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Factors associated with the delay in seeking inpatient and outpatient care services in the Philippines

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Abstract

Despite the country's policies and programs towards universal health care, health is not improving as well as expected, which suggests that households still face significant barriers to their choice of and access to health care, and their timing of use of health services. Using a nationally representative sample of households, we investigate the factors that affect the timing of outpatient care and inpatient care utilization. We define two indicators of delay in seeking care, namely: one for outpatient care, as the number of days from onset of symptom until visit of a clinic or provider, and another for inpatient care, as the number of days from doctor's advice until hospital confinement. Given our dependent variables are measured in terms days until visit, we estimate proportional hazard models (Cox, Weibull and Gompertz) to identify the significant factors associated with delay in seeking health care services. The factors associated with delay are classified in terms of health needs, financial access, physical access, opportunity costs, other household factors and location. Our findings suggest health needs and opportunity costs are the main factors associated with the delay in seeking outpatient and inpatient care services among Filipinos in need of medical attention. Perhaps more importantly from a policy perspective, we also find that physical and financial access variables do not significantly affect timing of care. We draw some implications from the results on increasing access to health care, through improvements in awareness of social health insurance and in the actual quality of health facilities. We also identify directions for future research.

Key words: Outpatient care, inpatient care, delay in seeking health care, health care utilization, social health insurance, Philippines

JEL Codes: I12, D12, I19

1. Introduction

Goal number three of the Sustainable Development Goals has been broadly termed as "Ensure health lives and promote well-being for all at all ages." This broad goal encompasses 17 targets including that to achieve universal health coverage, namely, financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all (WHO, 2015). This target has been noted to underpin the achievement of all the other targets. These goals recognize that still much must be done to improve access, not only to care but to good quality care. That there remain barriers in accessing care in the face of health complaints has been documented in low and middle income developing countries (Say and Raine, 2007; Peters et al., 2008; Bright et al., 2017; O'Donnell, 2007; Jacobs, 2012; Grimes, 2011). Low utilization of health care services has been cited as symptomatic of barriers to access (Ensor and Cooper, 2004; Gulliford, et al., 2002).

Even if individuals eventually utilize care, there may be significant delays in accessing these. Delays in care seeking have been documented among populations in low, middle and even high income countries (Godfrey, 2002; Finnegan, 2000), for different health complaints (Wu, 2004; Meyer-Weitz, 2000; Rutemberbwa, 2009) and among different age groups (Fortenberry, 1997; Kraft et al., 2009).

The consequences of delay in care seeking are non-trivial. Delays lead to worse conditions – for instance, Chen et al. (2011) note that people who delayed medical treatment has a significantly lower likelihood of reporting excellent or very good health status and lower health-related quality of life status measures. Kraft et al. (2009) finds that children whose inpatient admission is delayed by two days are more likely to be wasted and to have higher levels of Creatinine Reactive Protein, a measure of overall inflammation in the body, upon discharge. Kallander et al. (2008) finds that delayed care seeking could be detrimental and

prove to be fatal for children with pneumonia in Uganda. Their sample is composed of children who had died of pneumonia, and although sick children were eventually taken to providers, caretakers still waited more than 24 hours after recognizing the symptoms of illness before seeking care outside home. Weissman et al. (1991) reports nine percent longer hospital stays for those who delayed care. Not only do delays result in worse health outcomes, delays are also associated with higher costs of care as conditions become more severe and require more intensive use of resources. Kraft et al. (2009) reports that those whose inpatient admission are delayed by two days had hospitalization costs that were 1.9% higher. Studies have also considered cost implications associated with delays for specific diseases. Mesfin et al. (2011) study the costs incurred of pulmonary tuberculosis patients in Ethiopia, and find that patient costs increased for those who used alternative care providers or who were misdiagnosed in public health facilities.

Several factors have been cited by different studies as causing or reducing delays. Financial concerns and costs figure significantly (Kennedy at al., 2004; Barnet, 2001) such that insurance coverage has been noted to mitigate delays (Kraft et al., 2009). Some factors are cognitive and psychological (Meechan et al., 2003; Sreeramareddy et al., 2006), such as the perception of individuals on the severity of illness, fear and stigma. Demographic factors like sex and the care-giving for others (Stein, 2000; Kassile et al., 2014) have also been cited, most especially among care-seeking of women. Physical barriers such a location of facilities are also commonly cited (Grimes, 2011). These indicate the multi-faceted nature of delay in care-seeking, with this study attempting to contribute to its better understanding, especially in the context of a middle-income developing country that is attempting to overcome some of the barriers to care access.

This study differs from previous ones in the Philippines and in other countries in that it applies duration models in looking at the factors affecting delay in care seeking, whilst others

mostly investigate the likelihood of delay using logistic models. This study also considers both inpatient and outpatient care, recognizing that there may be differences in the influence of the factors, such as health insurance, for types of illnesses requiring care from different levels of the health system.

2. Setting

The Philippines has been moving towards universal health care. From 2010-2016, the national government has been implementing its Health Agenda or *Kalusugan Pangkahalatan* (*KP*), meant to achieve universal health care for all Filipinos. The first strategic thrust is financial risk protection, which was made possible through the expansion in enrollment and benefit delivery of the National Health Insurance Program (PhilHealth). During the implementation of the health agenda, revenues from the tobacco and alcohol excise taxes were earmarked towards the financing of enrollment of indigent families and senior citizens. The health budget increased from 24.7 in 2010 to 122.6 percent in 2016 and the government subsidies for premium payments for the poor also increased from 3 percent in 2010 to 43.8 percent in 2016 (Department of Health, 2016). As of June 2016, according to administrative data, PhilHealth coverage is 90 percent. According to survey data, PhilHealth coverage was 37.7 percent, 48.5 and 60.3 percent in 2008, 2011 and 2013, respectively.[1] In 2011-2016, PhilHealth also introduced policies such as the No Balance Billing and the Z-Benefits and Primary Care Package to expand its benefits. Given this, there have been policy initiative to reduce financial barriers.

The second thrust of KP is to improve access to quality hospitals and health care facilities. While the Health Facilities Enhancement Program upgraded health facilities and funded

[1] The 2008 and 2013 figures are from the 2008 and 2013 rounds of the National Demographic and Health Survey and the 2011 figure is from the 2011 Family Health Survey (Bredenkamp and Buisman, 2015).

infrastructure and equipment of barangay health stations, on the supply side, there are modest efforts to reduce physical barriers to access through the expansion of the health service delivery network. There has been an increasing trend in the total number of hospitals and beds for both private and public hospitals from 2005 to 2012, the growth rate was just 2.5 percent and 0.6 percent respectively WHO, 2013). Physical access and proximity of health facility to patient also associated with delay in seeking treatment (Ukwaja et al., 2013; Cai et al., 2015). According to Health Equity and Financial Protection in Asia (HEFPA) survey data, in 2011, about 66 and 83 percent of households reported the availability of private and public hospitals, respectively, the within municipality/town.

Despite improvements in access, health is not improving as drastically as expected. And even in the midst of expansion, problems persist – for instance, the quality devolved health facilities remain uneven (WHO, 2011). The country also faces double burden of disease. The burden of disease trend so far has been that leading causes of mortality are non-communicable diseases, while leading causes of morbidity are communicable diseases (i.e. respiratory infection, diarrhea, tuberculosis, dengue). Non-communicable diseases (NCDs) are emerging as a major cause of death in the Philippines wherein 67 percent of total deaths in the country are estimated to be caused by the four major NCDs (i.e. cardiovascular diseases, diabetes, cancer and chronic respiratory disease) (World Health Organization, 2014). In 2014, the total number of NCD deaths is estimated to be at 383,000, approximately four percent of total population. According to the 8th National Nutrition Survey, prevalence of hypertension has decreased from 25.8 percent in 2008 to 22.3 percent in 2013, while prevalence of diabetes increased from 4.8 percent in 2008 to 5.4 percent in 2013. Both diseases affect the rich and the poor – wherein prevalence for both diseases tends to increase with wealth. The prevalence of infectious and communicable diseases such as tuberculosis (TB), malaria and dengue remain

high. However, morbidity and mortality due to NCDs – diseases which cannot be passed on from one person to another – are also rising.

People are still not seeking care even when needed – latest data from NDHS shows that while there has been an increase in the percentage of live births delivered in a health facility from 44 percent in 2008 to 61 percent in 2013, the remaining proportion of mothers still do deliver in a health facility, the number one reason of which was due to costs (PSA and ICF International, 2014). Health care utilization remains low – according to the NDHS, only about one in every nine Filipinos either visited a health facility or sought advice/treatment (11 percent), of which 7 percent visited a public medical facility and the remaining 4 percent visited a private health facility. On the other hand, medicine and complementary/alternative medicine practices are still widely used in the Philippines (World Health Organization, 2012). The WHO estimates that 70 percent of the population still uses traditional and complementary medicines, 89 percent of which do so for particular illnesses, symptoms, or cultural needs which biomedicine cannot address, as well for financial reasons. Traditional practitioners' services are accessible, available and affordable, particularly in remote areas (Kadetz, 2010).

There seems to be a need for health care but utilization remains limited even in the face of financial protection. What then are the other factors that prevent Filipinos from seeking care promptly when needed? Despite the need for treatment, barriers impede individuals from accessing to health services despite the need for it. Ensor and Cooper (2004) identify both the supply and demand barriers to utilization of health care. On the demand side, this entails information on health care choices/providers, education, indirect consumer costs, household preferences and price and availability of products and services. We explore the factors that affect an individual's decision to delay seeking treatment. We base the categorization of predictors of delay on the literature on factors affecting health care utilization.

3. Methods

3.1 Survey data and indicators of delay in seeking care

This study uses a household survey data collected in 2011 in the Philippines under the Health Equity and Financial Protection in Asia (HEFPA) project of the UPecon Foundation, a Philippine-based research institution, in collaboration with the Erasmus University Rotterdam and the World Bank, and co-financed by the European Union. The survey is designed to provide baseline data for a randomized experiment to assess the impact of interventions on voluntary enrollment in a social health insurance program, and to collect information about households' health care utilization, and exposure to and coping with shocks.

The survey has a nationally-representative random sample of 2,950 households (representing 15,012 individuals) and follows a multi-stage cluster design. In the first stage, the country was stratified into four broad regions, namely National Capital Region, North-Central Luzon, South Luzon, Visayas, and Mindanao. The Autonomous Region of Muslim Mindanao, which accounts for 3.5 percent of the population in 2011, was not included because of the intensity of conflict. Then from each of the broad regions, specific regions (15) were selected using proportionate sampling. From the 15 regions, 62 provinces out of 80 were then drawn using systematic sampling. From these provinces, municipalities and cities (243 out of 1395) and the barangays (590 out of 37,165) within these municipalities and cities were likewise selected using systematic sampling. Finally, for each barangay cluster five households were drawn using simple random sampling.[2]

In this study, we use the HEFPA survey modules on household-level demographics and socioeconomic characteristics, and the individual-level health care utilization. The latter module contains questions related to outpatient (OP) and inpatient (IP) care, including the use

[2] For a more detailed account of the research design, timing of data collection and intervention of the UPecon HEFPA Project, see Capuno et al. (2015).

of health insurance for medical care. Following the survey questionnaire, we constructed two indicators of delay in seeking care: one for outpatient care (for consultation, or treatment of minor illness or injury) and another for inpatient care (for medical conditions or health needs requiring hospital confinement).

In the outpatient care sub-module, the household respondent was asked to report the number of sick and/or injured household members in the last thirty days prior to the interview, and whether the illness or injury is current or previously existing. A total of 1,067 household members were reported to be ill or injured, of which 117 reported their illnesses or injuries to be pre-existing and the rest (764) reported theirs to be current. Of the latter, only 210 visited a health facility or provider, while the other 554 claimed not to have visited a facility, in the last 30 days prior to the interview. Those who reported to have visited a health facility or provider were asked further how many days it took them from the onset of the symptoms before they finally sought care. For these individuals, the number of days from onset of the symptom to facility visit ranges from 0 to 30. About 53 percent of them visited an outpatient clinic in less than three days since occurrence of the symptom of illness or injury (Figure 1(a)).

In this study, we assume that the 554 sick or injured individuals who did not visit a health facility or provider during the reference period eventually did so afterwards. Thus, our first measure of delay in seeking care is *days until outpatient visit* defined as the number of days from the onset of the symptom to the visit to a health facility or provider for outpatient care services, for the 764 sample individuals who reported to have current illness or injury at the time of the survey.

[Insert Figure 1 here.]

In the inpatient care sub-module, the respondents were asked to report, first, who among their household members were confined to a hospital (or other health facility) in the last 12 months prior to the time of the interview, and, then, for each member confined, the number of

days from when the member was advised by the doctor to the time of actual confinement. There are 479 individuals were reported to have been confined in a hospital, from zero to 90 days after their doctors' advice. For these sample individuals, we construct our second measure of delay in seeking care, namely *days until confinement*, which is defined as the number of days from when the individual was advised by a doctor to the time when he or she was finally admitted in a hospital or health facility. About 55 percent of the sub-sample were confined in less than two after their doctors' advice (Figure 1(b)). Note that this delay indicator is constructed only for the 479 individuals who sought inpatient care, presumably because of a medical condition or health needs. The sub-sample does not include other household members who may have needed inpatient care but who never sought it because the survey did not ask about them.

3.2 Proportional hazard models

To identify the significant factors associated with the delay in seeking care, we estimate hazard models, which are appropriate for analyzing data that measures the length or duration of time until the event of interest, like death, hospital visit or discharge, cessation of smoking, or failure (Cameron and Triverdi, 2005). Estimating hazard models involves the specification of the hazard function, $h(t)$, which measures the probability an individual fails at time t given that he or she has survived up to that point (Jones, 2007). Specifically, we estimate a proportional hazard model, which gives the hazard rate conditional on a vector of covariates $\boldsymbol{X}$, given as follows

$$h(t|\boldsymbol{X}) = h_0(t,p)\varphi(\boldsymbol{X},\boldsymbol{\beta}), \quad (1)$$

where $h_0(\ldots)$ is the baseline hazard function, which is assumed to be a function of t alone and a parameter p, the scale factor $\varphi(\ldots)$ is a function of $\boldsymbol{X}$ alone, and $\boldsymbol{\beta}$ is a vector of parameters. A distinct advantage of a proportional hazard model is that the form for the baseline hazard

function need not be specified and still permits the parameters $\boldsymbol{\beta}$ to be consistently estimated (Cameron and Triverdi, 2005).

Following the literature, we also specify $\varphi(\boldsymbol{X},\boldsymbol{\beta})$ to have an exponential form (i.e., $\varphi(\boldsymbol{X},\boldsymbol{\beta}) = \exp(\boldsymbol{X}'\boldsymbol{\beta})$). Besides ensuring that $\varphi(\boldsymbol{X},\boldsymbol{\beta})>0$, the exponential form permits the easy interpretation of the regression parameters ($\boldsymbol{\beta}$). Specifically, the marginal contribution of the jth regressor X_j to the overall hazard rate is given by

$$\partial h(t|\boldsymbol{X},\boldsymbol{\beta})/\partial X_j = h_0(t)\exp(\boldsymbol{X}'\boldsymbol{\beta})\beta_j = \beta_j h(t|\boldsymbol{X},\boldsymbol{\beta}).$$

Effectively, thus, the estimated value and statistical significance of β_j indicates whether the X_j, by itself and holding other factors constant, speeds up, slows down or does not influence the time to failure (or the event of interest).

Our main estimation model is the Cox version of (1), which does not require the simultaneous estimation of $h_0(t)$, using limited-information maximum likelihood method (Cameron and Triverdi, 2007). From (1), we can derive the Cox proportional hazard model as

$$h(t|\boldsymbol{X})/h_0(t) = \exp(\boldsymbol{X}'\boldsymbol{\beta}). \quad (2)$$

Instead of the regression coefficients, we report the hazard ratio associated to each of the regressor. Suppose two individuals have covariates X_1 and X_2 (assumed for simplicity as scalars), then the ratio of their hazard at time t is

$$\frac{h(t|X_1)}{h(t|X_2)} = \frac{h_0(t)\exp(\beta X_1)}{h_0(t)\exp(\beta X_2)} = \exp\big(\beta(X_1 - X_2)\big).$$

If the hazard ratio is 2, say, then at any time the individual with covariate covariates X_1 is said to be twice as likely to "fail" as the other.

While relatively simple to estimate, the Cox proportional hazard model rests on the restrictive assumption that the hazard ratio is proportional over time. To validate this assumption with our data, we derive the Schoenfeld residuals and then regress them against time, and test the null hypothesis that the slope of the estimated line is zero. "The test is equivalent to testing that the log hazard ratio function is constant over time" (Cleves, Gould

and Guttierez, 2004; Grambsch and Therneau, 1994). A failure of the test indicates the Cox model does not fit the data, and that the baseline hazard function must be parameterized.

Here we estimated two parametric proportional hazard (PH) models, namely Weibull and Gompertz. In the Weibull regression model, the hazard function $h(t|\boldsymbol{X})=\exp(\boldsymbol{X}'\boldsymbol{\beta})pt^{p-1}$. In both models, the hazard monotonically increases (decreases) with time if $p>1$ ($p<1$). The Weibull model reduces to a simple exponential model when $p=0$. We estimate the Weibull and Gompertz models both when the assumption of the Cox model is not satisfied and when it is; in the case of the latter, the Weibull and Gompertz estimates serve to further assess the sensitivity of the Cox estimates.

In our estimation of the various proportional hazard models, we account for three characteristics of our data. The first is the right-censoring of the data on time until outpatient visit (which is not reported for many observations). The second characteristic is the tied failure time (i.e., observations that reported the same number of days until outpatient visit or days until confinement). To account for ties, we adopt the Breslow method. The third characteristics is that several observations of outpatient visit or hospital confinement belong to the same household. Thus, we adjust our estimates of the standard errors of the hazard ratio for household-level clustering. In estimating the PH models, adjustment for time-varying covariates is often made since they affect the timing of failure. In our data, for example, it is possible that a person who is unemployed at the onset of symptom may delay seeking care further if at the third day he gets employed; the initial reason for delaying care could be lack of income, while the latter reason could be opportunity cost. Notwithstanding such possibilities, however, given the relatively short reference period for the outpatient visit and hospital confinement in our data, we simply assume that the covariates are an unchanged during the period. We use STATA in our regression analysis.

3.3 Regression variables

Our two dependent variables are *days until outpatient visit* and *days until confinement* (Table 1). In our analysis, we recoded those outpatient or inpatient samples that reported the delay to be 0 day to 0.9 day, since it is required in the estimation of hazard models for each observation to have an entry time (i.e., onset of symptom or doctor's advice) different from the exit time (i.e., day of actual facility visit or confinement). While the adjustment in the measured delay is arbitrary, we think most people would need at least few hours (i.e., fraction of a day) to travel to a health facility. The average number of days until outpatient visit and days until confinement are 22.7 days and 3.22 days, respectively (Table 2). All inpatient samples reported the relevant days and maximum is 90 days. Since not all outpatient samples reported the relevant days, we simply imputed 30 days for them. In our estimation, we adjust for the right-censoring of the delays before outpatient visit.

Following the literature, we classified the factors associated with delays into six categories: (1) health needs, (2) financial access, (3) physical access, (4) opportunity costs, (5) other household factors, and (6) location. The five health needs indicators are binary variables that reflect the gravity of the health condition of the sick household member, specifically whether he or she is below 5 years old, or is at least 65 years old; whether his or her self-reported health status prior to illness or injury is poor or fair; whether he or she suffers from a chronic illness; and whether the reason for confinement is to undergo an executive check-up, or to give birth. Seven dummy variables serve to capture the household's financial capacity or socioeconomic status, namely coverage under the social health insurance program (PhilHealth covered), or by other insurance programs; and, whether the household belongs to any one of the income per capita quintiles. Physical access to health facilities are reflected by the presence in the locality of a public hospital, private hospital or other public health facility. An urban dummy variable

is also introduced to reflect the observation health facilities or providers are more numerous and accessible in urban areas than in rural areas.

To account for the opportunity costs of seeking care, we introduce dummy variables for the sex, headship status, and age group of the sick member, and the work status of the household head and the spouse. Other household-level socioeconomic and demographic characteristics are captured by the numbers of household members or children below 5 years old, and whether the household head finished college. The latter also serves to capture the information or knowledge that the household's main decisionmaker may have concerning the importance of seeking care or the gravity of the health condition of the sick member. Finally, to account for possible geographic factors, we further classified the sample by the broad regions, namely National Capital Region, North_Central Luzon, South Luzon, Visayas and Mindanao.

The regression variables and their definitions are given in Table 1. The summary statistics for the outpatient sample (N=760) and inpatient sample (N=461) are presented in Table 2. Four observations are excluded in the outpatient sample because of missing covariates.

[Insert Table 1 and Table 2 here.]

4. Results

4.1 Days until outpatient visit

Columns [1], [2] and [3] in Table 3 shows the estimated hazard ratios of the three specifications of the Cox PH model. Relative to the first column, the last two columns include more indicators of health needs and opportunity costs. The first column, however, also includes household size and number of children under 5 among the list of other household-level factors. Similar variable lists are used correspondingly in columns [3], [4] and [5], which are obtained using the Weibull PH model, and in columns [6], [7] and [8], which are derived using the Gompertz PH model.

Across the three Cox PH models, we find that the hazard ratios for sick is at most 5 years old and sick is at least 65 years old are greater than 1 and highly significant ($p<0.001$). They mean that, relatively to the household members aged 6-64, the younger members (0-5) or older members (65 and over) are more likely to be brought to an OP clinic for consultation or treatment at any point in time. Consistently as well, bad health prior to illness is greater than 1 and significant at $p<0.05$. There is also evidence that those with chronic illness are more likely than those without to visit OP clinic at any time.

Among the financial access variables, only the indicator of household belongs to second income quintile appears significant. Its hazard ratio is less than 1, which means individuals in the second income quintile are more likely than those in the poorest income quintile to delay their OP visit. There is no significant variation between the poorest income quintile and the third, fourth or fifth income quintile. Notably as well, those with PhilHealth coverage or other insurance coverage are not more or less likely than those without similar coverage to delay their OP visit.

None of the variables that indicate the physical accessibility of health facilities is statistically significant. The likelihood of OP visit is the same for urban and non-urban residents. Other household-level factors, namely household size, number of children under 5 and household head finished college, are also not significant factors associated with the number of days until OP visit.

Moreover, none of the opportunity costs variable is consistently significant across the specifications of the Cox PH model. However, there is some indication that OP visit is less likely for those individuals where the household head is working ([1]) or the sick member is working ([3]).

However, we find variations across broad regions. Relative to those in the National Capital Region, those in the other parts of Luzon (North-Central or in South), in the Visayas or Mindanao, are less likely to be making OP visit at any time.

In the bottom rows of Table 3, we see that the Wald chi-squared statistics are significant at $p<0.001$, indicating the hypothesis that the regressors in the Cox PH models are simultaneously equal to zero can be rejected. However, only the first and third Cox PH models pass the test of the proportional hazard assumption. The test results for the 2nd specification thus suggest the use of other PH models that parameterize the baseline hazard function.

The results of both the Weibull PH models and Gompertz models, however, are very similar with those obtained using the Cox PH model. The magnitudes and the statistical significance of the hazard ratios are similar for corresponding specifications across PH models. In the case of the Weibull models, however, we find that the baseline hazard function to slow down through time (the estimated logarithm of p is negative and significant at $p<0.001$). In other words, a sick individual is less likely to visit an OP clinic with each passing day, controlling for other covariates. The same finding can be deduced from the size and sign of gamma (i.e., p) in the Gompertz PH models. In all Weibull and Gompertz model specifications, the Wald chi-squared test statistics are highly significant.

[Insert Table 3 here.]

4.2 Days until confinement

The results of the Cox, Weibull and Gompertz PH models are shown in Table 4. Across the two Cox models ([1] and [2]), only confinement due to child birth is consistently significant among the factors that suggest the underlying health need or condition for seeking hospital care. For those whose reason is to give birth, they are about 1.5 times more likely to be confined than others with different medical condition. There is also evidence that younger household

members (aged 0-5) are also about 1.3 times more likely to be confined at any time than those in the 6-64 age group.

Having PhilHealth coverage or other insurance coverage also does appear to affect the number of days until confinement. There is no significant difference between the poorest income quintile and the 2nd, 4th or 5th income quintile. Relative to someone in the poorest income quintile, an individual in the 3rd income quintile is more likely to be confined at any point in time.

As in the case of OP visit, the timing of the IP visit is not influenced by the presence of a public or private health facility within the locality. IP visit is also not more or less likely in urban areas than in rural areas.

Among the opportunity costs variables, only sick female members, sick household head and sick members is working are statistically significant. However, the likelihood of confinement is higher for sick female member than for sick male member, or for a sick member who is working than for sick member who is not employed. But when the sick member is the household head, he or she is less likely to be confined at any time than when he or she is not the household head.

Two other results here are unlike those in the OP visits. For one, household size and household head finished college appear to be associated with greater probability of confinement at any time. For another, the number of days until confinement do not seem to vary across regions in the country.

The results of the Wald chi-squared tests indicate that the regressors in the Cox PH models are not simultaneously equal to zero. Further, the chi-square tests indicate that the proportional hazard assumption of the Cox model holds. Nonetheless, the Weibull and Gompertz models are also estimated to assess the sensitivity of the Cox PH model estimates.

The results obtained using alternative PH models are largely similar with the Cox model results. In addition, however, the Weibull PH models ([3] and [4]) reveal that those with PhilHealth coverage or those in the in the 4th income quintile are less likely to delay their hospital confinement than those without PhilHealth coverage or in the 1st income quintile, respectively. Somewhat similar results are obtained using the Gompertz PH model ([6]).

The estimate of the logarithm of *p* in the Weibull model indicate that the decision to be confined is not duration dependent. The estimate of the gamma (which is *p* in the Gompertz model), however, suggest that the confinement is less likely the longer it is postponed. In all Weibull and Gompertz models, the hypothesis that the regressors are simultaneously equal to zero can be rejected.

[Insert Table 4 here.]

5. Discussion and conclusion

Our results indicate that health needs, opportunity costs, location, and, to some extent, financial capacity, are the main factors associated with the delay in seeking outpatient or inpatient care services among Filipinos in need of medical attention. However, the proximity of public or private health facilities do not appear to reduce the delay.

The health needs of the very young (under-5 children) and the very old (65 years old and above) take precedence over the health needs of everybody else in the household, which seem to make sense since the two age groups are more vulnerable to illness or injury than others. Those with grave medical condition (due to child birth, chronic illness) or need a medical clearance often for employment purposes (executive checkup) also appear less likely to suffer delay in seeking care.

Opportunity costs have a different impact on OP visit than on hospital confinement. A sick member who is working is likely to delay the OP visit, but more immediately seek IP care

services, than another sick member who is unemployed. When the sick member is the household head, he or she is no more or less likely than other household member to visit an OP clinic; however, she is less likely to seek hospital confinement at any point in time. Since the household head or the spouse is working, a sick member is less likely to seek confinement. In most households, the head or spouse often accompany their members to hospitals. Thus, labor policies than will reduce the opportunity costs of the patient or accompanying household members will improve health care utilization.

Perhaps the two results that should concern policymakers more are the apparent lack of influence of PhilHealth coverage and the physical accessibility of public or private health facilities on the number of days until the household finally seek OP or IP care services. On the one hand, the insignificant effects of PhilHealth coverage and the presence of health facilities suggest how far the government has progressed towards achieving universal health coverage. This could be due to the low awareness among those with PhilHealth coverage about their insurance entitlements (Bredenkamp and Buisman, 2015; Bredenkamp et al. 2016) or that local-level health facilities, most of which devolved to local governments, are perceived to be of inferior quality. On the other hand, the government's program to expand PhilHealth coverage (especially to the poor) and enhancing public health facilities may have its impact on the decision to seek care or in the choice of facility, and not on the timing of OP visit or hospital confinement. Clearly, this is an important empirical issue that must be explored further. It would help to focus, for example, on the less educated households, since there is evidence here that the delays in seeking IP care is shorter for individuals where the household head finished at least college.

While the prompt decision to seek OP or IP care does not vary between the poorest income quintile and the two richest income quintiles, they do vary between the poorest and the near poor (2^{nd} and 3^{rd} income quintiles). This result could be due to extension of the free outpatient

benefit package to the poorest households enrolled in the PhilHealth Indigent Program, and to the leakages in the targeting mechanism used in the government's conditional cash transfer program (Fernandez and Velarde, 2012). To the extent that the OPB package available in accredited rural health units or city health centers is availed, then the poor beneficiaries use of OP facilities could have improved relative to those in the richest income groups. To the extent that the in the targeting mechanism mistakenly benefitted the near poor (i.e., 3rd income quintiles), the extra cash transfers could have induced them seek hospital confinement more promptly. These suppositions however need to be investigated further.

That there is no apparent difference in the delay in seeking care between urban and rural residents is comforting. However, the differences between National Capital Region (NCR) and regions outside NCR in the timing of OP visit should be considered. For one, it may be reflecting the persistent regional inequalities in the provision and financing of public health services. For another, it could reflect the greater accessibility of health facilities inside NCR than outside it, or that NCR residents may be more aware or knowledgeable of the available health services or better health seeking behavior. Certainly, transportation and media facilities are better in the NCR and in other metropolitan areas in the country than elsewhere.

We also recoded delay to from 0 to 0.5 or half a day for both inpatient and outpatient samples. There results of Cox estimation do not change at all, while the results of Gompertz and Weibull regressions show no systematic differences in signs, magnitude and significance level of estimates.

To recapitulate the policy implications of our results, there is certainly a need to improve awareness, if not the actual use, of PhilHealth coverage. Considering the huge government subsidy for the health insurance coverage of the indigent population, such coverage should influence whether to seek care, and also where and when to seek care. Also, there is a need to improve the actual quality of local-level public health facilities, and the public's perception of

it through the mass media and social media. Labor policies like paid medical leave should reduce delays in seeking care among the employed.

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Table 1. Variable names and definitions

Name	Definition
Days until outpatient visit	=number of days from onset of symptom(s) to visit to a health facility or provider
Days until confinement	=number of days from the time a doctor gave advice to the time of hospital confinement
Sick member is at most 5 years old	=1 if sick individual is 5 years old or younger, 0 otherwise
Sick member is at least 65 years old	=1 if sick individual is 65 years old or older, 0 otherwise
Bad health prior to illness	=1 if individual's self-rated health status prior to illness or injury is poor or fair, 0 if self-reported health status is good, very good or excellent
Chronic illness	=1 if individual has chronic illness, 0 otherwise
Confinement due to executive check-up	= 1 if reason for confinement is due to executive check-up, 0 otherwise
Confinement due to child birth	= 1 if reason for confinement is due to birth/pregnancy related issues (*raspa*, premature baby, miscarriage), 0 otherwise
PhilHealth covered	=1 if individual has PhilHealth coverage, 0 otherwise
Other insurance coverage	=1 if individual has other health insurance coverage, 0 otherwise
Household income_q1	=1 if average household income per capita quintile 1, 0 otherwise
Household income_q2	=1 if average household income per capita quintile 2, 0 otherwise
Household income_q3	=1 if average household income per capita quintile 3, 0 otherwise
Household income_q4	=1 if average household income per capita quintile 4, 0 otherwise
Household income_q5	=1 if average household income per capita quintile 5, 0 otherwise
Public hospital within locality	=1 if there is a public hospital within the locality, 0 otherwise
Private hospital within locality	=1 if there is a private hospital within the locality, 0 otherwise
Other public health facility within locality	=1 if there us barangay health station, rural health unit, or other type of public health facility (other than hospital) with the locality, 0 otherwise
Urban	=1 if urban, 0 otherwise
Sick female member	=1 if the sick individual is female, 0 otherwise
Sick household head	=1 if sick individual is the household head, 0 otherwise
Sick adult member	= 1 if the sick individual is an adult household member (father, mother, other relative), 0 otherwise
Number of sick members	Number of sick household members
Sick member is working	=1 if the sick household member is working, 0 otherwise
Household head is working	=1 if household head is working, 0 otherwise
Spouse is working	=1 if the spouse of the household head is working, 0 otherwise
Household size	Total number of household members
Number of children under 5	Number of children below 5 years old in the household
Household head finished college	=1 if the household head finished at least college education, 0 otherwise
National Capital Region	=1 if National Capital Region, 0 otherwise
North_Central Luzon	=1 if in Ilocos, Cagayan Valley or Central Luzon region, 0 otherwise
South Luzon	=1 if in Southern Tagalog regions or Bicol region, 0 otherwise
Visayas	=1 if in the Visayas, 0 otherwise
Mindanao	=1 if in Mindanao, 0 otherwise

Table 2. Summary statistics

Variable	Outpatient sample (*N*=760)		Inpatient sample (*N*=461)	
	Mean[a]	Std. dev.	Mean[a]	Std. dev.
Days until outpatient visit	22.700 [0.9, 30]	12.122		
Days until confinement			3.221 [0.9, 90]	7.890
Sick member is at most 5 years old	0.507	0.500	0.176	0.381
Sick member is at least 65 years old	0.147	0.355	0.065	0.247
Bad health prior to illness	0.339	0.474		
Chronic illness	0.104	0.305	0.176	0.381
Confinement due to executive check-up			0.041	0.199
Confinement due to child birth			0.215	0.411
PhilHealth covered	0.500	0.500	0.605	0.489
Other insurance coverage	0.062	0.241	0.069	0.254
Household income_q1	0.239	0.427	0.187	0.390
Household income_q2	0.246	0.431	0.202	0.402
Household income_q3	0.188	0.391	0.223	0.417
Household income_q4	0.189	0.392	0.219	0.414
Household income_q5	0.137	0.344	0.169	0.375
Public hospital within locality	0.801	0.399	0.872	0.334
Private hospital within locality	0.649	0.478	0.731	0.444
Other public health facility within locality	0.972	0.164		
Urban	0.437	0.496	0.516	0.500
Sick female member	0.305	0.461	0.555	0.497
Sick household head	0.039	0.195	0.221	0.416
Sick adult member	0.049	0.215	0.048	0.213
Number of sick members	1.968	1.174	0.555	0.842
Sick member is working	0.218	0.413	0.310	0.463
Household head is working	0.039	0.1195	0.870	0.337
Spouse is working	0.911	0.286	0.074	0.262
Household size			5.889 [1, 15]	2.500
Number of children under 5			0.829 [0, 4]	0.894
Household head finished college	0.101	0.302	0.145	0.353
National Capital Region	0.096	0.295	0.148	0.355
North/Central Luzon	0.145	0.352	0.176	0.381
Mindanao			0.236	0.425
South Luzon	0.212	0.409	0.189	0.392
Visayas	0.129	0.335	0.252	0.434

[a]The figures in parentheses are the minimum and maximum values, respectively. All other variables are binary indicators with "0" as minimum and "1" as maximum values.

Table 3. Results (Hazard ratios): Factors associated with the number of days until outpatient visit (*N*=760)

Variables	Cox			Weibull			Gompertz		
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Health needs									
Sick is at most 5 years old	2.117***	1.940***	1.744***	2.298***	2.084***	1.845***	2.163***	1.971***	1.764***
	(0.386)	(0.328)	(0.295)	(0.463)	(0.392)	(0345)	(0.404)	(0.341)	(0.305)
Sick is at least 65 years old	2.151***	2.148***	1.976**	2.610***	2.641***	2.394**	2.271***	2.286***	2.092**
	(0.591)	(0.626)	(0.581)	(0.853)	(0.881)	(0.812)	(0.651)	(0.683)	(0.630)
Bad health prior to illness	1.467**	1.414**	1.432**	1.543**	1.484**	1.517**	1.492**	1.438**	1.459**
	(0.240)	(0.233)	(0.235)	(0.278)	(0.269)	(0.273)	(0.249)	(0.242)	(0.244)
Chronic illness		1.545**	1.402		1.589*	1.399		1.542**	1.389
		(0.339)	(0.317)		(0.380)	(0.349)		(0.341)	(0.318)
Financial access									
PhilHealth covered	0.991	1.010	0.999	0.982	1.008	0.995	0.990	1.011	0.999
	(0.164)	(0.166)	(0.163)	(0.177)	(0.180)	(0.176)	(0.167)	(0.169)	(0.166)
Other insurance coverage	0.810	0.744	0.777	0.825	0.745	0.769	0.820	0.751	0.781
	(0.308)	(0.286)	(0.302)	(0.343)	(0.313)	(0.329)	(0.319)	(0.296)	(0.312)
Household income_q2	0.549**	0.553**	0.561**	0.529**	0.525**	0.535**	0.539**	0.541**	0.550**
	(0.140)	(0.138)	(0.140)	(0.148)	(0.144)	(0.146)	(0.140)	(0.139)	(0.140)
Household income_q3	0.740	0.742	0.788	0.735	0.730	0.786	0.736	0.737	0.786
	(0.185)	(0.184)	(0.192)	(0.202)	(0.198)	(0.209)	(0.189)	(0.187)	(0.196)
Household income_q4	0.946	0.942	0.930	0.980	0.968	0.959	0.946	0.940	0.930
	(0.236)	(0.226)	(0.225)	(0.272)	(0.257)	(0.256)	(0.241)	(0.230)	(0.229)
Household income_q5	0.888	0.889	0.908	0.917	0.909	0.953	0.890	0.891	0.915
	(0.261)	(0.253)	(0.256)	(0.295)	(0.285)	(0.293)	(0.267)	(0.258)	(0.263)
Physical access									
Public hospital within locality	1.093	1.032	1.018	1.119	1.052	1.030	1.097	1.036	1.020
	(0.268)	(0.256)	(0.249)	(0.306)	(0.291)	(0.281)	(0.278)	(0.265)	(0.257)
Private hospital within locality	1.227	1.287	1.300	1.212	1.281	1.293	1.221	1.283	1.295
	(0.245)	(0.255)	(0.258)	(0.264)	(0.278)	(0.281)	(0.249)	(0.260)	(0.263)
Other public health facility within locality	1.104	1.091	1.061	1.077	1.093	1.050	1.098	1.093	1.061
	(0.574)	(0.590)	(0.561)	(0.616)	(0.641)	(0.604)	(0.585)	(0.603)	(0.573)
Urban	0.755	0.787	0.788	0.730	0.760	0.757	0.749	0.780	0.780
	(0.153)	(0.162)	(0.162)	(0.159)	(0.168)	(0.167)	(0.154)	(0.163)	(0.163)
Opportunity costs									
Sick female member	0.951	0.953	0.924	0.960	0.966	0.935	0.957	0.960	0.930
	(0.144)	(0.145)	(0.139)	(0.161)	(0.162)	(0.155)	(0.148)	(0.149)	(0.143)
Sick household head	0.817	0.716	1.116	0.846	0.718	1.240	0.824	0.717	1.144
	(0.178)	(0.161)	(0.348)	(0.210)	(0.183)	(0.447)	(0.186)	(0.167)	(0.367)
Sick adult member		0.660	0.681		0.613	0.644		0.649	0.673
		(0.236)	(0.238)		(0.246)	(0.253)		(0.239)	(0.242)
Sick member is working			0.467**			0.404***			0.451**
			(0.146)			(0.139)			(0.143)
Household head is working	0.685*	0.716	0.803	0.677	0.710	0.802	0.685	0.715	0.803
	(0.153)	(0.168)	(0.207)	(0.173)	(0.189)	(0.230)	(0.159)	(0.173)	(0.213)
Spouse is working		0.805	1.752		0.753	1.874		0.785	1.765
		(0.351)	(0.937)		(0.343)	(1.048)		(0.343)	(0.949)

Table 3. Results (hazard ratios): Factors associated with the number of days until outpatient visit (*N*=760) (continuation)

Variables	Cox			Weibull			Gompertz		
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Other household-level factors									
Household size	1.020			1.027			1.022		
	(0.041)			(0.046)			(0.042)		
Number of children under 5	0.921			0.924			0.920		
	(0.129)			(0.140)			(0.131)		
Household head finished college	1.420	1.449	1.439	1.466	1.507	1.520	1.431	1.466	1.460
	(0.333)	(0.345)	(0.335)	(0.380)	(0.394)	(0.389)	(0.343)	(0.355)	(0.345)
Location									
North_Central Luzon	0.460**	0.472**	0.453***	0.399**	0.413***	0.394***	0.442***	0.453**	0.435***
	(0.140)	(0.144)	(0.137)	(0.134)	(0.140)	(0.131)	(0.137)	(0.141)	(0.133)
South Luzon	0.526**	0.543**	0.542**	0.471**	0.494**	0.493**	0.506***	0.523**	0.522**
	(0.135)	(0.139)	(0.137)	(0.136)	(0.142)	(0.140)	(0.133)	(0.136)	(0.135)
Visayas	0.348***	0.382***	0.372***	0.293***	0.325***	0.313***	0.331***	0.363***	0.353***
	(0.118)	(0.131)	(0.128)	(0.372)	(0.381)	(0.381)	(0.114)	(0.127)	(0.124)
Mindanao	0.248***	0.255***	0.245***	0.212***	0.220***	0.209***	0.237***	0.244***	0.234***
	(0.075	(0.078)	(0.074)	(0.071)	(0.075)	(0.071)	(0.073)	(0.076)	(0.073)
Constant				0.168**	0.169**	0.182**	0.200**	0.202**	0.213**
				(0.121)	(0.124)	(0.132)	(0.136)	(0.140)	(0.146)
Gamma[1]							-0.274***	-0.273***	-0.271***
							(0.023)	(0.023)	(0.023)
lnP				-0.769***	-0.766***	-0.754***			
				(0.030)	(0.029)	(0.031)			
Wald chi-squared	107.93***	118.86***	141.18***	103.04***	118.84***	149.48***	107.08***	120.76***	145.14***
Log-pseudolikelihood	-1297.93	-1295.79	-1292.26	-783.93	-781.44	-776.42	-669.098	-666.95	-663.07
Test of proportional-hazards assumption									
Chi-square[2]	27.93	43.19	43.97						
Prob>chi-square	(0.2184)	(0.0095)	(0.0109)						

Notes: Hazard ratios reported. Figures in parentheses are robust standard errors of the estimated hazard ratios and adjusted for household-level clustering. For the Cox proportional hazard models, the Breslow method for ties is used. Both the Weibull and Gompertz models are estimated as log relative hazard form.

[1]This is the p in Gompertz regression model $\underline{h}(t|\boldsymbol{X})=\exp(\boldsymbol{X}'\boldsymbol{\beta})\exp(pt)$.

[2]Global test based on Schoenfield residuals, where H_0: slope of the residual curve=0.

***p<0.01, **p<0.05, *p<0.10

Table 4. Results (hazard ratios): Factors associated with the number of days until confinement (*N*=461)

Variables	Cox		Weibull		Gompertz	
	[1]	[2]	[3]	[4]	[5]	[6]
Health needs						
Sick is at most 5 years old	1.191	1.258**	1.454**	1.554**	1.226	1.303**
	(0.135)	(0.146)	(0.252)	(0.284)	(0.160)	(0.174)
Sick is at least 65 years old	1.011	1.032	0.993	1.007	1.012	1.020
	(0.172)	(0.195)	(0.286)	(0.312)	(0.210)	(0.227)
Chronic illness		1.018		0.880		0.982
		(0.121)		(0.175)		(0.149)
Confinement due to executive check-up	1.311	1.312	1.635*	1.618*	1.350	1.345
	(0.294)	(0.293)	(0.465)	(0.458)	(0.334)	(0.329)
Confinement due to child birth	1.514***	1.498***	2.064***	1.975***	1.714***	1.669***
	(0.154)	(0.153)	(0.268)	(0.256)	(0.186)	(0.179)
Financial access						
PhilHealth covered	1.101	1.108	1.337**	1.371**	1.175	1.190*
	(0.095)	(0.096)	(0.170)	(0.173)	(0.119)	(0.121)
Other insurance coverage	0.957	0.989	0.934	0.996	0.958	1.001
	(0.161)	(0.164)	(0.233)	(0.240)	(0.188)	(0.190)
Household income_q2	1.053	1.075	1.140	1.160	1.091	1.112
	(0.136)	(0.141)	(0.234)	(0.242)	(0.165)	(0.170)
Household income_q3	1.249*	1.272*	1.454*	1.499*	1.309*	1.336**
	(0.160)	(0.162)	(0.283)	(0.291)	(0.194)	(0.195)
Household income_q4	1.205	1.223	1.382*	1.433*	1.269	1.289*
	(0.149)	(0.156)	(0.266)	(0.273)	(0.186)	(0.191)
Household income_q5	0.963	0.908	1.028	0.976	0.961	0.909
	(0.127)	(0.120)	(0.200)	(0.185)	(0.146)	(0.135)
Physical access						
Public hospital within locality	0.953	0.936	0.955	0.963	0.980	0.968
	(0.116)	(0.114)	(0.148)	(0.153)	(0.131)	(0.130)
Private hospital within locality	1.115	1.106	0.989	0.974	1.072	1.058
	(0.106)	(0.105)	(0.133)	(0.130)	(0.117)	(0.113)
Urban	0.971	0.972	1.026	0.993	0.969	0.960
	(0.098)	(0.099)	(0.152)	(0.143)	(0.112)	(0.109)
Opportunity costs						
Sick female member	1.140	1.161*	1.236	1.243	1.171	1.186
	(0.095)	(0.101)	(0.166)	(0.176)	(0.117)	(0.123)
Sick household head	0.902	0.726**	0.783	0.655**	0.852	0.695**
	(0.107)	(0.095)	(0.157)	(0.120)	(0.126)	(0.104)
Number of sick members	0.947	0.944	0.889	0.897	0.918	0.919
	(0.045)	(0.045)	(0.070)	(0.069)	(0.051)	(0.051)
Sick adult member		1.109		1.372		1.203
		(0.229)		(0.356)		(0.264)

Table 4. Results (hazard ratios): Factors associated with the number of days until confinement (*N*=461) (continuation)

Variables	Cox		Weibull		Gompertz	
	[1]	[2]	[3]	[4]	[5]	[6]
Sick member is working		1.421***		1.426**		1.423***
		(0.161)		(0.209)		(0.170)
Household head is working	1.024	0.893	0.800	0.677**	0.925	0.792*
	(0.123)	(0.107)	(0.134)	(0.105)	(0.133)	(0.109)
Spouse is working		0.728*		0.830		0.761
		(0.122)		(0.170)		(0.140)
Other household-level factors						
Household size	1.028*	1.018	1.068***	1.055**	1.034*	1.023
	(0.016)	(0.017)	(0.023)	(0.024)	(0.019)	(0.019)
Number of children under 5	0.969	0.990	0.942	0.959	0.979	0.999
	(0.052)	(0.053)	(0.080)	(0.080)	(0.058)	(0.059)
Household head finished college	1.273**	1.305**	1.456***	1.478***	1.320**	1.351***
	(0.137)	(0.143)	(0.184)	(0.192)	(0.148)	(0.150)
Location						
North_Central Luzon	1.139	1.141	1.047	1.088	0.955	0.971
	(0.164)	(0.166)	(0.237)	(0.252)	(0.163)	(0.167)
South Luzon	1.048	1.043	1.178	1.220	0.983	0.995
	(0.135)	(0.139)	(0.242)	(0.262)	(0.157)	(0.164)
Visayas	0.952	0.955	0.875	0.936	0.824	0.843
	(0.131)	(0.135)	(0.202)	(0.214)	(0.143)	(0.147)
Mindanao	0.815	0.798	0.733	0.738	0.714*	0.705*
	(0.126)	(0.127)	(0.197)	(0.203)	(0.132)	(0.134)
Constant			0.170***	0.187***	0.280***	0.317***
			(0.061)	(0.070)	(0.082)	(0.096)
Gamma[1]					-0.047***	-0.046***
					(0.005)	(0.005)
lnP			0.003	0.013		
			(0.039)	(0.037)		
Wald chi-squared	56.44***	73.59***	105.73***	134.64***	78.50***	100.87***
Log pseudolikelihood	-2437.48	-2434.89	-676.40	-672.18	-650.19	-667.25
Test of proportional-hazards assumption						
Chi-square[2]	4.97	6.64				
Prob>chi-square	(1.0000)	(1.0000)				

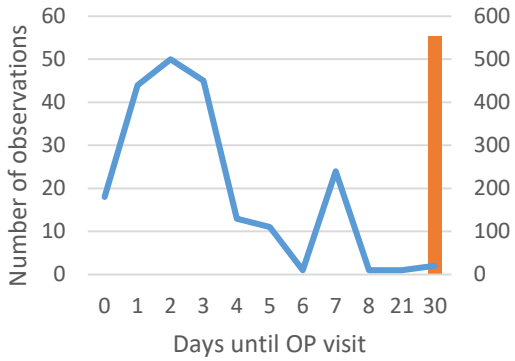
Notes: Hazard ratios reported. Figures in parentheses are robust standard errors of the estimated hazard ratios and adjusted for household-level clustering. For the Cox proportional hazard models, the Breslow method for ties is used. Both the Weibull and Gompertz models are estimated as log relative hazard form.

[1]This is the p in Gompertz regression model $\underline{h}(t|\boldsymbol{X})=\exp(\boldsymbol{X}'\boldsymbol{\beta})\exp(pt)$.

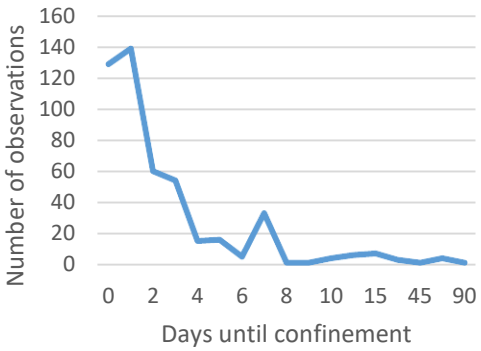
[2]Global test based on Schoenfield residuals, where H_0: slope of the residual curve=0.

***p<0.01, **p<0.05, *p<0.10

Figure 1. Frequency Distribution, by days



(a) Outpatient samples (*N*=760)



(b) Inpatient samples (*N*=461)

Note: Figure 1(a), the line graph refers to the 210 samples with reported number of days until OP visit, and the bar graph refers to the 554 who did not report the number of days.

Appendix: Table A.1 Results (hazard ratios with z-statistics in parentheses): Factors associated with the number of days until outpatient visit (*N*=760)

Variables	Cox			Weibull			Gompertz		
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Health needs									
Sick is at most 5 years old	2.117***	1.940***	1.744***	2.298***	2.084***	1.845***	2.163***	1.971***	1.764***
	(4.12)	(3.91)	(3.28)	(4.13)	(3.91)	(3.27)	(4.13)	(3.92)	(3.28)
Sick is at least 65 years old	2.151***	2.148***	1.976**	2.610***	2.641***	2.394**	2.271***	2.286***	2.092**
	(2.79)	(2.62)	(2.32)	(2.94)	(2.91)	(2.57)	(2.86)	(2.77)	(2.45)
Bad health prior to illness	1.467**	1.414**	1.432**	1.543**	1.484**	1.517**	1.492**	1.438**	1.459**
	(2.35)	(2.10)	(2.19)	(2.40)	(2.18)	(2.31)	(2.39)	(2.15)	(2.26)
Chronic illness		1.545**	1.402		1.589*	1.399		1.542**	1.389
		(1.98)	(1.49)		(1.94)	(1.34)		(1.96)	(1.44)
Financial access									
PhilHealth covered	0.991	1.01	0.999	0.982	1.008	0.995	0.99	1.011	0.999
	(-0.05)	(0.06)	(-0.00)	(-0.10)	(0.05)	(-0.03)	(-0.06)	(0.06)	(-0.01)
Other insurance coverage	0.81	0.744	0.777	0.825	0.745	0.769	0.82	0.751	0.781
	(-0.55)	(-0.77)	(-0.65)	(-0.46)	(-0.70)	(-0.61)	(-0.51)	(-0.73)	(-0.62)
Household income_q2	0.549**	0.553**	0.561**	0.529**	0.525**	0.535**	0.539**	0.541**	0.550**
	(-2.36)	(-2.37)	(-2.32)	(-2.28)	(-2.35)	(-2.29)	(-2.38)	(-2.40)	(-2.34)
Household income_q3	0.74	0.742	0.788	0.735	0.73	0.786	0.736	0.737	0.786
	(-1.21)	(-1.21)	(-0.98)	(-1.12)	(-1.16)	(-0.91)	(-1.19)	(-1.20)	(-0.97)
Household income_q4	0.946	0.942	0.93	0.98	0.968	0.959	0.946	0.94	0.93
	(-0.22)	(-0.25)	(-0.30)	(-0.07)	(-0.12)	(-0.16)	(-0.22)	(-0.25)	(-0.29)
Household income_q5	0.888	0.889	0.908	0.917	0.909	0.953	0.89	0.891	0.915
	(-0.40)	(-0.42)	(-0.34)	(-0.27)	(-0.31)	(-0.16)	(-0.39)	(-0.40)	(-0.31)
Physical access									
Public hospital within locality	1.093	1.032	1.018	1.119	1.052	1.03	1.097	1.036	1.02
	(0.36)	(0.13)	(0.07)	(0.41)	(0.18)	(0.11)	(0.37)	(0.14)	(0.08)
Private hospital within locality	1.227	1.287	1.3	1.212	1.281	1.293	1.221	1.283	1.295
	(1.02)	(1.27)	(1.32)	(0.88)	(1.14)	(1.18)	(0.98)	(1.23)	(1.27)
Other public health facility within locality	1.104	1.091	1.061	1.077	1.093	1.05	1.098	1.093	1.061
	(0.19)	(0.16)	(0.11)	(0.13)	(0.15)	(0.09)	(0.18)	(0.16)	(0.11)
Urban	0.755	0.787	0.788	0.73	0.76	0.757	0.749	0.78	0.78
	(-1.38)	(-1.16)	(-1.16)	(-1.45)	(-1.24)	(-1.27)	(-1.40)	(1.19)	(-1.19)
Opportunity costs									
Sick female member	0.951	0.953	0.924	0.96	0.966	0.935	0.957	0.96	0.93
	(-0.33)	(-0.32)	(-0.52)	(-0.24)	(-0.20)	(-0.41)	(0.29)	(-0.27)	(-0.48)
Sick household head	0.817	0.716	1.116	0.846	0.718	1.24	0.824	0.717	1.144
	(-0.93)	(-1.48)	(0.35)	(-0.67)	(-1.30)	(0.60)	(-0.86)	(-1.43)	(0.42)
Sick adult member		0.66	0.681		0.613	0.644		0.649	0.673
		(-1.16)	(-1.10)		(-1.22)	(-1.12)		(-1.18)	(-1.10)
Sick member is working			0.467**			0.404***			0.451**
			(-2.44)			(-2.63)			(-2.51)
Household head is working	0.685*	0.716	0.803	0.677	0.71	0.802	0.685	0.715	0.803
	(-1.69)	(-1.43)	(-0.85)	(-1.53)	(-1.29)	(-0.77)	(-1.63)	(-1.38)	(-0.83)
Spouse is working		0.805	1.752		0.753	1.874		0.785	1.765
		(-0.50)	(1.05)		(-0.62)	(1.12)		(-0.55)	(1.06)

Variables	Cox			Weibull			Gompertz		
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Other household-level factors									
Household size	1.02			1.027			1.022		
	(0.49)			(0.60)			(0.52)		
Number of children under 5	0.921			0.924			0.92		
	(-0.59)			(-0.52)			(-0.59)		
Household head finished college	1.42	1.449	1.439	1.466	1.507	1.52	1.431	1.466	1.46
	(1.49)	(1.56)	(1.56)	(1.48)	(1.57)	(1.64)	(1.50)	(1.58)	(1.60)
Location									
North_Central Luzon	0.460**	0.472**	0.453***	0.399**	0.413***	0.394***	0.442***	0.453**	0.435***
	(-2.55)	(-2.46)	(-2.63)	(-2.73)	(-2.61)	(-2.80)	(-2.63)	(-2.54)	(-2.71)
South Luzon	0.526**	0.543**	0.542**	0.471**	0.494**	0.493**	0.506***	0.523**	0.522**
	(-2.51)	(2.39)	(-2.42)	(-2.61)	(-2.46)	(-2.49)	(-2.60)	(-2.49)	(-2.51)
Visayas	0.348***	0.382***	0.372***	0.293***	0.325***	0.313***	0.331***	0.363***	0.353***
	(-3.11)	(-2.80)	(-2.87)	(-3.30)	(-2.94)	(-3.05)	(-3.20)	(-2.89)	(-2.97)
Mindanao	0.248***	0.255***	0.245***	0.212***	0.220***	0.209***	0.237***	0.244***	0.234***
	(-4.62)	(-4.48)	(-4.64)	(-4.61)	(-4.43)	(-4.60)	(-4.66)	(-4.51)	(-4.68)
Constant				0.168**	0.169**	0.182**	0.200**	0.202**	0.213**
				(-2.46)	(-2.42)	(-2.34)	(-2.36)	(-2.31)	(-2.25)
Gamma[1]							-0.274***	-0.273***	-0.271***
							(-12.00)	(-12.07)	(11.98)
lnP				-0.769***	-0.766***	-0.754***			
				(-26.00)	(-26.27)	(-24.53)			
Wald chi-squared	107.93***	118.86***	141.18***	103.04***	118.84***	149.48***	107.08***	120.76***	145.14***
Log-pseudolikelihood	-1297.93	-1295.79	-1292.26	-783.93	-781.44	-776.42	-669.098	-666.95	-663.07
Test of proportional-hazards assumption									
Chi-square[2]	27.93	43.19	43.97						
Prob>chi-square	(0.218)	(0.010)	(0.011)						

Appendix: Table B.1 Results (hazard ratios with z-statistics in parentheses): Factors associated with the number of days until confinement (*N*=461)

Variables	Cox		Weibull		Gompertz	
	[1]	[2]	[3]	[4]	[5]	[6]
Health needs						
Sick is at most 5 years old	1.191	1.258**	1.454**	1.554**	1.226	1.303**
	(1.54)	(1.98)	(2.16)	(2.41)	(1.56)	(1.98)
Sick is at least 65 years old	1.011	1.032	0.993	1.007	1.012	1.02
	(0.06)	(0.17)	(-0.02)	(0.02)	(0.06)	(0.09)
Chronic illness		1.018		0.88		0.982
		(0.15)		(-0.64)		(-0.12)
Confinement due to executive check-up	1.311	1.312	1.635*	1.618*	1.35	1.345
	(1.21)	(1.22)	(1.73)	(1.70)	(1.21)	(1.21)
Confinement due to child birth	1.514***	1.498***	2.064***	1.975***	1.714***	1.669***
	(4.09)	(3.97)	(5.58)	(5.25)	(4.98)	(4.78)
Financial access						
PhilHealth covered	1.101	1.108	(2.29)	1.371**	1.175	1.190*
	(1.11)	(1.19)		(2.50)	(1.59)	(1.71)
Other insurance coverage	0.957	0.989	0.934	0.996	0.958	1.001
	(-0.26)	(-0.06)	(-0.27)	(-0.02)	(-0.22)	(0.01)
Household income_q2	1.053	1.075	1.14	1.16	1.091	1.112
	(0.40)	(0.55)	(0.64)	(0.71)	(0.57)	(0.69)
Household income_q3	1.249*	1.272*	1.454*	1.499*	1.309*	1.336**
	(1.74)	(1.88)	(1.92)	(2.09)	(1.82)	(1.98)
Household income_q4	1.205	1.223	1.382*	1.433*	1.269	1.289*
	(1.51)	(1.58)	(1.68)	(1.89)	(1.62)	(1.71)
Household income_q5	0.963	0.908	1.028	0.976	0.961	0.909
	(-0.29)	(-0.73)	(0.14)	(-0.13)	(-0.26)	(-0.64)
Physical access						
Public hospital within locality	0.953	0.936	0.955	0.963	0.98	0.968
	(-0.40)	(-0.54)	(-0.29)	(-0.24)	(-0.15)	(-0.24)
Private hospital within locality	1.115	1.106	0.989	0.974	1.072	1.058
	(1.15)	(1.06)	(-0.08)	(-0.19)	(0.64)	(0.53)
Urban	0.971	0.972	1.026	0.993	0.969	0.96
	(-0.29)	(-0.28)	(0.17)	(-0.05)	(-0.27)	(-0.36)
Opportunity costs						
Sick female member	1.14	1.161*	1.236	1.243	1.171	1.186
	(1.57)	(1.71)	(1.58)	(1.53)	(1.58)	(1.64)
Sick household head	0.902	0.726**	0.783	0.655**	0.852	0.695**
	(-0.87)	(-2.44)	(-1.22)	(-2.30)	(-1.09)	(-2.44)
Number of sick members	0.947	0.944	0.889	0.897	0.918	0.919
	(-1.14)	(-1.20)	(-1.50)	(-1.40)	(-1.54)	(-1.54)
Sick adult member		1.109		1.203		1.372
		(0.50)		(2.33)		(0.84)

Variables	Cox		Weibull		Gompertz	
	[1]	[2]	[3]	[4]	[5]	[6]
Sick member is working		1.421***		1.426**		1.423***
				(2.42)		(2.95)
Household head is working	1.024	0.893	0.800	0.677**	0.925	0.792*
	(0.20)	(-0.95)	(-1.34)	(-2.52)	(-0.54)	(-1.70)
Spouse is working		0.728*		0.83		0.761
		(-1.89)		(-0.91)		(-1.48)
Other household-level factors						
Household size	1.028*	1.018	1.068***	1.055**	1.034*	1.023
	(1.76)	(1.11)	(3.00)	(2.33)	(1.87)	(1.23)
Number of children under 5	0.969	0.99	0.942	0.959	0.979	0.999
	(-0.60)	(-0.18)	(-0.70)	(-0.50)	(-0.36)	(-0.01)
Household head finished college	1.273**	1.305**	1.456***	1.478***	1.320**	1.351***
	(2.23)	(2.43)	(2.97)	(3.00)	(2.49)	(2.71)
Location						
North_Central Luzon	1.139	1.141	1.047	1.088	0.955	0.971
	(0.91)	(0.91)	(0.20)	(0.36)	(-0.27)	(-0.17)
South Luzon	1.048	1.043	1.178	1.22	0.983	0.995
	(0.36)	(0.31)	(0.80)	(0.93)	(-0.10)	(-0.03)
Visayas	0.952	0.955	0.875	0.936	0.824	0.843
	(-0.36)	(-0.32)	(-0.58)	(-0.29)	(-1.12)	(-0.98)
Mindanao	0.815	0.798	0.733	0.738	0.714*	0.705*
	(-1.32)	(-1.42)	(-1.16)	(-1.11)	(-1.82)	(-1.85)
Constant			0.170***	0.187***	0.280***	0.317***
			(-4.92)	(-4.48)	(-4.35)	(-3.81)
Gamma[1]					-0.047***	-0.046***
					(-9.69)	(-9.66)
lnP			0.003	0.013		
			(0.07)	(0.35)		
Wald chi-squared	56.44***	73.59***	105.73***	134.64***	78.50***	100.87***
Log pseudolikelihood	-2437.48	-2434.89	-676.4	-672.18	-650.19	-667.25
Test of proportional-hazards assumption						
Chi-square[2]	4.97	6.64				
Prob>chi-square	(1.000)	(1.000)				