Rural | 6.1% | 6.6% | 5.0% | 6.1% | 2.9% | 5.1% | 2.8% |
| Urban | 9.1% | 5.0% | 2.9% | 1.9% | 0.0% | 0.0% | 3.2% |
| Consumption | | | | | | | |
| First quintile | 0.3% | 0.0% | 4.8% | 2.3% | 3.5% | 12.3% | 5.9% |
| Second quintile | 1.0% | 4.4% | 8.0% | 14.8% | 3.2% | 2.9% | 4.5% |
| Third quintile | 7.6% | 11.8% | 6.6% | 8.3% | 1.6% | 1.6% | 1.4% |
| Fourth quintile | 15.5% | 10.2% | 3.2% | 1.2% | 0.0% | 0.0% | 1.0% |
| Fifth quintile | 9.7% | 4.8% | 0.8% | 1.0% | 4.1% | 2.2% | 0.0% |

*Source: Estimates based on available data from CSES 2004, 2007, 2009, 2010, 2011, 2012 and 2013.*

Finally, Table 21 presents the share of households that currently have a debt to pay for health expenditures. Households with PWD have debt to pay for health care more often than other households. After initial declines, this rate reached its highest point in 2013. Indebtedness due to healthcare expenses occurs more frequently in households with PWD in rural areas, compared to similar households in urban areas. The rate of indebtedness also varies by consumption quintile, but there is no clear trend. Sometimes households in lower quintiles have more health-related debt (e.g., in 2004 and 2011) and in some years, households in higher quintiles have more debt for health care (e.g., in 2012 and 2013).

**Table 21: Indebtedness to pay for health care, disaggregated by households with and without PWD, place of residence and consumption quintile.**

| | 2004 | 2007 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|
| **All households** | **4.9%** | **4.0%** | **3.8%** | **3.9%** | **4.1%** | **4.0%** | **3.1%** |
| Households without PWD | 4.4% | 3.3% | 3.5% | 3.5% | 3.6% | 3.5% | 2.4% |
| Households with PWD | 8.1% | 8.4% | 5.7% | 6.9% | 7.9% | 7.6% | 8.8% |
| Place of residence | | | | | | | |
| Rural | 8.6% | 9.1% | 6.1% | 7.3% | 8.7% | 7.7% | 9.6% |
| Urban | 5.2% | 3.5% | 3.2% | 4.2% | 1.4% | 7.4% | 4.6% |
| Consumption | | | | | | | |
| First quintile | 7.5% | 8.0% | 6.1% | 8.9% | 10.9% | 7.2% | 8.4% |
| Second quintile | 10.2% | 5.7% | 6.4% | 7.0% | 4.8% | 7.6% | 4.1% |
| Third quintile | 8.8% | 15.5% | 4.6% | 6.2% | 9.5% | 4.6% | 8.5% |
| Fourth quintile | 7.6% | 7.8% | 6.3% | 7.6% | 4.8% | 10.5% | 13.7% |
| Fifth quintile | 6.3% | 3.9% | 4.9% | 3.6% | 8.0% | 9.1% | 9.5% |

*Source: Estimates based on available data from CSES 2004, 2007, 2009, 2010, 2011, 2012 and 2013.*

## 4.2 Older people

As described in the methodology section, older people are defined as people 60 years old and older. The share of older people in the Cambodian population has increased from 5.3% in 2004 to 7.6% in 2013 (see Table 3). Table 22 presents the future projections of the share of older people in Cambodia, Southeast Asia, and the world. It is expected that in 2070, more than one-quarter (28.1%) of Cambodians will be 60 years old or older, a higher rate than the average among all Southeast Asian countries, and more than 5% higher than the average rate of all countries in the world.

**Table 22: Percentage of the population age 60 and older, in Cambodia, Southeast Asia and the world; 1970 – 2070 (estimate).**

| | 1970 | 1980 | 1990 | 2000 | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Cambodia | 4.3% | 4.7% | 5.1% | 5.7% | 7.2% | 9.4% | 12.8% | 14.7% | 21.2% | 25.3% | 28.1% |
| Southeast Asia | 5.8% | 5.9% | 6.4% | 7.4% | 8.1% | 11.2% | 15.1% | 18.9% | 22.4% | 25.1% | 27.5% |
| World | 8.3% | 8.6% | 9.2% | 10.0% | 11.1% | 13.4% | 16.3% | 18.6% | 21.2% | 22.7% | 23.8% |

Note: Figures for Southeast Asia include 11 countries: Brunei Darussalam, Cambodia, Indonesia, Lao People's Democratic Republic, Malaysia, Myanmar, Philippines, Singapore, Thailand, Timor-Leste and Vietnam.
Source: United Nations (2013). World Population Prospects: The 2012 Revision.

Table 23 presents the share of households with at least one older person in Cambodia. About one-in-four households in Cambodia have one or more older person living with them. This rate is quite consistent across the years. In most years, this rate is somewhat higher in rural areas than in urban areas, and especially in recent years households with older members seem more concentrated in lower consumption quintiles.

**Table 23: Percentage of households with at least one older member in the total population, and by place of residence and consumption quintile.**

| | 2004 | 2007 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|
| **Cambodia** | **24.2%** | **24.6%** | **23.6%** | **23.4%** | **24.7%** | **25.6%** | **25.2%** |
| Place of residence | | | | | | | |
| Rural | 24.1% | 24.3% | 23.8% | 23.6% | 25.8% | 26.1% | 25.5% |
| Urban | 24.7% | 27.3% | 23.1% | 22.2% | 20.6% | 23.8% | 24.3% |
| Consumption | | | | | | | |
| First quintile | 22.8% | 27.3% | 22.9% | 22.0% | 26.5% | 28.0% | 30.3% |
| Second quintile | 22.9% | 23.4% | 23.0% | 23.0% | 29.4% | 29.5% | 25.1% |
| Third quintile | 26.4% | 23.1% | 25.4% | 23.3% | 21.4% | 24.1% | 25.0% |
| Fourth quintile | 25.9% | 22.9% | 24.2% | 25.2% | 25.7% | 23.2% | 23.3% |
| Fifth quintile | 23.1% | 26.6% | 22.7% | 23.3% | 20.7% | 23.1% | 22.4% |

*Source: Estimates based on available data from CSES 2004, 2007, 2009, 2010, 2011, 2012 and 2013.*

### 4.2.1 Incidence of illness and health seeking behaviour

Older people are sick more often than people younger than 60 years old (Table 24). The incidence of illness is between two and 2.5 times higher for older people than for younger people in most years analysed. Among older people, females tend to have a higher rate of illness than males. There is no clear trend for older people living in rural and urban areas, as in some years older people in urban areas have a higher rate of illness (e.g., 2004, 2007, 2011 and 2013), but in other years older people in rural areas have a higher incidence of illness (e.g., 2010 and 2012). Moreover, there is no clear trend with respect to subgroups of older people by consumption quintile, except that older people living in the least wealthy households (the first quintile) are less often sick than older people in the highest quintile.

**Table 24: Incidence of illness, disaggregated by age, sex, place of residence and consumption quintile.**

| | 2004 | 2007 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|
| **Population** | **18.0%** | **15.3%** | **14.4%** | **19.1%** | **15.8%** | **19.5%** | **17.7%** |
| People younger than 60 | 16.8% | 14.0% | 13.0% | 17.9% | 14.6% | 17.9% | 15.6% |
| Older people | 38.6% | 34.1% | 33.7% | 36.3% | 32.8% | 41.6% | 42.1% |
| Sex | | | | | | | |
| Female | 40.9% | 38.4% | 35.8% | 38.6% | 34.1% | 43.5% | 42.7% |
| Male | 35.2% | 27.5% | 31.0% | 32.9% | 31.0% | 38.9% | 41.2% |
| Place of residence | | | | | | | |
| Rural | 38.1% | 33.5% | 33.7% | 36.7% | 32.6% | 43.3% | 41.8% |
| Urban | 41.4% | 36.5% | 33.7% | 34.4% | 34.0% | 34.7% | 43.3% |

| | 2004 | 2007 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|
| Consumption | | | | | | | |
| First quintile | 35.2% | 25.2% | 30.2% | 33.3% | 27.7% | 40.1% | 41.0% |
| Second quintile | 37.9% | 38.3% | 35.1% | 36.5% | 34.6% | 39.5% | 43.1% |
| Third quintile | 41.1% | 28.3% | 30.9% | 34.3% | 24.1% | 45.1% | 36.0% |
| Fourth quintile | 41.1% | 38.2% | 37.0% | 39.9% | 35.1% | 39.2% | 47.7% |
| Fifth quintile | 39.4% | 39.2% | 35.3% | 37.0% | 43.1% | 44.5% | 43.1% |

*Source: Estimates based on available data from CSES 2004, 2007, 2009, 2010, 2011, 2012 and 2013.*

The results for older people also show a considerable increase in the rate of care-seeking over the years 2004 – 2013 (Table 25). For older people, this rate increased from 86.7% in 2004 to 97.6% in 2013. Except for 2004, the rate is similar for both younger and older people. There are also few differences between older males and older females, except in 2011 when the rate of care-seeking for older males was 10% lower than for older females. In most years, the rate of care-seeking is somewhat higher for older people living in urban areas than for those in rural areas, except in 2010, and the difference between these two groups has decreased over the years. In addition, older people living in higher consumption households seek care for an illness more often than older people in lower consumption households, although this difference has also decreased over the years analysed.

**Table 25: Share of people who sought care for an illness, by age, sex, place of residence and consumption quintile.**

| | 2004 | 2007 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|
| **Population** | **90.3%** | **91.5%** | **91.4%** | **95.2%** | **96.6%** | **98.1%** | **98.6%** |
| People younger than 60 | 90.8% | 91.4% | 91.3% | 95.3% | 96.8% | 98.2% | 98.8% |
| Older people | 86.7% | 92.4% | 92.2% | 94.3% | 95.4% | 97.1% | 97.6% |
| Sex | | | | | | | |
| Female | 87.4% | 91.2% | 92.1% | 93.7% | 99.4% | 97.6% | 98.6% |
| Male | 85.7% | 95.1% | 92.3% | 95.3% | 89.2% | 96.3% | 96.2% |
| Place of residence | | | | | | | |
| Rural | 86.7% | 91.0% | 91.1% | 95.7% | 95.0% | 96.9% | 97.4% |
| Urban | 86.7% | 97.3% | 96.6% | 87.1% | 97.9% | 98.6% | 98.3% |
| Consumption | | | | | | | |
| First quintile | 75.7% | 80.8% | 86.5% | 95.6% | 90.3% | 95.0% | 93.5% |
| Second quintile | 87.5% | 89.0% | 87.8% | 100.0% | 92.2% | 97.1% | 98.0% |
| Third quintile | 85.8% | 92.1% | 91.8% | 87.7% | 97.8% | 97.2% | 98.3% |
| Fourth quintile | 90.2% | 94.9% | 95.2% | 93.8% | 100.0% | 98.4% | 99.3% |
| Fifth quintile | 92.7% | 98.9% | 97.6% | 94.3% | 97.2% | 98.3% | 100.0% |

*Source: Estimates based on available data from CSES 2004, 2007, 2009, 2010, 2011, 2012 and 2013.*

Table 26 presents the percentage of people who sought care at a licensed medical provider when ill (either public or private), disaggregated by people younger and older than 60 years old. For both groups, the rate of care-seeking at medical providers increased from 2004 to 2013; in 2013 more than eight out of every 10 older people who were ill sought care at a medical provider. In most years, except 2007, older females use medical providers more often than older males. Older people living in urban areas are more likely to seek care at medical providers than older people living in rural areas across all years. Furthermore, older people living in households with higher consumption also use medical providers more often than older people living in households with lower consumption.

**Table 26: Percentage of people who sought care for an illness at a medical provider, by age, sex, place of residence and consumption quintile.**

| | 2004 | 2007 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|
| **Population** | **52.4%** | **55.2%** | **68.6%** | **66.8%** | **65.0%** | **77.2%** | **80.8%** |
| People younger than 60 | 52.8% | 54.5% | 68.3% | 67.0% | 64.7% | 77.2% | 80.0% |
| Older people | 49.0% | 59.0% | 70.1% | 65.4% | 66.7% | 77.4% | 84.8% |
| Sex | | | | | | | |
| Female | 50.2% | 58.2% | 70.7% | 67.6% | 68.1% | 79.6% | 87.3% |
| Male | 46.8% | 60.6% | 69.3% | 61.5% | 64.5% | 73.9% | 81.0% |
| Place of residence | | | | | | | |
| Rural | 46.5% | 55.0% | 66.4% | 63.7% | 62.9% | 75.6% | 82.7% |
| Urban | 64.2% | 73.2% | 86.2% | 73.4% | 85.8% | 86.5% | 92.9% |
| Consumption | | | | | | | |
| First quintile | 35.2% | 49.6% | 53.3% | 51.8% | 49.0% | 60.0% | 77.6% |
| Second quintile | 38.4% | 56.0% | 59.4% | 66.3% | 57.5% | 75.6% | 87.5% |
| Third quintile | 45.7% | 35.8% | 68.7% | 64.2% | 60.4% | 80.0% | 80.3% |
| Fourth quintile | 54.6% | 54.5% | 76.4% | 65.6% | 71.2% | 79.9% | 88.7% |
| Fifth quintile | 68.7% | 80.8% | 87.7% | 77.7% | 90.8% | 91.8% | 90.8% |

*Source: Estimates based on available data from CSES 2004, 2007, 2009, 2010, 2011, 2012 and 2013.*

Table 27 presents the types of health care providers accessed by older and younger people from 2004 – 2013. Except for the period of 2007 – 2010, people younger than 60 years use public providers more often than older people. For both groups, private medical services account for the highest share of providers across all years. In the last three years, especially in 2013, older people used private medical services more often than younger people. In 2013, almost three-quarters (73.6%) of older people who reported an illness sought care at a private medical provider. The use of non-medical services is quite similar across both age groups, except in 2007 and 2013, when people younger than 60 years old used non-medical services more than older people. In 2004, older people used non-medical services more often than their younger counterparts, a dynamic that has switched in 2013.

**Table 27: Type of healthcare provider accessed, by age group.**

| | 2004 | 2007 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|
| **Public** | | | | | | | |
| Population | 11.9% | 14.9% | 20.0% | 16.8% | 15.2% | 18.6% | 15.7% |
| People younger than 60 | 12.1% | 14.6% | 20.3% | 16.2% | 15.7% | 19.0% | 16.3% |
| Older people | 10.7% | 17.1% | 18.4% | 20.6% | 11.8% | 15.9% | 12.8% |
| **Private** | | | | | | | |
| Population | 34.2% | 43.9% | 54.1% | 52.7% | 52.3% | 59.3% | 66.0% |
| People younger than 60 | 34.5% | 43.5% | 53.6% | 53.3% | 51.5% | 58.7% | 64.4% |
| Older people | 31.9% | 46.0% | 56.9% | 48.6% | 57.7% | 62.9% | 73.6% |
| **Non-medical** | | | | | | | |
| Population | 53.9% | 41.2% | 25.9% | 30.5% | 32.5% | 22.1% | 18.3% |
| People younger than 60 | 53.6% | 41.9% | 26.2% | 30.5% | 32.8% | 22.2% | 19.4% |
| Older people | 57.5% | 37.0% | 24.7% | 30.8% | 30.5% | 21.1% | 13.5% |

*Note: For years 2009 – 2013, the type of provider for the first visit is reported.*
*Source: Estimates based on available data from CSES 2004, 2007, 2009, 2010, 2011, 2012 and 2013.*

### 4.2.2 Healthcare expenditures

Older people spend more money on average on health care than their younger counterparts; in most years about three times as much (Table 28). The average amount of healthcare spending for older people has also increased considerably across the years studied, from about KHR 12,000 in 2004 to more than KHR 40,000 in 2013, with a peak of more than KHR 46,000 in 2012. There is no consistent trend for older males versus older females, as in some years older females had higher OOP than older males (e.g., 2007, 2010, 2011 and 2012), while in the other years (e.g., 2004, 2009 and 2013) older males spent more than older females. Except for 2011, older people living in urban areas spend more on their health care than older people living in rural areas. In addition, the level of OOP increases with consumption across all years for older people.

**Table 28: Mean out-of-pocket health expenditures per month, disaggregated by age, sex, place of residence and consumption quintile.**

| | 2004 | 2007 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|
| **Population** | **8,696** | **7,089** | **10,728** | **11,982** | **8,156** | **16,777** | **16,983** |
| People younger than 60 | 4,423 | 3,852 | 8,045 | 9,838 | 6,341 | 14,077 | 14,960 |
| Older people | 12,619 | 15,858 | 28,438 | 21,471 | 23,587 | 46,284 | 41,526 |
| Sex | | | | | | | |
| Female | 11,617 | 18,242 | 26,262 | 22,068 | 29,509 | 48,907 | 37,981 |
| Male | 14,029 | 12,192 | 31,357 | 20,604 | 14,983 | 42,507 | 46,830 |
| Place of residence | | | | | | | |
| Rural | 11,697 | 14,207 | 28,228 | 20,043 | 21,890 | 49,256 | 37,247 |
| Urban | 18,862 | 22,256 | 29,346 | 20,604 | 32,571 | 34,354 | 58,092 |

| | 2004 | 2007 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|
| Consumption | | | | | | | |
| First quintile | 1,892 | 2,337 | 6,182 | 2,677 | 4,263 | 9,602 | 11,214 |
| Second quintile | 3,403 | 6,693 | 11,021 | 12,501 | 6,767 | 13,354 | 19,881 |
| Third quintile | 5,129 | 4,485 | 13,697 | 13,245 | 9,966 | 26,372 | 22,428 |
| Fourth quintile | 11,138 | 10,732 | 32,353 | 23,166 | 19,431 | 40,770 | 54,326 |
| Fifth quintile | 43,720 | 44,683 | 76,387 | 56,292 | 92,448 | 155,124 | 115,156 |

*Source: Estimates based on available data from CSES 2004, 2007, 2009, 2010, 2011, 2012 and 2013.*

The mean OOP expenditures of older people who sought care and those with positive OOP are presented in Table 29. Older people who seek care have spent more on health care than their younger counterparts in all years, but the differences are less profound than the figures for the whole population (Table 28). In 2013, the difference between older people and their younger counterparts was about KHR 5,000. However, average OOP per month has almost tripled for older people in the last decade, from KHR 37,333 in 2004 to KHR 100,971 in 2013. The same increase is noted for average OOP expenditures among older people with positive OOP (i.e., excluding those with free health care such as HEF members).

**Table 29: Mean out-of-pocket health expenditures per month, disaggregated by care-seeking, positive OOP and age (in 2013 KHR).**

| | 2004 | 2007 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|
| **Mean OOP among those who sought care** | | | | | | | |
| Population | 53,529 | 49,073 | 76,562 | 64,704 | 52,539 | 86,354 | 96,783 |
| People younger than 60 | 28,922 | 29,139 | 63,662 | 56,629 | 44,159 | 78,832 | 95,911 |
| Older people | 37,733 | 49,559 | 87,060 | 62,102 | 74,896 | 114,076 | 100,791 |
| **Mean OOP among those with positive OOP** | | | | | | | |
| Population | 54,873 | 50,510 | 77,225 | 67,566 | 54,770 | 89,554 | 99,705 |
| People younger than 60 | 29,651 | 29,935 | 64,163 | 59,044 | 45,975 | 81,882 | 99,083 |
| Older people | 38,644 | 51,595 | 88,176 | 65,564 | 78,708 | 117,213 | 102,519 |

*Source: Estimates based on available data from CSES 2004, 2007, 2009, 2010, 2011, 2012 and 2013.*

Table 30 presents the results from the estimation of the share of total OOP health expenditures paid by older people. This rate increased from 2004 to 2009, suddenly decreased in 2010 back to the 2004 level, increased again to 21.3% in 2011, and then started decreasing slowly to 18.6% in 2013. In the same period, the share of older people in the population steadily increased from 5.3% to 7.6% (Table 3), showing no consistent trend between the two.

**Table 30: Share of total out-of-pocket health expenditures paid by older people.**

| | 2004 | 2007 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|
| Share of total OOP paid by older people | 13.7% | 22.3% | 20.7% | 13.5% | 21.3% | 19.6% | 18.6% |

### *Transportation expenses*

Table 31 presents the average transportation expenses for care-seeking among older people, relative to the total population and those younger than 60 years old. Older people spend about two to three times more on health-related transport. For those who sought care, older people spent more than their younger counterparts in 2009 and 2010, but younger people spent slightly more than older people in the most recent years analysed (2011 – 2013).

**Table 31: Mean health-related transportation expenditures per month, disaggregated by age and care-seeking (in 2013 KHR).**

| | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|
| **Mean transportation expenditures per month** | | | | | |
| Population | 1,253 | 1,174 | 867 | 1,972 | 1,614 |
| People younger than 60 | 1,087 | 1,079 | 811 | 1,824 | 1,483 |
| Older people | 3,498 | 2,507 | 1,645 | 3,962 | 3,209 |
| **Mean transportation expenditures per month for those who sought care** | | | | | |
| Population | 8,109 | 6,235 | 5,375 | 10,140 | 9,190 |
| People younger than 60 | 7,777 | 6,090 | 5,404 | 10,206 | 9,495 |
| Older people | 9,851 | 7,250 | 5,193 | 9,752 | 7,789 |

*Source: Estimates based on available data from CSES 2004, 2007, 2009, 2010, 2011, 2012 and 2013.*

### *Household out-of-pocket health expenditures*

Households with at least one older member report monthly OOP expenditures on health that are 1.5 times higher than households without an older person (Table 32). The level of household health expenditures has doubled for households with an older member from 2004 to 2013. Except for 2009 and 2010, households with older members in urban areas have higher healthcare costs than those in rural areas. In addition, households with older members in the highest consumption quintile have considerably higher OOP health expenditures than poorer households with an older member.

**Table 32: Household out-of-pocket health expenditures among households with and without a member 60 years old or older, and by place of residence and consumption quintile (in 2013 KHR).**

| | 2004 | 2007 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|
| **All households** | **44,424** | **32,638** | **51,709** | **56,087** | **38,360** | **80,099** | **78,058** |
| Households without older person | 41,038 | 27,920 | 46,085 | 50,496 | 34,325 | 71,828 | 67,513 |
| Households with older person | 55,020 | 47,066 | 69,872 | 74,421 | 50,633 | 104,145 | 109,326 |
| Place of residence | | | | | | | |
| Rural | 45,085 | 45,299 | 70,730 | 77,760 | 86,582 | 178,749 | 142,119 |
| Urban | 109,670 | 57,588 | 65,836 | 59,158 | 101,220 | 101,041 | 247,729 |

| | 2004 | 2007 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|
| Consumption | | | | | | | |
| First quintile | 6,837 | 6,377 | 12,960 | 7,577 | 12,436 | 31,281 | 23,824 |
| Second quintile | 14,193 | 25,059 | 24,078 | 25,695 | 24,145 | 38,022 | 64,508 |
| Third quintile | 23,681 | 23,494 | 40,084 | 32,163 | 39,880 | 93,285 | 85,526 |
| Fourth quintile | 46,143 | 41,207 | 81,335 | 52,040 | 90,809 | 131,157 | 141,058 |
| Fifth quintile | 186,608 | 133,837 | 194,737 | 252,052 | 346,295 | 583,932 | 625,119 |
| *Source: Estimates based on available data from CSES 2004, 2007, 2009, 2010, 2011, 2012 and 2013.* | | | | | | | |

Table 33 presents the share of cumulative OOP expenditures on health paid by households with an older member. This rate fluctuated between 30% and 35% during the decade analysed, but was at its peak in 2007, and has been generally increasing since 2010.

**Table 33: Percentage of total cumulative out-of-pocket health expenditures paid by households with an older member.**

| | 2004 | 2007 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|
| Share of total OOP paid by households with an older member | 30.0% | 35.5% | 32.0% | 31.0% | 32.7% | 33.3% | 35.3% |

### 4.2.3 Capacity to pay, catastrophic health expenditures, impoverishment and indebtedness

The capacity to pay of a household is its total consumption expenditures minus its subsistence expenditures. Table 34 shows that the capacity to pay for households with and without an older member are quite similar across the years studied. Capacity to pay has increased about 70% to 75% from 2004 –2013. Households with an older member in urban areas have about twice the capacity to pay than households in rural areas. Evidently, households with an older member in higher consumption quintiles have a higher capacity to pay than equivalent households in lower consumption quintiles. However, the difference between the first and fifth quintile (e.g., those with the lowest and highest wealth) has decreased over the years.

**Table 34: Capacity to pay, among households with and without an older member, and by place of residence and consumption quintile (in 2013 KHR).**

| | 2004 | 2007 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|
| **All households** | **406,781** | **464,707** | **626,682** | **623,271** | **610,804** | **694,684** | **707,644** |
| Households without older person | 405,176 | 456,619 | 627,679 | 617,094 | 628,369 | 707,127 | 711,990 |
| Households with older person | 411,802 | 489,442 | 623,462 | 643,523 | 557,370 | 658,509 | 694,756 |

| | 2004 | 2007 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|
| Place of residence | | | | | | | |
| Rural | 324,241 | 389,078 | 473,038 | 478,848 | 415,741 | 543,875 | 543,754 |
| Urban | 893,436 | 1,087,161 | 1,331,535 | 1,396,243 | 1,274,159 | 1,096,203 | 1,298,956 |
| Consumption | | | | | | | |
| First quintile | 70,159 | 77,173 | 141,343 | 161,847 | 170,996 | 185,339 | 230,720 |
| Second quintile | 117,230 | 158,765 | 228,897 | 254,546 | 251,764 | 325,490 | 359,946 |
| Third quintile | 197,288 | 232,235 | 375,383 | 611,106 | 395,445 | 498,430 | 524,524 |
| Fourth quintile | 385,338 | 442,642 | 672,528 | 647,651 | 619,542 | 809,643 | 796,621 |
| Fifth quintile | 1,300,333 | 1,468,478 | 1,734,371 | 1,797,865 | 1,576,834 | 1,672,430 | 1,781,429 |

*Source: Estimates based on CSES 2004, 2007, 2009, 2010, 2011, 2012 and 2013.*

Table 35 presents the average proportion of OOP health expenditures as part of the household's capacity to pay. This share is higher for households with an older member than for other households in all years studied, and the share tends to increase slightly over the years. The share of OOP among capacity to pay for households with an older member in rural areas is higher than for households in urban areas. This share is also greater in higher consumption quintiles.

**Table 35: Out-of-pocket health expenditures as a share of capacity to pay, for households with and without an older member, and by place of residence and consumption quintile.**

| | 2004 | 2007 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|
| **All households** | **8.7%** | **7.3%** | **7.1%** | **6.7%** | **5.2%** | **9.5%** | **8.9%** |
| Households without older person | 8.0% | 6.6% | 6.2% | 6.3% | 4.6% | 8.5% | 7.7% |
| Households with older person | 10.8% | 9.4% | 10.0% | 8.1% | 7.1% | 12.3% | 12.3% |
| Place of residence | | | | | | | |
| Rural | 11.1% | 9.8% | 10.9% | 9.1% | 7.6% | 13.8% | 13.0% |
| Urban | 9.3% | 7.4% | 5.6% | 3.5% | 4.4% | 6.7% | 9.2% |
| Consumption | | | | | | | |
| First quintile | 7.9% | 6.5% | 8.3% | 3.7% | 5.4% | 10.7% | 9.9% |
| Second quintile | 10.0% | 14.1% | 9.4% | 8.9% | 5.8% | 10.5% | 10.3% |
| Third quintile | 10.6% | 8.9% | 10.1% | 8.0% | 6.2% | 12.5% | 10.2% |
| Fourth quintile | 12.0% | 8.6% | 11.7% | 9.9% | 8.7% | 13.6% | 14.7% |
| Fifth quintile | 13.5% | 9.4% | 10.4% | 9.7% | 10.0% | 15.2% | 17.4% |

*Source: Estimates based on CSES 2004, 2007, 2009, 2010, 2011, 2012 and 2013.*

Catastrophic health expenditure occurs when the proportion of OOP expenditures on health equals or exceeds 40% of a household's capacity to pay. Catastrophic health expenditures occur more often in households with an older member than in households without such a member (Table 36). Among households with an older member, catastrophic health expenditures occur more often in rural areas and among households in higher consumption quintiles. The rate of catastrophic health expenditures for households with an older member decreased from 2004 – 2011, but returned to 2004 levels in 2012.

**Table 36: Catastrophic health expenditures for households with and without an older member, and by place of residence and consumption quintile.**

| | 2004 | 2007 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|
| **All households** | **7.1%** | **5.6%** | **5.2%** | **4.3%** | **3.4%** | **6.9%** | **6.3%** |
| Households without older person | 6.4% | 4.8% | 4.4% | 4.0% | 3.1% | 5.9% | 5.5% |
| Households with older person | 9.2% | 8.1% | 7.8% | 5.3% | 4.2% | 9.6% | 8.6% |
| Place of residence | | | | | | | |
| Rural | 9.6% | 8.6% | 8.9% | 6.1% | 4.8% | 11.4% | 9.3% |
| Urban | 7.3% | 4.6% | 3.0% | 1.9% | 1.4% | 3.0% | 5.6% |
| Consumption | | | | | | | |
| First quintile | 5.2% | 4.2% | 5.1% | 1.0% | 2.2% | 7.6% | 3.6% |
| Second quintile | 8.1% | 16.3% | 7.1% | 5.4% | 1.2% | 6.4% | 4.9% |
| Third quintile | 9.5% | 6.7% | 6.6% | 4.4% | 4.9% | 8.5% | 6.1% |
| Fourth quintile | 10.3% | 6.6% | 10.6% | 6.3% | 5.5% | 13.5% | 13.5% |
| Fifth quintile | 12.6% | 7.2% | 9.7% | 9.4% | 8.9% | 13.7% | 17.0% |

*Source: Estimates based on available data from CSES 2004, 2007, 2009, 2010, 2011, 2012 and 2013.*

The rate of impoverishment due to OOP expenditures on health is higher for households with an older member compared to other households, although the differences are not large (Table 37). In addition, the impoverishment rate has decreased over the years, despite a small upward bump in 2012. Impoverishment due to healthcare expenditures is more common among households with an older member in rural areas. Similar to households with PWD, the highest impoverishment rates were concentrated in higher consumption quintiles in 2004, and have transitioned to lower quintiles over the years studied.

**Table 37: Impoverishment due to health expenditures for households with and without a member 60 years old or older, and by place of residence and consumption quintile.**

| | 2004 | 2007 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|
| **All households** | **3.5%** | **2.9%** | **2.5%** | **2.2%** | **1.8%** | **2.7%** | **1.4%** |
| Households without older person | 3.2% | 2.6% | 2.3% | 2.1% | 1.5% | 2.4% | 1.3% |
| Households with older person | 4.6% | 3.8% | 2.8% | 2.6% | 2.7% | 3.5% | 1.7% |

| | 2004 | 2007 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|
| Place of residence | | | | | | | |
| Rural | 4.8% | 4.0% | 3.0% | 2.9% | 3.1% | 4.1% | 1.8% |
| Urban | 3.3% | 2.6% | 2.2% | 1.3% | 0.7% | 1.3% | 0.9% |
| Consumption | | | | | | | |
| First quintile | 0.4% | 0.0% | 3.6% | 0.4% | 5.1% | 9.4% | 4.6% |
| Second quintile | 1.8% | 6.3% | 5.8% | 9.8% | 4.8% | 4.1% | 1.7% |
| Third quintile | 4.6% | 7.3% | 2.5% | 2.5% | 1.1% | 0.6% | 0.8% |
| Fourth quintile | 8.3% | 2.5% | 1.9% | 0.2% | 0.3% | 1.2% | 0.2% |
| Fifth quintile | 6.9% | 3.6% | 0.3% | 0.2% | 1.0% | 1.1% | 0.1% |

*Source: Estimates based on available data from CSES 2004, 2007, 2009, 2010, 2011, 2012 and 2013.*

Except for 2013, the share of households that took debt to pay for medical expenses is lower among households with an older member aged than for other households (Table 38), although the differences are not large. This share ranges between 2.5% and 4.8% across the years analysed. Indebtedness due to OOP health expenditures is more common among households with an older member in rural areas than those in urban areas. From 2010 to 2012, the highest rate of indebtedness occurred in the first consumption quintile, but a clear trend in this subgroup is not apparent from the data.

**Table 38: Indebtedness due to health expenditures for households with and without an older member, and by place of residence and consumption quintile.**

| | 2004 | 2007 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|
| **All households** | **4.9%** | **4.0%** | **3.8%** | **3.9%** | **4.1%** | **4.0%** | **3.1%** |
| Households without older person | 5.0% | 4.4% | 4.0% | 4.2% | 4.0% | 2.4% | 2.9% |
| Households with older person | 4.8% | 2.5% | 3.2% | 3.0% | 4.3% | 3.6% | 3.5% |
| Place of residence | | | | | | | |
| Rural | 5.3% | 2.7% | 3.6% | 3.4% | 4.9% | 4.0% | 3.9% |
| Urban | 2.0% | 1.8% | 1.7% | 1.3% | 1.4% | 1.8% | 1.8% |
| Consumption | | | | | | | |
| First quintile | 4.4% | 1.1% | 2.7% | 5.9% | 9.8% | 4.3% | 5.5% |
| Second quintile | 5.6% | 2.5% | 3.5% | 1.7% | 1.9% | 4.0% | 1.2% |
| Third quintile | 5.8% | 3.8% | 3.4% | 0.5% | 4.6% | 3.9% | 1.6% |
| Fourth quintile | 3.7% | 4.5% | 4.2% | 3.2% | 2.9% | 3.2% | 7.0% |
| Fifth quintile | 3.7% | 1.2% | 2.2% | 3.7% | 2.1% | 2.2% | 1.8% |

*Source: Estimates based on available data from CSES 2004, 2007, 2009, 2010, 2011, 2012 and 2013.*

## 4.3 People with a chronic disease

As defined in the methodology section, people with a chronic disease (PWCD) are identified in the CSES as household members who reportedly had an illness for more than one year. Data on PWCD is available from 2009 onwards. Table 39 presents the share of the total population with a chronic disease, and by various subgroups. Older people are more prone to chronic disease than their younger counterparts. The share of people aged 60 years or older with a chronic disease has increased about 4.8% from 2009 – 2013 (from 14.0% to 18.8%). In addition, females have a slightly higher rate of chronic disease than males. The rate of chronic disease is also higher among people living in rural areas, compared to people in urban areas, although the differences are not large. Furthermore, chronic diseases tend to be more common among people in higher consumption quintiles.

**Table 39: Percentage of population with a chronic disease, by age group, sex, place of residence and consumption quintile.**

| | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|
| Age | | | | | |
| Under 5 years | 1.2% | 0.8% | 0.6% | 0.9% | 1.7% |
| 5 – 14 years | 0.6% | 0.6% | 0.6% | 0.9% | 0.5% |
| 15 – 44 years | 1.8% | 1.7% | 1.4% | 1.5% | 1.8% |
| 45 – 59 years | 7.0% | 7.0% | 5.0% | 8.8% | 8.4% |
| 60 and above | 14.0% | 12.7% | 12.5% | 18.6% | 18.8% |
| Sex | | | | | |
| Female | 3.5% | 3.3% | 2.7% | 4.3% | 4.8% |
| Male | 2.3% | 2.1% | 1.9% | 2.6% | 2.6% |
| Place of residence | | | | | |
| Rural | 2.9% | 2.9% | 2.5% | 3.6% | 3.8% |
| Urban | 2.9% | 2.2% | 1.8% | 2.9% | 3.1% |
| Consumption | | | | | |
| First quintile | 2.3% | 2.2% | 1.7% | 2.9% | 2.9% |
| Second quintile | 2.3% | 2.6% | 2.6% | 2.8% | 3.3% |
| Third quintile | 2.5% | 2.9% | 1.8% | 3.1% | 3.5% |
| Fourth quintile | 3.6% | 2.9% | 2.8% | 3.6% | 3.5% |
| Fifth quintile | 3.8% | 3.1% | 2.9% | 4.7% | 4.3% |

*Source: Estimates based on available data from CSES 2009, 2010, 2011, 2012 and 2013.*

A similar variation by subgroups can be observed when looking at households with at least one PWCD (Table 40). Households with a PWCD are somewhat more common in rural areas compared to urban areas, and are also more common in higher consumption quintiles. Overall, about one in seven Cambodian households had at least one PWCD in 2013. This rate has increased since 2011.

**Table 40: Percentage of households with at least one member with a chronic disease, by place of residence and consumption quintile.**

| | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|
| **Cambodia** | **11.9%** | **10.9%** | **9.4%** | **14.6%** | **14.7%** |
| Place of residence | | | | | |
| Rural | 12.0% | 11.3% | 9.8% | 15.3% | 15.2% |
| Urban | 11.0% | 8.9% | 7.9% | 12.1% | 12.9% |
| Consumption | | | | | |
| First quintile | 9.2% | 9.1% | 7.1% | 12.9% | 11.0% |
| Second quintile | 9.4% | 10.1% | 9.5% | 12.3% | 13.3% |
| Third quintile | 10.7% | 10.8% | 6.7% | 14.9% | 14.0% |
| Fourth quintile | 14.8% | 11.5% | 11.6% | 14.4% | 18.1% |
| Fifth quintile | 15.2% | 12.9% | 12.2% | 18.5% | 17.0% |

*Source: Estimates based on available data from CSES 2009, 2010, 2011, 2012 and 2013.*

### 4.3.1 Incidence of illness and health seeking behaviour

By definition, the rate of illness for PWCD is 100% in all years.

Table 41 reports the share of people with and without a chronic disease who sought care for an illness in the month before the survey. The care-seeking rate is slightly higher for people without a chronic disease, but the differences are not large. For both groups, the rate of care-seeking has increased since 2009 to almost universal care-seeking in 2013, following the overall population. The rate of care-seeking varies somewhat by subgroup. Younger PWCD sought care less often than older age groups in 2009 and 2010, but this difference has switched in subsequent years. Females with a chronic disease have a slightly higher rate of care-seeking than their male counterparts. Further, the rate of care-seeking is higher among PWCD in higher consumption quintiles than PWCD in lower quintiles.

**Table 41: Percentage of people that sought care for an illness, disaggregated by chronic disease, age group, sex, place of residence and consumption quintile.**

| | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|
| **Population** | **91.4%** | **95.2%** | **96.6%** | **98.1%** | **98.6%** |
| People without a chronic disease | 91.9% | 95.6% | 96.7% | 98.2% | 98.9% |
| People with a chronic disease | 89.4% | 92.4% | 96.2% | 97.4% | 97.3% |
| Age | | | | | |
| 0 – 44 years | 87.0% | 91.5% | 98.2% | 97.0% | 99.2% |
| 45 – 59 years | 89.9% | 90.8% | 93.6% | 97.8% | 98.4% |
| 60 and above | 91.8% | 95.2% | 96.3% | 97.4% | 94.8% |
| Sex | | | | | |
| Female | 89.9% | 94.8% | 96.9% | 98.3% | 97.9% |
| Male | 88.7% | 88.4% | 95.3% | 95.8% | 96.1% |

| | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|
| Place of residence | | | | | |
| Rural | 89.0% | 93.3% | 96.2% | 97.1% | 97.1% |
| Urban | 91.0% | 87.8% | 96.6% | 98.4% | 97.9% |
| Consumption | | | | | |
| First quintile | 82.3% | 88.9% | 95.7% | 95.6% | 89.9% |
| Second quintile | 85.9% | 93.6% | 94.1% | 94.8% | 95.5% |
| Third quintile | 89.5% | 90.2% | 95.1% | 97.0% | 98.7% |
| Fourth quintile | 90.6% | 95.1% | 97.9% | 99.1% | 99.6% |
| Fifth quintile | 94.2% | 93.5% | 97.6% | 98.9% | 99.8% |

*Source: Estimates based on available data from CSES 2009, 2010, 2011, 2012 and 2013.*

Medical care-seeking was defined as seeking care at a licensed public or private medical provider, therefore excluding drug stores, self-care and unidentified health providers. Findings in Table 42 show that PWCD more often sought care at a medical provider than people without a chronic disease. For both groups, this rate increases over time. There is no clear trend in the differences between age groups for this indicator. In 2010 and 2012, females with a chronic disease had a higher rate of care-seeking at a medical provider than their male counterparts, but in other years the rate is similar for both sexes. PWCD in higher consumption quintiles seek care more often at medical providers than their counterparts in lower consumption quintiles.

**Table 42: Percentage of population that sought care for an illness at a medical provider, disaggregated by chronic disease, age group, sex, place of residence and consumption quintile.**

| | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|
| **Population** | **68.6%** | **66.8%** | **65.0%** | **77.2%** | **80.8%** |
| People without a chronic disease | 67.3% | 65.1% | 62.7% | 75.4% | 79.8% |
| People with a chronic disease | 73.7% | 77.0% | 77.9% | 85.5% | 84.7% |
| Age | | | | | |
| 0 – 44 years | 70.6% | 76.6% | 76.4% | 87.4% | 86.9% |
| 45 – 59 years | 76.3% | 71.7% | 85.6% | 86.7% | 81.5% |
| 60 and above | 74.9% | 82.9% | 73.7% | 83.0% | 85.3% |
| Sex | | | | | |
| Female | 73.6% | 77.0% | 78.3% | 87.6% | 97.9% |
| Male | 73.8% | 71.9% | 77.4% | 81.8% | 84.6% |
| Place of residence | | | | | |
| Rural | 72.0% | 93.3% | 76.1% | 83.9% | 84.0% |
| Urban | 80.4% | 76.7% | 87.7% | 92.7% | 87.7% |

| | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|
| Consumption | | | | | |
| First quintile | 59.9% | 58.8% | 65.7% | 73.1% | 82.4% |
| Second quintile | 63.1% | 78.7% | 67.5% | 79.6% | 77.1% |
| Third quintile | 72.6% | 76.2% | 75.8% | 88.4% | 80.0% |
| Fourth quintile | 75.9% | 81.6% | 79.6% | 91.0% | 86.9% |
| Fifth quintile | 86.0% | 84.2% | 94.2% | 90.6% | 93.5% |

*Source: Estimates based on available data from CSES 2009, 2010, 2011, 2012 and 2013.*

Table 43 presents the types of health care providers consulted for those who sought care. PWCD more often use the services of public providers compared to people without a chronic disease. In turn, people without a chronic disease use non-medical providers more often. Both groups use the services of private health care providers most often. In all years, the share of private providers is more than 50%, and increases over time.

**Table 43: Type of health care provider for first treatment, disaggregated by chronic disease.**

| | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|
| **Public** | | | | | |
| Population | 20.0% | 16.8% | 15.2% | 18.6% | 15.7% |
| People without a chronic disease | 17.8% | 14.7% | 14.0% | 17.0% | 14.4% |
| People with a chronic disease | 29.2% | 29.7% | 22.4% | 26.5% | 20.7% |
| **Private** | | | | | |
| Population | 54.1% | 52.7% | 52.3% | 59.3% | 66.0% |
| People without a chronic disease | 54.5% | 52.8% | 51.4% | 59.2% | 65.9% |
| People with a chronic disease | 52.2% | 52.3% | 57.9% | 60.1% | 66.4% |
| **Non-medical** | | | | | |
| Population | 25.9% | 30.5% | 32.5% | 22.1% | 18.3% |
| People without a chronic disease | 27.6% | 32.5% | 34.7% | 23.9% | 19.7% |
| People with a chronic disease | 18.6% | 18.0% | 19.7% | 13.4% | 12.9% |

*Source: Estimates based on available data from CSES 2009, 2010, 2011, 2012 and 2013.*

### 4.3.2 Healthcare expenditures

PWCD report average monthly OOP health expenditures that are at least 16 times higher than people without a chronic disease in all years (Table 44). Over the years 2009 – 2013, the average OOP expenditures for PWCD decreased from 2009 – 2011, and increased in 2012 and 2013 to levels greater than in 2009. PWCD 45 – 59 years old have the highest OOP expenditures among all age groups and years, except in 2011. In addition, in some years (e.g., 2009, 2010 and 2012) males with a chronic disease spent more on health care than their female counterparts, but this was not consistent across all r years studied. PWCD in urban areas generally have higher OOP expenditures than their rural counterparts, except in 2013. Average OOP expenditures for PWCD increase with consumption quintile.

The average OOP expenditures for PWCD who sought care are between 2.5 and three times higher than people without a chronic disease who sought care. The same trend is seen when looking at people with positive OOP expenditures (Table 45). There is a similar trend over time, as described above, for both groups.

In addition, PWCD pay more than one-third of cumulative OOP health expenditures in most years (Table 46). This proportion was highest in 2009, decreased from 2009 to 2011, but has increased again in 2012 and 2013 to nearly the same level.

**Table 44: Mean out-of-pocket health expenditures per month, by chronic disease, age group, sex, place of residence and consumption quintile (in 2013 KHR).**

| | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|
| **Population** | **10,728** | **11,982** | **8,156** | **16,777** | **16,983** |
| People without a chronic disease | 6,701 | 8,359 | 5,787 | 10,932 | 10,800 |
| People with a chronic disease | 143,940 | 140,193 | 106,871 | 181,529 | 178,433 |
| Age | | | | | |
| 0 – 44 years | 125,209 | 151,425 | 114,633 | 159,758 | 190,913 |
| 45 – 59 years | 179,661 | 161,107 | 86,439 | 228,745 | 224,539 |
| 60 and above | 133,582 | 104,819 | 114,312 | 158,458 | 133,238 |
| Sex | | | | | |
| Female | 133,993 | 119,292 | 132,860 | 163,847 | 183,068 |
| Male | 160,010 | 175,009 | 68,673 | 212,341 | 169,296 |
| Place of residence | | | | | |
| Rural | 140,059 | 135,904 | 101,809 | 171,608 | 179,235 |
| Urban | 159,942 | 163,104 | 133,728 | 224,937 | 174,841 |
| Consumption | | | | | |
| First quintile | 23,419 | 14,515 | 18,303 | 26,911 | 30,816 |
| Second quintile | 43,021 | 42,835 | 28,981 | 51,011 | 71,435 |
| Third quintile | 72,830 | 49,091 | 65,733 | 79,033 | 84,223 |
| Fourth quintile | 104,254 | 97,809 | 108,556 | 158,037 | 145,573 |
| Fifth quintile | 350,585 | 427,293 | 253,243 | 444,345 | 461,264 |

*Source: Estimates based on available data from CSES 2009, 2010, 2011, 2012 and 2013.*

**Table 45: Mean out-of-pocket health expenditures per person per month, by chronic disease, care-seeking and positive OOP expenditures (in 2013 KHR).**

| | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|
| **Mean OOP for those who sought care** | | | | | |
| Population | 76,562 | 64,704 | 52,539 | 86,354 | 96,783 |
| People without a chronic disease | 57,114 | 50,878 | 42,594 | 65,608 | 74,512 |
| People with a chronic disease | 160,963 | 151,693 | 111,037 | 186,422 | 183,454 |
| **Mean OOP for those with positive OOP** | | | | | |
| Population | 77,225 | 67,566 | 54,770 | 89,554 | 99,705 |
| People without a chronic disease | 57,349 | 52,730 | 44,126 | 67,599 | 76,522 |
| People with a chronic disease | 165,608 | 166,327 | 120,185 | 199,603 | 191,326 |
| *Source: Estimates based on available data from CSES 2009, 2010, 2011, 2012 and 2013.* | | | | | |

**Table 46: Percentage of total cumulative out-of-pocket health expenditures paid by people with a chronic disease.**

| | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|
| Share of total OOP paid by people with a chronic disease | 39.4% | 32.2% | 30.7% | 37.1% | 38.7% |

### *Transportation expenses*

Table 47 presents the average transportation expenses for care-seeking for PWCD and people without a chronic disease. PWCD spend considerably more per month on health-related transport than people without a chronic disease. Only taking people who sought care into account, PWCD spend up to 3.5 times as much on health-related transport than people without a chronic disease.

**Table 47: Mean health-related transportation expenditures per month, disaggregated by chronic disease and care-seeking (in 2013 KHR).**

| | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|
| **Mean transportation expenditures per month** | | | | | |
| Total population | 1,253 | 1,174 | 867 | 1,972 | 1,614 |
| People without a chronic disease | 733 | 733 | 655 | 1,402 | 974 |
| People with a chronic disease | 18,450 | 14,949 | 9,737 | 18,046 | 18,334 |
| **Mean transportation expenditures per month for those who sought care** | | | | | |
| Total population | 8,109 | 6,235 | 5,375 | 10,140 | 9,190 |
| People without a chronic disease | 5,413 | 4,732 | 4,568 | 8,400 | 6,708 |
| People with a chronic disease | 19,809 | 15,687 | 10,116 | 18,533 | 18,850 |

*Source: Estimates based on CSES 2009, 2010, 2011, 2012 and 2013.*

### *Household out-of-pocket health expenditures*

Table 48 presents the mean OOP expenditures for households with and without PWCD. OOP expenditures on health are between 4.5 and seven times as high for households with PWCD compared to households without such a member. In some years (e.g., 2009, 2011 and 2012), households with PWCD in urban areas have higher OOP expenditures than their rural counterparts. Household OOP expenditures increase with increases in household consumption. For all households, average OOP expenditures have increased over the years, after a considerable drop in 2011.

Households with PWCD account for a large proportion of cumulative OOP health expenditures in Cambodia (Table 49). Except for 2011, this share is around 45% of cumulative OOP expenditures. Considering that the number of households with PWCD is between 10% and 14% of the total population from 2009 – 2013, the proportion of cumulative OOP expenditures is disproportionately large.

**Table 48: Household out-of-pocket health expenditures, disaggregated by chronic disease, place of residence and consumption quintile (in 2013 KHR).**

| | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|
| **All households** | **51,709** | **56,087** | **38,360** | **80,099** | **78,058** |
| Households without older person | 33,051 | 34,137 | 26,942 | 53,489 | 49,972 |
| Households with older person | 190,391 | 235,772 | 148,284 | 235,782 | 241,110 |
| Place of residence | | | | | |
| Rural | 182,257 | 239,872 | 140,761 | 228,944 | 246,523 |
| Urban | 230,975 | 213,354 | 185,937 | 265,915 | 216,977 |
| Consumption | | | | | |
| First quintile | 31,339 | 19,977 | 26,917 | 33,948 | 41,151 |
| Second quintile | 58,653 | 61,179 | 47,805 | 69,664 | 90,839 |
| Third quintile | 101,989 | 77,474 | 96,248 | 109,840 | 109,119 |
| Fourth quintile | 146,214 | 138,414 | 135,634 | 220,485 | 186,962 |
| Fifth quintile | 472,488 | 746,703 | 338,276 | 601,323 | 653,909 |

*Source: Estimates based on CSES 2009, 2010, 2011, 2012 and 2013.*

**Table 49: Share of total cumulative out-of-pocket health expenditures paid by households with a member with a chronic disease.**

| | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|
| Share of total OOP paid by households with a member with a chronic disease | 43.7% | 45.8% | 36.4% | 43.0% | 45.4% |

### 4.3.3 Capacity to pay, catastrophic health expenditures, impoverishment and indebtedness

The monthly capacity to pay for households with and without PWCD is presented in Table 50. Households with a PWCD have a higher capacity to pay than other households, although their capacity to pay decreased from 2009 – 2011, it increased again in 2013 to its highest level in all years analysed. Urban households with PWCD have a higher capacity to pay for health care than their rural counterparts. In addition, capacity to pay increases with consumption quintile, but the capacity to pay for the highest quintile decreased slightly over the five-year period 2009 – 2013, whereas households in all other quintiles saw their capacity to pay increase in this same period.

The burden of health expenditures is much higher for households with a PWCD, based on the average proportion of OOP in capacity to pay. In most years, health expenditures constituted about one-fifth of the capacity to pay for households with PWCD, compared to just around 4% to 7% for households without PWCD in the same timeframe (Table 51). This trend is quite constant over time. OOP expenditures make up a higher share of the capacity to pay of households with PWCD living in rural areas compared to households in urban areas. In general, OOP as a share of capacity to pay is higher among households with PWCD in higher consumption quintiles.

**Table 50: Capacity to pay for health care, disaggregated by chronic disease, place of residence and consumption quintile (in 2013 KHR).**

| | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|
| **All households** | **406,781** | **464,707** | **626,682** | **623,271** | **610,804** |
| Households without member with chronic disease | 601,154 | 609,836 | 598,659 | 671,379 | 682,673 |
| Households with member with chronic disease | 816,427 | 733,245 | 727,734 | 831,034 | 852,612 |
| Place of residence | | | | | |
| Rural | 640,973 | 618,224 | 584,357 | 752,077 | 740,282 |
| Urban | 1,691,835 | 1,362,201 | 1,445,311 | 1,178,966 | 1,353,484 |
| Consumption | | | | | |
| First quintile | 162,083 | 176,768 | 196,937 | 210,778 | 249,432 |
| Second quintile | 266,056 | 281,723 | 293,385 | 354,560 | 403,846 |
| Third quintile | 401,889 | 431,096 | 478,532 | 537,813 | 523,744 |
| Fourth quintile | 671,709 | 601,668 | 663,515 | 801,855 | 791,419 |
| Fifth quintile | 1,982,004 | 1,855,999 | 1,575,016 | 1,841,931 | 1,929,101 |

*Source: Estimates based on available data from CSES 2009, 2010, 2011, 2012 and 2013.*

**Table 51: Out-of-pocket health expenditures as a share of capacity to pay, disaggregated by chronic disease, place of residence and consumption quintile.**

| | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|
| **All households** | **7.1%** | **6.7%** | **5.2%** | **9.5%** | **8.9%** |
| Households without member with chronic disease | 5.2% | 5.0% | 3.8% | 7.3% | 6.3% |
| Households with member with chronic disease | 21.2% | 21.3% | 18.5% | 22.1% | 23.5% |
| Place of residence | | | | | |
| Rural | 22.7% | 22.9% | 19.7% | 23.7% | 25.1% |
| Urban | 13.4% | 12.9% | 12.3% | 15.2% | 16.8% |
| Consumption | | | | | |
| First quintile | 18.2% | 10.2% | 13.9% | 14.9% | 15.8% |
| Second quintile | 20.7% | 19.3% | 14.2% | 19.4% | 21.7% |
| Third quintile | 23.1% | 18.1% | 20.4% | 20.3% | 21.5% |
| Fourth quintile | 21.1% | 24.0% | 19.2% | 26.1% | 23.0% |
| Fifth quintile | 22.0% | 31.1% | 22.6% | 27.3% | 32.3% |

*Source: Estimates based on available data from CSES 2009, 2010, 2011, 2012 and 2013.*

Catastrophic health expenditures (i.e., when OOP health expenditures are equal or higher than 40% of capacity to pay) are more common among households with PWCD than among other households (Table 52). There has been a slight increase in the rate of catastrophic health expenditures since 2011. Among households with PWCD, catastrophic health expenditures occur more often in rural households than in urban households. In addition, catastrophic health expenditures are more common among households with PWCD in higher consumption quintiles. It is noteworthy that the rate of catastrophic health expenditures has consistently decreased among households in the first consumption quintile (i.e., those with the least wealth) between 2009 and 2013, while for households in other quintiles it remained somewhat stable during the same timeframe.

**Table 52: Households with catastrophic health expenditures disaggregated by chronic disease, place of residence and consumption quintile.**

| | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|
| **All households** | **5.2%** | **4.3%** | **3.4%** | **6.9%** | **6.3%** |
| Households without member with chronic disease | 3.4% | 2.8% | 2.3% | 4.8% | 3.8% |
| Households with member with chronic disease | 18.7% | 16.9% | 14.4% | 18.9% | 20.5% |
| Place of residence | | | | | |
| Rural | 21.0% | 18.6% | 16.1% | 20.9% | 22.8% |
| Urban | 7.3% | 7.3% | 6.1% | 9.8% | 10.6% |

| | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|
| Consumption | | | | | |
| First quintile | 14.1% | 4.3% | 8.0% | 9.6% | 4.1% |
| Second quintile | 17.2% | 13.6% | 5.7% | 13.6% | 17.5% |
| Third quintile | 20.8% | 11.4% | 19.1% | 12.6% | 18.0% |
| Fourth quintile | 19.7% | 16.7% | 12.3% | 27.7% | 20.9% |
| Fifth quintile | 20.1% | 33.1% | 24.4% | 27.1% | 35.2% |

*Source: Estimates based on available data from CSES 2009, 2010, 2011, 2012 and 2013.*

Table 53 presents the rate of impoverishment due to health expenditures among households with and without PWCD. Impoverishment is more common among households with PWCD, but the rate has decreased over time. Impoverishment generally occurs more often among rural households with PWCD, except in 2010 and 2013. In addition, impoverishment was more common among households in the second consumption quintile, but in the most recent years (2011 – 2013) the highest rate of impoverishment among households with PWCD was in the lowest consumption quintile.

**Table 53: Household impoverishment due to health expenditures, disaggregated by chronic disease, place of residence and consumption quintile.**

| | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|
| **All households** | **2.5%** | **2.2%** | **1.8%** | **2.7%** | **1.4%** |
| Households without member with chronic disease | 1.9% | 1.8% | 1.4% | 2.3% | 1.1% |
| Households with member with chronic disease | 6.7% | 5.6% | 5.3% | 5.0% | 2.8% |
| Place of residence | | | | | |
| Rural | 7.4% | 5.4% | 6.3% | 5.7% | 2.6% |
| Urban | 3.2% | 6.3% | 0.0% | 2.1% | 3.4% |
| Consumption | | | | | |
| First quintile | 9.1% | 2.8% | 16.2% | 13.4% | 7.4% |
| Second quintile | 14.8% | 15.1% | 7.8% | 9.0% | 6.1% |
| Third quintile | 10.4% | 6.5% | 0.0% | 1.4% | 2.0% |
| Fourth quintile | 3.0% | 3.2% | 1.7% | 2.5% | 0.6% |
| Fifth quintile | 1.1% | 1.4% | 3.3% | 1.3% | 0.0% |

*Source: Estimates based on available data from CSES 2009, 2010, 2011, 2012 and 2013.*

Finally, Table 54 reports the share of households that have a debt to pay for medical care. About one in 12 households with PWCD had a debt to pay for health care in 2013; a decrease from the high of more than one-in-10 in 2010. The proportion of households indebted due to healthcare expenses is higher among rural households with PWCD than their urban counterparts. There is no clear variation by consumption quintile for this indicator.

**Table 54: Household indebtedness due to health expenditures among all households, disaggregated by chronic disease, place of residence and consumption quintile.**

| | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|
| **All households** | **3.8%** | **3.9%** | **4.1%** | **4.0%** | **3.1%** |
| Households without member with chronic disease | 3.2% | 3.1% | 3.6% | 3.1% | 2.2% |
| Households with member with chronic disease | 8.6% | 10.9% | 8.9% | 8.8% | 8.0% |
| Place of residence | | | | | |
| Rural | 9.6% | 12.1% | 10.0% | 9.7% | 9.0% |
| Urban | 3.6% | 4.7% | 3.2% | 5.1% | 3.9% |
| Consumption | | | | | |
| First quintile | 10.8% | 16.2% | 5.0% | 10.0% | 10.4% |
| Second quintile | 10.4% | 11.8% | 11.1% | 12.6% | 6.3% |
| Third quintile | 7.8% | 7.1% | 13.0% | 7.7% | 8.1% |
| Fourth quintile | 10.0% | 10.0% | 5.8% | 8.3% | 9.7% |
| Fifth quintile | 5.3% | 10.6% | 10.1% | 6.8% | 6.1% |

*Source: Estimates based on available data from CSES 2009, 2010, 2011, 2012 and 2013.*

## 4.4 Overlap between older people, people with a disability and people with a chronic disease

There is considerable overlap between older people, PWD and PWCD, as seen in Table 55, Table 56 and Table 57. In all years, more than three-in-10 PWD are 60 years old or older, and in some years (2007, 2011 and 2013) more than four-in-10 PWD are 60 years old or older. Considering that the percentage of older people in the total population ranges from 5.3% to 7.6% (Table 3), older people are highly overrepresented in the population of PWD.

**Table 55: Age distribution of people with a disability.**

| | 2004 | 2007 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|
| Under 5 years | 4.0% | 2.9% | 1.6% | 1.2% | 0.8% | 2.7% | 1.4% |
| 5 – 14 years | 9.2% | 7.7% | 7.4% | 6.8% | 8.4% | 9.6% | 5.7% |
| 15 – 44 years | 36.0% | 28.1% | 30.1% | 32.1% | 27.9% | 26.8% | 30.5% |
| 45 – 59 years | 19.8% | 20.1% | 24.8% | 25.8% | 22.7% | 23.7% | 21.2% |
| 60 and above | 31.0% | 41.2% | 36.2% | 34.2% | 40.2% | 37.2% | 41.2% |

*Source: Estimates based on available data from CSES 2004, 2007, 2009, 2010, 2011, 2012 and 2013.*

Table 56 shows the age distribution of PWCD. Similar to PWD, the highest share of PWCD are 60 years old or older, and this share has increased over time, to almost 40% in 2013. In addition, about three-in-10 PWCD are between 45 and 59 years old.

**Table 56: Age distribution of people with a chronic disease.**

| | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|
| Under 5 years | 3.9% | 2.9% | 2.6% | 2.6% | 4.1% |
| 5 – 14 years | 4.9% | 4.6% | 5.7% | 5.8% | 3.0% |
| 15 – 44 years | 29.1% | 30.2% | 28.5% | 21.9% | 24.4% |
| 45 – 59 years | 29.4% | 31.6% | 27.1% | 32.3% | 29.6% |
| 60 and above | 32.8% | 30.7% | 36.2% | 37.5% | 38.9% |

*Source: Estimates based on available data from CSES 2009, 2010, 2011, 2012 and 2013.*

Table 57 shows the overlap between PWD and PWCD. In all years, this overlap was higher than 20%, and in 2012 it surpassed 30%. This indicates that between one-in-five and one-in-three PWD also reported a chronic disease in these years.

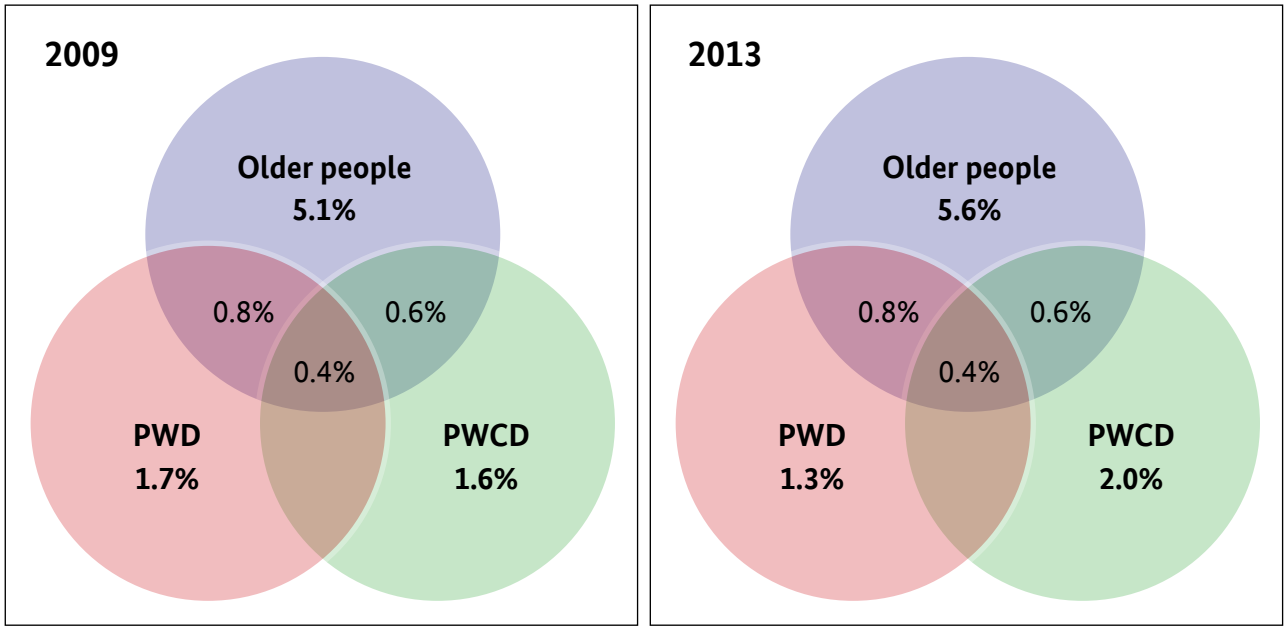
**Table 57: Percentage of people reporting a chronic disease, disaggregated by disability.**

| | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|
| People without a disability | 2.2% | 2.2% | 1.8% | 2.6% | 3.0% |
| People with a disability | 23.7% | 20.6% | 23.0% | 33.5% | 29.3% |

*Source: Estimates based on available data from CSES 2009, 2010, 2011, 2012 and 2013.*

Another way of looking at the overlap between groups is by Venn diagram (Figure 1). The figure shows the share of the population with only one type of vulnerability, two types of vulnerabilities, and all three types of vulnerabilities for the years 2009 and 2013; the first and last years for which all data is available.

**Figure 1: Overlap between older people, people with a disability and people with a chronic disease, 2009 and 2013. (Source: CSES)**



## 4.5 Determinants of outcomes of interest

To analyse the determinants of the variables of interest, a number of regression models were constructed. In most cases, these were logistic regression models, as the dependent variables were binary. All models include controls for household characteristics and individual characteristics. The specification of each model was tested with two types of goodness-of-fit tests; a link test, and a post-estimation goodness-of-fit test. If the initial models were not considered a 'good fit' by the standards of these tests, further variables and possible interactions between variables were included in the models to improve their predictive power. The models reported here are the preferred models. The subpop command in Stata was used to efficiently estimate standard errors in the subgroups.

### 4.5.1 Reported illnesses

The determinants of reported illness were analysed using logistic probability models for a wide array of potential explanatory variables at the household level and individual level (Table 58). The preferred model includes interaction terms between having a disability and consumption quintile, and having a disability and age group. Results indicate that individuals in larger households and individuals in male-headed households are less likely to report an illness. In addition, the odds of reporting an illness decrease when the age of the household head increases. There is some evidence that those living in a household in which the head of household has low educational attainment (i.e., completion of primary education – grade six – or less) are more likely to report an illness. Individuals living in an operational district (OD) with HEF are about 30% less likely to report an illness than those who live in an OD without HEF. Having access to an improved water sources has no effect on the probability of reporting an illness, but access to improved sanitation has a significant effect. The place of residence of the household has no effect on the odds of reporting an illness, but the likelihood of reporting an illness increases with consumption quintile.

In terms of individual characteristics, those with low education and females are more likely to report an illness. The main analysis of age groups shows that the likelihood of reporting an illness is higher for children under five years old and for people 45 years old and older, compared to people age 15 – 44. In addition, the main analysis of disability indicates that PWD are much more likely to report an illness than people without a disability. Due to the interaction between age group and disability status, the effects of these two variables differ based on each other. Finally, the interaction effect between the fifth quintile and disability status is significant.

### 4.5.2 Healthcare seeking

Table 59 reports the odds ratios of the determinants of seeking health care when ill for the subpopulation that reported an illness in the 30 days before the survey. Household size and the sex and age of the household head do not have a significant effect on the probability of seeking care. People living in a household whose head has low education are more likely to seek care than those living in households whose head has higher education. Having access to some kind of health insurance (HEF or fee exemption) decreases the odds of seeking care when ill. Individuals living in Phnom Penh are more likely to seek care than their counterparts living in other places. Furthermore, the probability to seek care increases with household consumption.

In terms of individual characteristics, gender and educational level do not have a significant effect on the likelihood to seek care. The main analysis of age groups shows that most age groups have the same probability of seeking care, except five to 14 year olds, who are more likely to seek care than other age groups.

The main analysis of having a disability and having a chronic disease indicate that PWD and PWCD have lower odds of seeking care when ill. Having a severe illness (i.e., so severe that the person had to stop working) significantly increases the odds of seeking care.

**Table 58: Logistic model of the probability of reporting an illness.**

| | OR | Standard error | t | P>\|t\| | 95% Confidence Interval | |
|---|---|---|---|---|---|---|
| **Household characteristics** | | | | | | |
| Household size | 0.967 | 0.009 | -3.63 | 0.000 | 0.950 | 0.985 |
| Male household head | 0.846 | 0.040 | -3.52 | 0.000 | 0.771 | 0.929 |
| Age of household head | 0.992 | 0.001 | -5.24 | 0.000 | 0.989 | 0.995 |
| Household head (primary education or less) | 1.073 | 0.042 | 1.79 | 0.073 | 0.993 | 1.160 |
| Located in OD with HEF | 0.692 | 0.054 | -4.76 | 0.000 | 0.594 | 0.805 |
| Access to improved water source | 1.072 | 0.071 | 1.04 | 0.297 | 0.941 | 1.222 |
| Access to improved sanitation | 0.722 | 0.043 | -5.49 | 0.000 | 0.642 | 0.811 |
| Place of residence (reference = Phnom Penh) | | | | | | |
| Other urban | 1.215 | 0.198 | 1.20 | 0.232 | 0.882 | 1.674 |
| Rural | 1.237 | 0.189 | 1.40 | 0.163 | 0.917 | 1.669 |
| Consumption quintile (reference = First quintile) | | | | | | |
| Second quintile | 1.163 | 0.072 | 2.44 | 0.015 | 1.030 | 1.313 |
| Third quintile | 1.338 | 0.095 | 4.10 | 0.000 | 1.164 | 1.539 |
| Fourth quintile | 1.506 | 0.111 | 5.54 | 0.000 | 1.303 | 1.742 |
| Fifth quintile | 1.650 | 0.154 | 5.38 | 0.000 | 1.374 | 1.980 |
| **Individual characteristics** | | | | | | |
| Primary education or less | 1.258 | 0.050 | 5.74 | 0.000 | 1.163 | 1.361 |
| Male | 0.799 | 0.022 | -8.17 | 0.000 | 0.757 | 0.843 |
| Age group (reference = 15 – 44 years old) | | | | | | |
| 0 – 4 years old | 2.269 | 0.110 | 16.92 | 0.000 | 2.063 | 2.496 |
| 5 – 14 years old | 0.821 | 0.035 | -4.59 | 0.000 | 0.754 | 0.893 |
| 45 – 59 years old | 2.179 | 0.097 | 17.58 | 0.000 | 1.998 | 2.378 |
| 60 years and above | 3.637 | 0.199 | 23.58 | 0.000 | 3.266 | 4.050 |
| Having at least one disability | 4.317 | 0.658 | 9.60 | 0.000 | 3.201 | 5.822 |
| **Interactions** | | | | | | |
| Interaction: age group * disability | | | | | | |
| 0 – 4 years old * disability | 0.909 | 0.352 | -0.25 | 0.805 | 0.425 | 1.945 |
| 5 – 14 years old * disability | 0.697 | 0.152 | -1.65 | 0.099 | 0.454 | 1.070 |
| 45 – 59 years old * disability | 0.646 | 0.094 | -2.99 | 0.003 | 0.484 | 0.860 |
| 60 years and above * disability | 0.785 | 0.109 | -1.74 | 0.083 | 0.597 | 1.032 |

| | OR | Standard error | t | P>\|t\| | 95% Confidence Interval | |
|---|---|---|---|---|---|---|
| Interaction: quintile * disability | | | | | | |
| Second quintile * disability | 0.898 | 0.149 | -0.65 | 0.518 | 0.648 | 1.245 |
| Third quintile * disability | 0.875 | 0.152 | -0.77 | 0.443 | 0.622 | 1.231 |
| Fourth quintile * disability | 1.332 | 0.235 | 1.62 | 0.105 | 0.942 | 1.884 |
| Fifth quintile * disability | 1.562 | 0.305 | 2.28 | 0.023 | 1.065 | 2.292 |
| Constant | 0.173 | 0.034 | -8.79 | 0.000 | 0.117 | 0.255 |
| N | | | 57,105 | | | |
| F(28, 648) | | | 71.13 | | | |
| Prob > F | | | 0.000 | | | |
| *OR = Odds ratio* | | | | | | |

**Table 59: Logistic regression model of the probability of seeking health care when ill.**

| | OR | Standard error | t | P>\|t\| | 95% Confidence Interval | |
|---|---|---|---|---|---|---|
| **Household characteristics** | | | | | | |
| Household size | 0.956 | 0.027 | -1.58 | 0.115 | 0.903 | 1.011 |
| Male household head | 1.164 | 0.143 | 1.23 | 0.218 | 0.914 | 1.482 |
| Age of household head | 1.004 | 0.004 | 0.98 | 0.326 | 0.996 | 1.013 |
| Household head (primary education or less) | 1.287 | 0.162 | 2.01 | 0.045 | 1.006 | 1.647 |
| Located in OD with HEF | 0.754 | 0.122 | -1.75 | 0.081 | 0.549 | 1.035 |
| Fee exemption | 0.623 | 0.116 | -2.53 | 0.012 | 0.432 | 0.899 |
| Place of residence (reference = Phnom Penh) | | | | | | |
| Other urban | 0.515 | 0.175 | -1.96 | 0.051 | 0.265 | 1.003 |
| Rural | 0.542 | 0.179 | -1.85 | 0.065 | 0.283 | 1.038 |
| Consumption quintile (reference = First quintile) | | | | | | |
| Second quintile | 1.194 | 0.176 | 1.20 | 0.230 | 0.894 | 1.595 |
| Third quintile | 1.876 | 0.309 | 3.82 | 0.000 | 1.358 | 2.591 |
| Fourth quintile | 2.089 | 0.314 | 4.90 | 0.000 | 1.555 | 2.807 |
| Fifth quintile | 2.459 | 0.496 | 4.46 | 0.000 | 1.654 | 3.655 |
| **Individual characteristics** | | | | | | |
| Primary education or less | 1.076 | 0.142 | 0.55 | 0.579 | 0.831 | 1.393 |
| Male | 0.988 | 0.087 | -0.14 | 0.890 | 0.831 | 1.175 |
| Age group (reference = 15 – 44 years old) | | | | | | |
| 0 – 4 years old | 0.981 | 0.143 | -0.13 | 0.898 | 0.737 | 1.306 |
| 5 – 14 years old | 1.666 | 0.307 | 2.77 | 0.006 | 1.160 | 2.392 |
| 45 – 59 years old | 1.168 | 0.216 | 0.84 | 0.402 | 0.812 | 1.681 |

| | OR | Standard error | t | P>\|t\| | 95% Confidence Interval | |
|---|---|---|---|---|---|---|
| 60 years and above | 1.122 | 0.229 | 0.56 | 0.573 | 0.751 | 1.676 |
| Having at least one disability | 0.595 | 0.112 | -2.75 | 0.006 | 0.411 | 0.862 |
| Having a chronic disease | 0.429 | 0.097 | -3.72 | 0.000 | 0.275 | 0.670 |
| Severe illness (stop usual activities) | 6.784 | 1.638 | 7.93 | 0.443 | 0.622 | 1.231 |
| Constant | 0.173 | 0.034 | -8.79 | 0.000 | 4.222 | 10.900 |
| N | | | 8,344 | | | |
| F(29, 647) | | | 6.88 | | | |
| Prob > F | | | 0.000 | | | |

*Note: The full model includes interaction terms between age group and disability, and age group and chronic disease (not reported in the table). The interaction terms are insignificant, but including these terms improve the overall fit of the model.*

### 4.5.3 Use of licensed medical health services

Table 60 presents the odds ratios from a logistic regression model of the probability of seeking care at a licensed medical provider when ill. Medical providers include all official public and private providers, and exclude drug stores, self-care, and care from traditional providers. The preferred model includes interaction terms between place of residence and chronic disease state, consumption quintile and chronic disease state, and consumption quintile and disability status. Most household characteristics are not associated with the probability of seeking care at a medical provider. Individuals living in households with a fee exemption are somewhat less likely to seek care at medical providers. The analyses of place of residence and consumption quintile are more complex to interpret because of the interactions with chronic disease and disability status. The main effects are that individuals living in Phnom Penh and people living in households with higher consumption expenditures are more likely to seek care at medical providers, even when taking into account the interaction effects of having a chronic disease.

**Table 60: Logistic regression model of the probability of seeking health care at a medical provider when ill.**

| | OR | Standard error | t | P>\|t\| | 95% Confidence Interval | |
|---|---|---|---|---|---|---|
| **Household characteristics** | | | | | | |
| Household size | 0.978 | 0.017 | -1.24 | 0.217 | 0.944 | 1.013 |
| Male household head | 1.044 | 0.089 | 0.50 | 0.616 | 0.883 | 1.233 |
| Age of household head | 1.002 | 0.003 | 0.78 | 0.437 | 0.997 | 1.008 |
| Household head (primary education or less) | 1.030 | 0.089 | 0.34 | 0.732 | 0.869 | 1.221 |
| Located in OD with HEF | 0.977 | 0.127 | -0.18 | 0.857 | 0.756 | 1.262 |
| Fee exemption | 0.725 | 0.135 | -1.73 | 0.084 | 0.503 | 1.045 |
| Place of residence (reference = Phnom Penh) | | | | | | |
| Other urban | 0.218 | 0.079 | -4.18 | 0.000 | 0.107 | 0.446 |
| Rural | 0.167 | 0.057 | -5.23 | 0.000 | 0.086 | 0.327 |

| | OR | Standard error | t | P>\|t\| | 95% Confidence Interval | |
|---|---|---|---|---|---|---|
| Consumption quintile (reference = First quintile) | | | | | | |
| Second quintile | 1.181 | 0.156 | 1.26 | 0.207 | 0.912 | 1.531 |
| Third quintile | 1.336 | 0.198 | 1.96 | 0.050 | 0.999 | 1.786 |
| Fourth quintile | 1.432 | 0.216 | 2.38 | 0.018 | 1.065 | 1.926 |
| Fifth quintile | 1.684 | 0.286 | 3.07 | 0.002 | 1.207 | 2.350 |
| **Individual characteristics** | | | | | | |
| Primary education or less | 0.918 | 0.079 | -1.00 | 0.319 | 0.775 | 1.087 |
| Male | 0.974 | 0.050 | -0.52 | 0.606 | 0.881 | 1.077 |
| Age group (reference = 15 – 44 years old) | | | | | | |
| 0 – 4 years old | 1.136 | 0.097 | 1.48 | 0.138 | 0.960 | 1.344 |
| 5 – 14 years old | 1.089 | 0.091 | 1.02 | 0.309 | 0.924 | 1.282 |
| 45 – 59 years old | 0.971 | 0.082 | -0.36 | 0.722 | 0.823 | 1.145 |
| 60 years and above | 0.985 | 0.099 | -0.15 | 0.881 | 0.808 | 1.200 |
| Having at least one disability | 0.560 | 0.100 | -3.25 | 0.001 | 0.395 | 0.795 |
| Having a chronic disease | 0.300 | 0.138 | -2.62 | 0.009 | 0.121 | 0.740 |
| Severe illness (stop usual activities) | 2.520 | 0.286 | 8.14 | 0.000 | 2.016 | 3.150 |
| **Interactions** | | | | | | |
| Interaction: region * chronic | | | | | | |
| Other urban * chronic | 2.414 | 1.202 | 1.77 | 0.077 | 0.908 | 6.417 |
| Other rural * chronic | 3.687 | 1.602 | 3.00 | 0.003 | 1.570 | 8.655 |
| Interaction: quintile * chronic | | | | | | |
| Second quintile * chronic | 0.897 | 0.214 | -0.46 | 0.649 | 0.562 | 1.433 |
| Third quintile * chronic | 1.098 | 0.292 | 0.35 | 0.725 | 0.651 | 1.851 |
| Fourth quintile * chronic | 1.228 | 0.299 | 0.84 | 0.401 | 0.760 | 1.982 |
| Fifth quintile * chronic | 1.753 | 0.480 | 2.05 | 0.041 | 1.024 | 3.000 |
| Interaction: quintile * disability | | | | | | |
| Second quintile * disability | 1.058 | 0.288 | 0.21 | 0.836 | 0.619 | 1.807 |
| Third quintile * disability | 1.834 | 0.516 | 2.16 | 0.031 | 1.056 | 3.186 |
| Fourth quintile * disability | 1.478 | 0.393 | 1.47 | 0.142 | 0.877 | 2.493 |
| Fifth quintile * disability | 2.443 | 0.729 | 2.99 | 0.003 | 1.360 | 4.390 |
| Constant | 8.628 | 3.455 | 5.38 | 0.000 | 3.930 | 18.941 |
| N | | | 8,344 | | | |
| F(31, 645) | | | 6.16 | | | |
| Prob > F | | | 0.000 | | | |

At the individual level, gender, education and age do not have a significant effect on the probability of seeking care at a medical provider. The effect of having a disability depends on the consumption quintile. The interaction effect indicates how much the main effect (e.g., having a disability) differs depending on the consumption quintile, and it does so in multiplicative terms. The main effect of having a disability refers to the effect for people in the reference category of income quintile (here, the first quintile). For example, the effect of having a disability for an individual in the fifth quintile is 2.44 times the main effect.

The main effect of having a chronic disease is also significant, and has significant interactions with place of residence and consumption quintile. The effect of having a chronic disease increases if an individual lives outside Phnom Penh, and also increases with consumption quintile. Having a severe illness increases the odds of seeking care at a medical provider.

To complete this section, Table 61 presents the results of a logistic regression model of the probability of seeking care at a public medical facility for the first visit to a healthcare provider for that illness.

**Table 61: Logistic regression model of the probability of seeking health care at a public medical provider when ill (first visit).**

| | OR | Standard error | t | P>\|t\| | 95% Confidence Interval | |
|---|---|---|---|---|---|---|
| **Household characteristics** | | | | | | |
| Household size | 0.966 | 0.017 | -1.68 | 0.094 | 0.928 | 1.006 |
| Male household head | 0.978 | 0.097 | -0.23 | 0.820 | 0.804 | 1.188 |
| Age of household head | 1.003 | 0.003 | 1.06 | 0.289 | 0.997 | 1.010 |
| Household head (primary education or less) | 1.035 | 0.102 | 0.35 | 0.728 | 0.853 | 1.255 |
| Located in OD with HEF | 1.763 | 0.224 | 4.46 | 0.000 | 1.374 | 2.262 |
| Fee exemption | 1.469 | 0.225 | 2.51 | 0.012 | 1.088 | 1.984 |
| Place of residence (reference = Phnom Penh) | | | | | | |
| Other urban | 2.032 | 0.656 | 2.19 | 0.029 | 1.078 | 3.831 |
| Rural | 2.819 | 0.807 | 3.62 | 0.000 | 1.606 | 4.947 |
| Consumption quintile (reference = First quintile) | | | | | | |
| Second quintile | 0.900 | 0.129 | -0.74 | 0.462 | 0.679 | 1.192 |
| Third quintile | 0.843 | 0.127 | -1.13 | 0.258 | 0.627 | 1.134 |
| Fourth quintile | 0.918 | 0.134 | -0.59 | 0.557 | 0.690 | 1.222 |
| Fifth quintile | 0.937 | 0.150 | -0.40 | 0.002 | 1.207 | 2.350 |
| **Individual characteristics** | | | | | | |
| Primary education or less | 1.164 | 0.120 | 1.48 | 0.140 | 0.951 | 1.425 |
| Male | 0.874 | 0.059 | -1.99 | 0.047 | 0.765 | 0.765 |
| Age group (reference = 15 – 44 years old) | | | | | | |
| 0 – 4 years old | 1.398 | 0.141 | 3.33 | 0.001 | 1.148 | 1.704 |

| | OR | Standard error | t | P>\|t\| | 95% Confidence Interval | |
|---|---|---|---|---|---|---|
| 5 – 14 years old | 0.979 | 0.102 | -0.21 | 0.837 | 0.797 | 1.202 |
| 45 – 59 years old | 0.888 | 0.079 | -1.34 | 0.182 | 0.746 | 1.057 |
| 60 years and above | 0.681 | 0.080 | -3.28 | 0.001 | 0.542 | 0.857 |
| Having at least one disability | 0.758 | 0.171 | -1.23 | 0.221 | 0.487 | 1.181 |
| Having a chronic disease | 3.855 | 1.196 | 4.35 | 0.000 | 2.096 | 7.090 |
| Severe illness (stop usual activities) | 1.969 | 0.198 | 6.75 | 0.000 | 1.617 | 2.398 |
| **Interactions** | | | | | | |
| Interaction: sex * chronic | 1.336 | 0.178 | 2.17 | 0.030 | 1.028 | 1.737 |
| Interaction: region * chronic | | | | | | |
| Other urban * chronic | 0.436 | 0.174 | -2.08 | 0.038 | 0.200 | 0.954 |
| Other rural * chronic | 0.416 | 0.134 | -2.73 | 0.006 | 0.222 | 0.781 |
| Interaction: quintile * chronic | | | | | | |
| Second quintile * chronic | 0.778 | 0.255 | -0.77 | 0.444 | 0.408 | 1.482 |
| Third quintile * chronic | 1.633 | 0.490 | 1.63 | 0.103 | 0.906 | 2.945 |
| Fourth quintile * chronic | 1.253 | 0.378 | 0.75 | 0.455 | 0.693 | 2.264 |
| Fifth quintile * chronic | 2.410 | 0.713 | 2.98 | 0.003 | 1.349 | 4.307 |
| Constant | 0.048 | 0.019 | -7.72 | 0.000 | 0.022 | 0.104 |
| N | | | 8,344 | | | |
| F(28, 648) | | | 7.49 | | | |
| Prob > F | | | 0.000 | | | |

### 4.5.4 Out-of-pocket health expenditures

This section presents three determinant analyses: determinants of positive OOP expenditures; determinants of the level of total health-related expenditures (OOP + transportation costs); and, the determinants of free health care.

First, Table 62 presents the results from a logistic regression model of the likelihood that an individual will have positive OOP expenditures on health (i.e., will have spent money on health care in the last month). Living in a large household, living with a male head of household, living with an older head of households, and living in an OD with HEF all decrease the probability of reporting positive OOP expenditures. Those living with a household head that has low education have a higher likelihood of reporting positive OOP. The results indicate no significant effect of fee exemption and place of residence on OOP expenditures. The household consumption increases the odds of reporting positive OOP expenditures.

**Table 62: Logistic regression model of the probability of reporting positive out-of-pocket health expenditures.**

| | OR | Standard error | t | P>\|t\| | 95% Confidence Interval | |
|---|---|---|---|---|---|---|
| **Household characteristics** | | | | | | |
| Household size | 0.956 | 0.010 | -4.28 | 0.000 | 0.937 | 0.976 |
| Male household head | 0.877 | 0.047 | -2.46 | 0.014 | 0.791 | 0.974 |
| Age of household head | 0.990 | 0.002 | -5.91 | 0.000 | 0.987 | 0.994 |
| Household head (primary education or less) | 1.142 | 0.051 | 2.99 | 0.003 | 1.047 | 1.246 |
| Located in OD with HEF | 0.686 | 0.058 | -4.48 | 0.000 | 0.581 | 0.809 |
| Fee exemption | 1.060 | 0.119 | 0.52 | 0.601 | 0.851 | 1.321 |
| Place of residence (reference = Phnom Penh) | | | | | | |
| Other urban | 1.059 | 0.168 | 0.36 | 0.721 | 0.774 | 1.447 |
| Other rural | 1.202 | 0.172 | 1.28 | 0.200 | 0.907 | 1.593 |
| Consumption quintile (reference = First quintile) | | | | | | |
| Second quintile | 1.176 | 0.075 | 2.54 | 0.011 | 1.038 | 1.333 |
| Third quintile | 1.381 | 0.105 | 4.23 | 0.000 | 1.189 | 1.605 |
| Fourth quintile | 1.479 | 0.118 | 4.90 | 0.000 | 1.264 | 1.729 |
| Fifth quintile | 1.599 | 0.158 | 4.76 | 0.000 | 1.318 | 1.941 |
| **Individual characteristics** | | | | | | |
| Primary education or less | 1.232 | 0.055 | 4.67 | 0.000 | 1.129 | 1.345 |
| Male | 0.806 | 0.024 | -7.28 | 0.000 | 0.831 | 0.854 |
| Age group (reference = 15 – 44 years old) | | | | | | |
| 0 – 4 years old | 2.317 | 0.111 | 17.58 | 0.000 | 2.109 | 2.545 |
| 5 – 14 years old | 0.900 | 0.039 | -2.46 | 0.014 | 0.826 | 0.979 |
| 45 – 59 years old | 1.775 | 0.082 | 12.36 | 0.000 | 1.620 | 1.944 |
| 60 years and above | 2.761 | 0.164 | 17.06 | 0.000 | 2.457 | 3.104 |
| Having at least one disability | 2.305 | 0.173 | 11.15 | 0.000 | 1.989 | 2.670 |
| Having a chronic disease | 52.244 | 6.627 | 31.19 | 0.000 | 40.726 | 67.020 |
| Severe illness (stop usual activities) | 0.207 | 0.042 | -7.71 | 0.000 | 0.139 | 0.309 |
| Constant | 0.157 | 0.031 | -9.33 | 0.000 | 0.107 | 0.232 |
| N | | | 57,105 | | | |
| F(22, 654) | | | 188.74 | | | |
| Prob > F | | | 0.000 | | | |

All individual effects included in the model are statistically significant at the 5% level. People with low education (completion of primary or less), children younger than five years old and people in the two oldest age groups are more likely to report positive OOP expenditures. Due to interactions between having a disability and having a chronic disease, the effect of both terms depends on the value of the other. For example, the effect of having a chronic disease for PWD is 0.2 times the effect of chronic disease on people without a disability.

Analysis of the amount of OOP expenditures is more complex, as OOP expenditures are only recorded for people that sought and paid for health care. If there is unobserved heterogeneity in the perception of being ill and the decision to seek care, simple regression models produce biased estimates. Therefore, a two-stage Heckman selection model was used to generate estimates for the effect of OOP. This model controls for the potential selection bias in the decision to spend money on health care. The first stage of the model is a probit model, estimating the probability of having positive OOP, and is therefore similar to the one presented in Table 62. The second stage of the model is an ordinary least square (OLS) regression model, using the logarithm of total health-related expenses (OOP plus transport expenditures). The logarithm of health-related expenditures is more useful in this context, due to the large number of zero values and high outliers. Table 63 presents the results of the second stage of this model.

**Table 63: Heckman selection model of the amount of (log) health-related expenditures (OOP and transport).**

| | OR | Standard error | t | P>\|t\| | 95% Confidence Interval | |
|---|---|---|---|---|---|---|
| **Household characteristics** | | | | | | |
| Household size | 0.012 | 0.010 | 1.17 | 0.243 | -0.008 | 0.033 |
| Male household head | 0.130 | 0.053 | 2.45 | 0.015 | 0.026 | 0.234 |
| Age of household head | 0.002 | 0.002 | 1.11 | 0.266 | -0.001 | 0.005 |
| Household head (primary education or less) | -0.005 | 0.052 | -0.09 | 0.926 | -0.107 | 0.097 |
| Located in OD with HEF | 0.062 | 0.064 | 0.97 | 0.335 | -0.064 | 0.189 |
| Fee exemption | -0.120 | 0.096 | -1.25 | 0.210 | -0.308 | 0.068 |
| Place of residence (reference = Phnom Penh) | | | | | | |
| Other urban | 0.484 | 0.187 | 2.59 | 0.010 | 0.117 | 0.852 |
| Other rural | 0.690 | 0.164 | 4.20 | 0.000 | 0.367 | 1.012 |
| Consumption quintile (reference = First quintile) | | | | | | |
| Second quintile | 0.266 | 0.066 | 4.01 | 0.000 | 0.136 | 0.396 |
| Third quintile | 0.531 | 0.086 | 6.20 | 0.000 | 0.363 | 0.699 |
| Fourth quintile | 0.779 | 0.083 | 9.36 | 0.000 | 0.616 | 0.942 |
| Fifth quintile | 1.185 | 0.112 | 10.62 | 0.000 | 0.966 | 1.404 |
| **Individual characteristics** | | | | | | |
| Primary education or less | -0.011 | 0.052 | -0.22 | 0.828 | -0.114 | 0.091 |

| | OR | Standard error | t | P>\|t\| | 95% Confidence Interval | |
|---|---|---|---|---|---|---|
| Male | 0.096 | 0.034 | 2.86 | 0.004 | 0.030 | 0.162 |
| Age group (reference = 15 – 44 years old) | | | | | | |
| 0 – 4 years old | -0.306 | 0.066 | -4.66 | 0.000 | -0.435 | -0.177 |
| 5 – 14 years old | -0.350 | 0.057 | -6.12 | 0.000 | -0.462 | -0.238 |
| 45 – 59 years old | -0.023 | 0.065 | -0.35 | 0.727 | -0.150 | 0.105 |
| 60 years and above | 0.036 | 0.088 | 0.41 | 0.681 | -0.136 | 0.208 |
| Having at least one disability | -0.114 | 0.112 | -1.02 | 0.309 | -0.333 | 0.106 |
| Having a chronic disease | 0.166 | 0.356 | 0.47 | 0.641 | -0.533 | 0.865 |
| Severe illness (stop usual activities) | 1.268 | 0.062 | 20.30 | 0.000 | 1.146 | 1.391 |
| Constant | 8.797 | 0.267 | 32.90 | 0.000 | 8.272 | 9.322 |
| rho | -0.316 | 0.056 | | | -0.422 | -0.202 |
| sigma | 1.416 | 0.024 | | | 1.371 | 1.463 |
| Prob > F | -0.448 | 0.086 | | | -0.616 | -0.279 |

*Note: The full model includes interaction terms between region (place of residence) and chronic disease, age group and chronic disease, consumption quintile and chronic disease, and consumption quintile and disability status (not reported in this table).*

The interpretation of the coefficients of the Heckman model is complex, especially when the independent variable is included in the first stage of the model as well. If a variable appears only in the outcome equation, the coefficient on it can be interpreted as the marginal effect of a one-unit change in that variable on the outcome variable. If, on the other hand, the variable appears in both the selection and outcome equations the coefficient in the second-stage equation is affected by its presence in the selection equation as well. Therefore, it is more useful to look at the significance and direction (positive or negative) of the coefficients instead of their size.

Results from the selection model indicate that it is necessary to control for selection bias, as the value of rho is significantly different from zero. The findings show that the household size, age of household head, education of household head, and health insurance status (fee exemption or in a HEF OD) are not significantly related to the amount of OOP expenditures. Living in a male-headed household, outside Phnom Penh, and in higher consumption households increases the amount of OOP health spending. At the individual level, education has no effect on the amount of OOP health spending, but males spend somewhat more than females. People under 15 years old spend significantly less than older people. After accounting for selection bias and interaction effects, the main effects of having a disability or having a chronic illness are not significantly related to the amount of OOP health expenditures. Having a severe illness significantly increases health spending.

Furthermore, a logistic regression model was constructed to estimate the determinants of free health care. Results of this model are presented in Table 64. However, it should be noted that the number of observations with free health care is very low (N=68), and the logistic regression model is quite poor at predicting the outcomes in this circumstance.

People living in households with fee exemptions are more likely to report free health care. Individuals in male-headed households have

lower odds of reporting free health care; other household characteristics are not significant. In contrast, at the individual level, males are more likely to report free health care than females. Younger people are less likely to report free health care, but PWD and PWCD have higher odds of reporting free health care.

**Table 64: Logistic regression model of the probability of reporting free health care (OOP=0).**

| | OR | Standard error | t | P>\|t\| | 95% Confidence Interval | |
|---|---|---|---|---|---|---|
| **Household characteristics** | | | | | | |
| Household size | 1.085 | 0.070 | 1.27 | 0.205 | 0.956 | 1.231 |
| Male household head | 0.530 | 0.159 | -2.12 | 0.034 | 0.294 | 0.953 |
| Age of household head | 1.005 | 0.011 | 0.42 | 0.678 | 0.983 | 1.026 |
| Household head (primary education or less) | 0.792 | 0.245 | -0.75 | 0.451 | 0.432 | 1.453 |
| Located in OD with HEF | 0.966 | 0.254 | -0.13 | 0.894 | 0.577 | 1.617 |
| Fee exemption | 4.331 | 1.401 | 4.53 | 0.000 | 2.295 | 8.174 |
| Place of residence (reference = Phnom Penh) | | | | | | |
| Other urban | 4.006 | 3.591 | 1.55 | 0.122 | 0.689 | 23.284 |
| Other rural | 2.225 | 1.891 | 0.94 | 0.347 | 0.419 | 11.802 |
| Consumption quintile (reference = First quintile) | | | | | | |
| Second quintile | 0.875 | 0.329 | -0.36 | 0.722 | 0.418 | 1.832 |
| Third quintile | 0.257 | 0.129 | -2.70 | 0.007 | 0.096 | 0.690 |
| Fourth quintile | 0.573 | 0.219 | -1.46 | 0.145 | 0.271 | 1.213 |
| Fifth quintile | 0.510 | 0.223 | -1.54 | 0.123 | 0.216 | 1.201 |
| **Individual characteristics** | | | | | | |
| Primary education or less | 1.112 | 0.379 | 0.31 | 0.756 | 0.570 | 2.169 |
| Male | 1.856 | 0.469 | 2.45 | 0.015 | 1.130 | 3.047 |
| Age group (reference = 15 – 44 years old) | | | | | | |
| 0 – 4 years old | 0.263 | 0.199 | -1.76 | 0.078 | 0.059 | 1.163 |
| 5 – 14 years old | 0.103 | 0.107 | -2.19 | 0.029 | 0.013 | 0.788 |
| 45 – 59 years old | 0.913 | 0.300 | -0.28 | 0.782 | 0.479 | 1.741 |
| 60 years and above | 0.553 | 0.219 | -1.50 | 0.135 | 0.254 | 1.203 |
| Having at least one disability | 2.202 | 0.112 | 2.66 | 0.008 | 1.229 | 3.945 |
| Having a chronic disease | 4.894 | 1.321 | 5.88 | 0.000 | 2.881 | 8.315 |
| Constant | 0.002 | 0.003 | -5.12 | 0.000 | 0.000 | 0.024 |
| N | | | 8109 | | | |
| F(20, 656) | | | 6.26 | | | |
| Prob > F | | | 0.000 | | | |

### 4.5.5 Household level

At the household level, three models were estimated: determinants of catastrophic health expenditure; impoverishment; and, indebtedness. Table 65 presents the results of the analysis of catastrophic health expenditures. The findings indicate that households with a head that has low educational attainment have a higher chance of catastrophic health expenditures. Households with an older head and households with one or more children under five years old also have a higher likelihood of catastrophic expenditures. Households living in rural areas and richer households are also more likely to experience catastrophic expenditures. Households with an older member do not have a higher likelihood of reporting catastrophic expenditures. However, households with PWD, and households with PWCD have higher odds of catastrophic expenditures. The interaction term between households with PWD and those with PWCD indicates that the effect decreases when both are present in the same household.

**Table 65: Logistic regression model of the probability of catastrophic health expenditures among households.**

| | OR | Standard error | t | P>\|t\| | 95% Confidence Interval | |
|---|---|---|---|---|---|---|
| Household size | 0.963 | 0.026 | -1.41 | 0.160 | 0.913 | 1.015 |
| Household head primary education or less | 1.920 | 0.223 | 5.62 | 0.000 | 1.529 | 2.411 |
| Male household head | 1.237 | 0.150 | 1.75 | 0.080 | 0.975 | 1.569 |
| Age of household head | 1.018 | 0.005 | 3.88 | 0.000 | 1.009 | 1.027 |
| Number of children under 5 | 1.165 | 0.089 | 2.00 | 0.046 | 1.003 | 1.353 |
| Located in OD with HEF | 2.016 | 1.566 | 0.90 | 0.367 | 0.438 | 1.9.271 |
| Fee exemption | 4.331 | 1.401 | 4.53 | 0.000 | 2.295 | 8.174 |
| Place of residence (reference = Phnom Penh) | | | | | | |
| Other urban | 1.080 | 0.363 | 0.23 | 0.819 | 0.558 | 2.089 |
| Other rural | 3.816 | 1.011 | 5.05 | 0.000 | 2.268 | 6.421 |
| Consumption quintile (reference = First quintile) | | | | | | |
| Second quintile | 1.446 | 0.237 | 2.25 | 0.025 | 1.048 | 1.996 |
| Third quintile | 1.721 | 0.297 | 3.15 | 0.002 | 1.227 | 2.415 |
| Fourth quintile | 1.905 | 0.335 | 3.67 | 0.000 | 1.350 | 2.690 |
| Fifth quintile | 3.088 | 0.572 | 6.09 | 0.000 | 2.146 | 4.442 |
| Member aged 60 or older | 0.887 | 0.107 | -0.99 | 0.320 | 0.699 | 1.125 |
| Member with a mild illness | 2.565 | 0.325 | 7.44 | 0.000 | 2.000 | 3.288 |
| Member with a severe illness | 5.138 | 0.687 | 12.25 | 0.000 | 3.952 | 6.679 |
| Member with a chronic disease | 5.366 | 0.808 | 11.15 | 0.000 | 3.992 | 7.212 |
| Member with a disability | 2.300 | 0.308 | 6.21 | 0.000 | 1.768 | 2.992 |
| Interaction (hhchronic * hhdisable) | 0.540 | 0.117 | -2.85 | 0.004 | 0.354 | 0.825 |
| Constant | 0.001 | 0.000 | -16.82 | 0.000 | 0.000 | 0.002 |
| N | | | 11,971 | | | |
| F(19, 657) | | | 41.70 | | | |
| Prob > F | | | 0.000 | | | |

Table 66 presents the results from the logistic regression model to estimate the probability of impoverishment due to OOP health expenditures. It shows that the odds of impoverishment increase with household size and households whose head has low education. Impoverishment is less common among households in higher consumption quintiles. Having an older person in the household has no significant effect on the probability of impoverishment, but having a member with a mild illness, severe illness, chronic disease or disability increases the odds of impoverishment.

**Table 66: Logistic regression model of the probability of household impoverishment due to health expenditures.**

| | OR | Standard error | t | P>\|t\| | 95% Confidence Interval | |
|---|---|---|---|---|---|---|
| Household size | 1.154 | 0.036 | 4.54 | 0.000 | 1.085 | 1.228 |
| Household head primary education or less | 1.557 | 0.227 | 3.04 | 0.002 | 1.170 | 2.071 |
| Male household head | 1.240 | 0.150 | 1.75 | 0.080 | 0.975 | 1.569 |
| Age of household head | 0.993 | 0.005 | 3.88 | 0.000 | 1.009 | 1.027 |
| Number of children under five years old | 0.947 | 0.089 | 2.00 | 0.046 | 1.003 | 1.353 |
| Located in OD with HEF | 1.257 | 1.566 | 0.90 | 0.367 | 0.438 | 1.9.271 |
| Fee exemption | 0.727 | 1.401 | 4.53 | 0.000 | 2.295 | 8.174 |
| Place of residence (reference = Phnom Penh) | | | | | | |
| Other urban | 0.915 | 0.363 | 0.23 | 0.819 | 0.558 | 2.089 |
| Other rural | 0.702 | 1.011 | 5.05 | 0.000 | 2.268 | 6.421 |
| Consumption quintile (reference = First quintile) | | | | | | |
| Second quintile | 1.913 | 0.323 | 3.84 | 0.000 | 1.373 | 2.666 |
| Third quintile | 1.019 | 0.200 | 0.09 | 0.925 | 0.693 | 1.497 |
| Fourth quintile | 0.320 | 0.082 | -4.42 | 0.000 | 0.193 | 0.530 |
| Fifth quintile | 0.117 | 0.048 | -5.18 | 0.000 | 0.052 | 0.263 |
| Member aged 60 or older | 0.972 | 0.149 | -0.19 | 0.852 | 0.720 | 1.312 |
| Member with a mild illness | 3.273 | 0.498 | 7.80 | 0.000 | 2.429 | 4.412 |
| Member with a severe illness | 2.723 | 0.572 | 4.77 | 0.000 | 1.802 | 4.114 |
| Member with a chronic disease | 4.749 | 0.870 | 8.50 | 0.000 | 3.314 | 6.806 |
| Member with a disability | 1.431 | 0.223 | 2.30 | 0.022 | 1.053 | 1.943 |
| Constant | 0.008 | 0.005 | -7.82 | 0.000 | 0.002 | 0.026 |
| N | | | 11,971 | | | |
| F(18, 658) | | | 23.04 | | | |
| Prob > F | | | 0.000 | | | |

*Note: Model has poor specification statistics.*

Finally, the determinants of having a debt to pay for medical expenses are modelled using a logistic regression model (Table 67). Households whose head has low education, and households with one or more children under five years old, are more likely to have a debt to pay for medical expenses. Households in the highest consumption quintile have significantly lower odds of going into debt for health expenses compared to households in the first consumption quintile. Having an older member, a member with a severe illness, or a member with a chronic disease, increases the likelihood of indebtedness for medical expenses. The main effect of having a member with a disability is not significant, and the significant interaction between households with PWCD and households with PWD indicates that the effect of having a member with a chronic disease decreases when there is also a member with a disability in the household.

**Table 67: Logistic model of the probability of household indebtedness to pay for medical expenses.**

| | OR | Standard error | t | P>\|t\| | 95% Confidence Interval | |
|---|---|---|---|---|---|---|
| Household size | 1.009 | 0.029 | 0.32 | 0.752 | 1.123 | 1.067 |
| Household head primary education or less | 1.424 | 0.172 | 2.92 | 0.004 | 1.123 | 1.806 |
| Male household head | 0.941 | 0.127 | -0.45 | 0.655 | 0.722 | 1.227 |
| Age of household head | 0.992 | 0.005 | -1.63 | 0.104 | 0.982 | 1.002 |
| Number of children under five years old | 1.240 | 0.098 | 2.73 | 0.007 | 1.062 | 1.448 |
| Located in OD with HEF | 3.383 | 2.729 | 1.51 | 0.131 | 0.694 | 16.487 |
| Fee exemption | 0.454 | 0.356 | -1.01 | 0.315 | 0.098 | 2.117 |
| Place of residence (reference = Phnom Penh) | | | | | | |
| Other urban | 1.190 | 0.437 | 0.47 | 0.636 | 0.579 | 2.446 |
| Other rural | 1.875 | 0.616 | 1.91 | 0.056 | 0.983 | 3.575 |
| Consumption quintile (reference = First quintile) | | | | | | |
| Second quintile | 0.771 | 0.139 | -1.44 | 0.150 | 0.541 | 1.099 |
| Third quintile | 0.905 | 0.167 | -0.54 | 0.589 | 0.631 | 1.299 |
| Fourth quintile | 0.892 | 0.173 | -0.59 | 0.556 | 0.610 | 1.305 |
| Fifth quintile | 0.477 | 0.119 | -2.97 | 0.003 | 0.293 | 0.778 |
| Member aged 60 or older | 0.719 | 0.102 | -2.33 | 0.020 | 0.544 | 0.950 |
| Member with a mild illness | 1.254 | 0.164 | 1.73 | 0.084 | 0.970 | 1.622 |
| Member with a severe illness | 1.763 | 0.275 | 3.63 | 0.000 | 1.297 | 2.396 |
| Member with a chronic disease | 3.442 | 0.555 | 7.66 | 0.000 | 2.508 | 4.725 |
| Member with a disability | 1.306 | 0.355 | 0.98 | 0.327 | 0.766 | 2.226 |
| Constant | 0.547 | 0.156 | -2.12 | 0.035 | 0.313 | 2.226 |
| N | | | 11,971 | | | |
| F(23, 653) | | | 7.76 | | | |
| Prob > F | | | 0.000 | | | |

# 5. Recommendations and Follow-up Analysis

- Analysis and comparison of CDHS data (including 2014 data that became recently available), especially on OOP expenditures per provider type. CDHS 2014 employs a different method to measure disability, so it would be interesting to compare estimates with CSES.
- Pooled analysis of CSES data, combining several years of data, to analyse the drivers of change for indicators of interest.

# 6. Annexes

The statistical annexes are available in separate Excel files and STATA output files:

- o All tables including standard errors and medians (if applicable):
  - Tables report – PWD.xlsx
  - Tables 2004 – 2013 for report – PWD.smcl
  - Tables report – OLDER PEOPLE.xlsx
  - Tables 2004 – 2013 for report – OLDER PEOPLE.smcl
  - Tables report – PWCD.xlsx
  - Tables 2004 – 2013 for report – PWCD.smcl
- o Regression analysis and test results:
  - Regression results for report.xlsx
  - Determinants analysis – Illness & Health care seeking.log
  - Determinants analysis – OOP.log
  - Determinants analysis – HH.log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