The Impact of Social Health Insurance on Healthcare Utilization Outcomes: Evidence from the Indigent Program of the Philippine National Health Insurance

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Disclaimer:

This document represents part of the author's study programme while at the Institute of Social Studies. The views stated therein are those of the author and not necessarily those of the Institute.

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List of Acronyms

CCT	Conditional Cash Transfer
DOH	Department of Health
DSWD	Department of Social Welfare and Development
LGU	Local Government Unit
MDG	Millennium Development Goals
Medicare	Philippine Medical Care Plan
NBB	No Balance Billing
NDHS	National Demographic and Health Survey
NHIP	National Health Insurance Program
NHTS-PR	National Household Targeting System for Poverty Reduction
PhilHealth	Philippine Health Insurance Corporation
PhP	Philippine Peso
PMCC	Philippine Medical Care Commission
PMT	Proxy Means Test
PSA	Philippine Statistics Authority
SHI	Social Health Insurance
UHC	Universal Health Care
UNDP	United Nations Development Program
USAID	United States Agency for International Development
WHO	World Health Organization

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Abstract

The Philippines is one of the pioneering countries in South East Asia to embark upon universal health care, with the ultimate goal of ensuring equal access to healthcare services for everyone regardless of their socioeconomic status and financial situation. Since the establishment of PhilHealth—the country's social health insurance system—the national government has continuously invested in the program to expand its coverage and benefit packages and grow existing funding sources. The present study sought to examine the effects that recent developments in the Philippines' social health insurance (SHI) may have had on Filipino indigent members' healthcare use and out-of-pocket expenditures.

To address this objective, a combination of quantitative and qualitative approaches was undertaken as the research methodology. First, I analyzed the impact of PhilHealth indigent membership status on outpatient and inpatient care utilization as well as out-of-pocket payments using three rounds of a nationally-representative survey on demographics and health in the Philippines, while putting in place measures to reduce potential biases. Results show that participation in SHI among Filipino indigents is robustly and positively correlated with outpatient and inpatient care utilization, and negatively associated with the amount of personal income, loan, or savings used to finance hospital confinement. However, evidence linking PhilHealth membership with the reduction in total amount paid for outpatient and inpatient care cannot be established. Second, I conducted key-informant interviews among selected indigent members in the Philippines to understand healthcare utilization choices and perceptions of quality of care. A number of critical elements to improving healthcare utilization among the poor emerged from the qualitative data. One is to enhance PhilHealth members' awareness of their health benefits. Two is to improve the supply-side provision and delivery of services, especially among public health facilities, as this may affect the perception of quality of care and, subsequently, utilization of healthcare services. Finally, on the supply side, the sustainability of providing free health insurance membership is a crucial concern that requires a clear direction, and the mechanisms to ensure that the true poor are targeted need to be put in place.

Relevance to Development Studies

The provision of and access to basic healthcare services is critical to economic progress and overall human development. It is a necessary element towards the advancement in people's functionalities and capabilities to enable productive and meaningful participation in society. This study investigates the role of social health insurance coverage on improving access to healthcare, particularly the probability of healthcare utilization for both preventive and curative care and its impact on own-cost expenditures among members of PhilHealth's Indigent Program. It also aims to gauge the members' perceptions of quality of care based on their outpatient and inpatient care experiences.

Improving understanding of the health-seeking behavior under social insurance programs is fundamental in informing policy decisions, especially in designing sustainable and effective assistance packages for the vulnerable sectors of society. This study seeks to contribute to the development studies field by understanding the role of socialized insurance programs in improving health outcomes among the poor, in support of the Philippine Government's pursuit of a more inclusive universal health care in the country.

Keywords

social health insurance, universal health care, healthcare utilization outcomes, quality of care, out-of-pocket expenditures, health spending

Chapter 1 Introduction

Access to basic healthcare is central to development and overall human welfare. Along with vital needs such as food, water, sanitation, housing, and education, healthcare is regarded not only as a necessity but also as a fundamental human right (UNDP 2011). The health of a population is critical to the advancement of people's functionalities and capabilities, which are both integral in utilizing economic resources for productive and meaningful participation in society. Despite this being the case, access to health services remains largely constrained, particularly in low- and middle-income countries where different magnitudes of poverty and inequality influence health status and, at the same time, hamper the provision of and accessibility to healthcare. Governments respond to such issues by putting in place more inclusive social protection programs, ranging from the direct provision of subsidized healthcare, introduction of cash transfer programs (e.g., Chaudhury and Okamura 2012; Saavedra and Garcia 2012; Molina-Millan et al. 2016), and—most commonly—the provision of social health insurance in developing countries with the goal of achieving universal health care (hereafter, UHC) for the entire population (e.g., Sparrow, Suryahadi and Widyanti 2013; Azam 2018; Wagner et al. 2018; Bernal, Carpio, and Klein 2017). Social health insurance (hereafter, SHI) loosely refers to a structural mechanism of aggregating funds through taxes, individual or corporate contributions, community insurance and other means, to finance healthcare services of the insured and their dependents (Doetinchem, Carrin and Evans 2010: 1). In the context of developing countries, SHI also provides full financing of contributions and healthcare coverage to the poor through government subsidies, private donations, and other non-tax revenue sources (Ibid.)

The Philippines is one of the countries that has pursued a UHC program, with many critical reforms for the continuous expansion of the SHI system implemented in recent years (Bredenkamp et al. 2017; Silfverberg 2014; Lavado 2010). These health reforms aim to reduce inequity in access to healthcare services by providing equal benefits to all irrespective of economic position. Subsidized premium contributions among qualified beneficiaries likewise reduce financial burden of the poorest and most vulnerable sectors of society. In line with these recent developments the critical question to ask is how and to what extent do these policy interventions result in improved access to and utilization of health services among those most in need. This paper contributes to the growing empirical evidence by examining the impact of SHI coverage on healthcare utilization outcomes among less privileged members of the Filipino population.

1.1 Background

The implementation of SHI system in the Philippines dates back to when the Philippine Medical Care Commission (hereafter, PMCC), mandated to implement the Philippine Medical Care Plan or "Medicare", was established in 1969 (Obermann et al. 2006: 3178; Lavado 2010). Medicare's target members comprised individuals in formal employment and those in informal sectors whose incomes were relatively unstable due to irregularity in employment. The health insurance plan covered the costs of confinement in private health facilities with

members being reimbursed up to a certain benefit ceiling and were then required to be transferred to a public hospital in case of further treatment (Oberman et al. 2006: 3178). While Medicare was mostly successful in enrolling individuals in the formal sector, it did not make huge strides in inducing healthcare demand among the poor, thus leaving the issues of unmet health needs and financial brunt of hospitalization costs unaddressed.

Medicare's limitation in extending coverage to the poor led to an overhaul of the Philippines' SHI system. Through the Department of Health (hereafter, DOH), a proposed extension of health insurance beneficiaries and benefit packages was sought and resulted in the creation of a new SHI scheme under the auspices of Republic Act 7875, also known as the National Health Insurance Act of 1995 (USAID 1991; Gamboa, Bautista and Beringuela 1993). The law created the Philippine Health Insurance Corporation or "PhilHealth", effectively replacing its predecessor, PMCC, and becoming in charge of implementing the National Health Insurance Program (hereafter, NHIP). One of the key mandates of PhilHealth is the attainment of UHC by 2010, with emphasis on expanding coverage to the poor (Lavado 2010). All Filipino nationals in the Philippines and, later on, overseas can become members by enrolling and paying monthly premium contributions, which entitles them to the benefits of PhilHealth, regardless of socioeconomic status, income, and illness risks. While details are provided later, in theory, PhilHealth pays a fixed amount for medical services, treatments, and other fees per illness case. Although the scheme does not guarantee comprehensive coverage of medical costs, it aims to enhance accessibility to healthcare services and, ultimately, improve health outcomes of those who mostly require it.

Critical to pursuing UHC is the extension of the Indigent Program—one of the membership components of PhilHealth that covers the poorest sectors of the population by fully subsidizing premium contributions of its members (Bredenkamp et al. 2017; Silfverberg 2014). This extension has been postulated in the 2013 amendment of the law, with the objective of expanding coverage and providing the poor with larger subsidies from various sources: the national government, local government units, and other donors.

Increase in SHI membership became evident following the 2013 amendment in the law. A recent study by Bredenkamp and colleagues (2017: 6) on PhilHealth expansion finds that health insurance coverage increased by 20 percent between 2011 and 2015, from 52.6 percent to 63.2 percent at the household level, with the increase larger among the two poorest quintiles of the population than non-poor households. Similarly, PhilHealth data shows that, as of December 2016, membership to the NHIP has already covered 91 percent of the projected Filipino population (see Table 1) (PhilHealth 2016). This translates to approximately 93.4 million beneficiaries enrolled in different PhilHealth programs.

Among the membership types, the Indigent Program—which includes individuals and dependents from the two poorest quintiles of the population without visible source of income—comprise the biggest proportion of total beneficiaries at 47 percent (see Table 1). The formal economy, which consists of those employed in both private and public sectors, constitutes 31 percent of total membership, while the informal economy (9%), senior citizens (8%), sponsored members (3%), and lifetime members (2%) form part of the remaining proportion of total beneficiaries. With nearly half of total beneficiaries being classified

as indigents, it appears that expansion in membership and health insurance benefit coverage has been consistent with the pro-poor mandate of the law.

Table 1 Membership in PhilHealth Programs, December 2016

Sector	Members	(%)	Dependents[b]	(%)	Beneficiaries	(%)
Formal economy	14,636,188	35	14,674,103	28	29,310,291	31
Informal economy	3,260,811	8	4,907,400	9	8,168,211	9
Indigents[a]	14,641,685	36	28,844,119	55	43,485,804	47
Sponsored members	1,217,941	3	1,560,458	3	2,778,399	3
Senior citizens	6,245,583	15	1,328,749	3	7,574,332	8
Lifetime members	1,229,641	3	854,183	2	2,083,824	2
Total	41,231,849	100	52,169,012	100	93,400,861	100

Source: PhilHealth Stats and Charts, December 31, 2016

Note: [a] Indigent count of members and dependents was based on DSWD *Listahanan* database and are subject for further validation (PhilHealth 2016).

[b] Dependents refer to legal dependents of the principal member, which include spouse and all children below 21 years of age, and physically or mentally handicapped parents and children above the age of 21 years.

With the rapid scale-up of health insurance schemes in the Philippines and in many developing countries the impact of SHI programs has received a great amount of attention in recent years. Previous empirical work in the Philippine context has focused primarily on the effects of health insurance coverage on maternal mortality rates and utilization of prenatal and facility-based delivery care (e.g., Gouda et al. 2016; Kozhimannil et al. 2009; Bishwajit et al. 2016). There is also a growing literature on the impact of health insurance coverage on out-of-pocket expenditures, health outcomes, and child outcomes, such as school performance and attendance (e.g., Wagner et al. 2018; Quimbo et al. 2011; Capuno et al. 2009).

There are two motivations for this study. First, the recent reforms in the Philippine Health Insurance System that allowed for membership and coverage expansion among indigent households between 2011 and 2017, as well as the equalization of benefits across members, provide room for further research on the impact of the country's universal health insurance scheme. Specifically, studies focusing on the role of health insurance in enabling access to care among members of PhilHealth's Indigent Program remain sparse. While previous empirical evidence finds a positive correlation between utilization of facility-based delivery services and SHI among Filipino women (e.g., Gouda et al. 2016), the literature also confirms that there is high incidence of underutilization of insurance benefits among poor Filipinos (Quimbo et al. 2008). It is therefore relevant and timely to examine the accomplishments of the Indigent Program in relation to the overall goals of the National Health Insurance Act, specifically to determine whether expansion of membership and benefits in recent years contributed to improved healthcare utilization. The second motivation is that, in the spectrum of qualitative research, healthcare utilization decisions and general perceptions about healthcare quality among indigent PhilHealth members remain understudied. Exploring this angle qualitatively is complementary to the analysis of healthcare utilization outcomes and could, in part, explain members' decisions to seek medical attention. With respect to policy decisions, it is hoped that providing clarity to these gaps contribute to assessing whether government strategies are on the right track in meeting healthcare needs of the poor. Otherwise,

the need to realign government strategies with focus on addressing the potential supply-side barriers to fully utilizing SHI benefits must become a top priority.

1.2 Research Objectives and Hypothesis

The spirit of this study is similar to existing empirical evidence on the effect of SHI programs on various healthcare outcomes. It seeks to contribute to the literature by assessing the impacts that recent reforms on health insurance coverage in the Philippines have had on healthcare utilization among the poor. Using three waves of nationally-representative household surveys to form a pooled cross-section, this study examines the role of the country's SHI scheme on a variety of measures for health facility utilization—including access to inpatient and outpatient medical services for both preventive and curative care and health expenditures—among members of PhilHealth's Indigent Program. The main research question is: To what extent does social health insurance coverage affect healthcare utilization and health spending among members of PhilHealth's Indigent Program in the Philippines.

For the qualitative aspect the sub-research question is: How do members of PhilHealth's Indigent Program make healthcare utilization decisions, and what are their perceptions regarding the quality of care they receive for both preventive and curative care.

SHI programs, especially those that are fully subsidized and targeted to the poor, are a form of social protection aimed at enhancing the overall health and wellbeing of intended beneficiaries, in the present case, the Filipino indigents. These schemes seek to address unmet health needs of less privileged people by inducing healthcare demand while reducing the burden of paying monthly health premiums for those who, in principle, lack the financial means to afford it. It is thus reasonable to expect healthcare utilization to increase once people are covered by health insurance. Similar findings have been observed in earlier studies about maternal care in the Philippines (see Gouda et al. 2016; Kozhimannil et al. 2009). On the other hand, the effect of health insurance membership on own-cost health expenditures appears to be ambiguous. While it can protect patients from using personal finances on medical costs (e.g., Wagner et al. 2018; Liu, Wu and Liu 2014; Capuno et al. 2009; Kraft et al. 2009), for example, when insurance covers all costs related to a particular illness; it can also increase own costs, such as when patients need to avail of medical services and treatments that are beyond the coverage of insurance or are not offered in a particular health facility. In developing countries such as the Philippines, where there are prevailing funding constraints, limitations on coverage, and institutional or supply-side barriers, the latter may well be the case (Quimbo et al. 2008). To supplement the empirical data, qualitative information on healthcare utilization decisions and perceived quality of healthcare services in relation to PhilHealth benefits and health facilities are collected.

1.3 Study Limitations

It is important to acknowledge the methodological and data limitations of this study. First, PhilHealth's selection criteria for enrolling indigents to the program

changed a number of times. From initially targeting qualified individuals belonging to the poorest 25 percent of the population (Obermann et al. 2006; Lavado 2010), it shifted to using the National Household Targeting System for Poverty Reduction (hereafter, NHTS-PR) list, locally known as *Listahanan*. The NHTS-PR is a targeting system developed by the Department of Social Welfare and Development (hereafter, DSWD) that consists of a set of objective criteria to identify the poor (Fernandez 2012: 1). NHTS-PR listing classifies beneficiaries as indigents if they belong to the poorest two quintiles of the population (Silfverberg 2014: 39). In addition to income quintile classification, DSWD's targeting system also uses a proxy means test (PMT) methodology to estimate the levels of economic position of a household based on consumption and other socio-demographic characteristics. This is the same system used for the selection of qualified beneficiaries for the Philippines' conditional cash transfer program. Hence, for the control group in the current study, individuals from the two poorest quintiles of the population who are not members of PhilHealth or any other health insurance schemes have been selected. To ensure comparable units of observations between the treatment and control groups, all observable socioeconomic and demographic characteristics of the treated PhilHealth indigent members have been matched against those from the two poorest quintiles that are not members of any health insurance programs.

A key methodological concern in relation to PhilHealth Indigent Program's selection criteria is the instances of "under-coverage" and "leakage" in the enrollment of members to the Indigent Program (Silfverberg 2014: 79). Under-coverage refers to the situation where qualified indigent families were excluded from the program, while leakage takes place when families that were not supposed to be in the program became included in the enrollment lists (Ibid.). This might have entailed differences in characteristics between some PhilHealth indigent members and non-PhilHealth members that are part of the two poorest quintiles.

Finally, the persistent challenge in PhilHealth's system is the measurement discrepancies between the administrative data and independent household surveys. In accordance with the 2013 amendment in the National Health Insurance Act, PhilHealth is mandated to enroll indigent 'families' as specifically defined in the law (Bredenkamp et al. 2017: 12). However, the NHTS-PR list that is being used to identify the poor includes 'households' instead of families. This means that there could be multiple families per each household, hence, the discrepancies in counting. Similarly, in the study of Bredenkamp and colleagues (2017), they find that indigent members that are identified through the NHTS-PR list are automatically enrolled in the PhilHealth program given their eligibility. These members are immediately registered in the database, and it is very likely that some indigents might not be even aware of their insurance privileges and entitlements. This does not only entail discrepancies in measurement but also undermine measures of healthcare utilization.

1.4 Contribution to Literature

The objective of this study is to isolate the effect of SHI coverage on the probability of using healthcare services and on the reduction or increase in own-cost expenditures among members of PhilHealth's Indigent Program. It also aims to

explore members' healthcare utilization decisions and perceptions of healthcare quality. Improving understanding of the health-seeking behavior under SHI programs is critical in informing policy decisions, especially in designing sustainable and effective financial assistance packages for the vulnerable sectors of society. Ultimately, this study, alongside other projects being undertaken on the topic, seeks to contribute to the development studies field by understanding the role of social insurance programs in improving health outcomes among the poor, in support of the Philippine Government's pursuit of a more inclusive universal health care in the country.

The novelty of the paper is twofold: first, to investigate the effect that recent changes and expansion in the Philippines' SHI membership has had among underprivileged Filipino members under the Indigent Program. While there is a rich literature on the impact of voluntary health insurance membership on health outcomes and out-of-pocket expenditures, the work that examines the effect of SHI on indigent members' utilization of health services, in the Philippines and other developing countries, remains limited. This paper takes advantage of the latest edition of the Philippine National Demographic and Health Survey, together with two previous waves of the same, to measure the impact of SHI on selected healthcare utilization variables. Considering the nature of the available datasets, this paper uses propensity score matching (hereafter, PSM) in combination with fixed effects model (with clustering at the *barangay* level) as the main estimation strategies. Second, this paper provides a qualitative perspective to the analysis by exploring indigent members' healthcare utilization choices and experiences of care quality from healthcare providers.

1.5 Preview of Results and Structure of the Paper

To preview the results, it is found that participation in SHI among indigents is robustly and positively correlated with inpatient and outpatient care utilization for both adults and children under 15 years of age across individual survey rounds and for the pooled sample. This study also finds that SHI membership is associated with a reduction in the amount paid out-of-pocket (i.e., from income, savings, or loan) for hospital confinement in current PhP prices, but the effect is not statistically significant for the total amount paid for outpatient care and hospital confinement. Apart from the changes in the magnitude of the coefficients, these results are consistent all throughout the analysis and not sensitive to changes in controls, even when we controlled for the self-reported health status of individuals and used alternative treatment and control groups. For the qualitative data, the overall message that emerged from the interviews is the perceived general satisfaction on medical services received from private healthcare providers but not from public healthcare facilities. In addition, indigent members raised the issue of lack of awareness of their benefits, making them unable to fully maximize their healthcare coverage use.

This paper is organized in the following manner. Chapter 2 presents a brief overview of the Philippine economy and its healthcare system as well as the trends and challenges in the Philippine National Health Insurance System. Chapter 3 discusses related academic work relevant to the topic. Section 4 presents the analytical framework, and empirical strategy tailored to the problem and data at hand. Section 5 provides the empirical results and Section 6 concludes.

Chapter 2 Characterizing the Philippine Healthcare System

2.1 Social Protection for the Poor: Recent Trends and Challenges

Improving social protection is one of the Philippine government's top policy priorities for its less privileged sectors. From the introduction of conditional cash transfer programs that seek to break the cycle of intergenerational poverty, to the continuous expansion of the SHI system, the Philippines has continued to make huge investments in social protection in recent years. Fueled by consecutive years of robust economic growth, the government has amplified its efforts to provide free health insurance to poor and near-poor families. It has also remained adamant in its efforts to make a dent on underutilization of health services and improving health awareness among Filipinos. As set forth in the 2010 Universal Health Care Program, the Department of Health (hereafter, DOH) is bent on reducing health inequities by guaranteeing improvements in financial risk protection and benefit distribution through the continuous expansion of PhilHealth enrollment, improvement in service and benefit delivery, enhancement of access to quality hospitals and healthcare facilities, promotion of good governance, and promotion of health awareness and information (Cabalfin 2016: 6).

In terms of expanding PhilHealth enrollment along with the corresponding budget necessary to sustain its implementation, the government recently passed the Sin Tax Law[1]. The enactment of this law augmented PhilHealth's financing, as 80 percent of its revenues were meant to be allocated for subsidizing insurance premiums of indigent members and the remaining 20 percent earmarked for other programs of the DOH (Bredenkamp et al. 2017: 1). With the DOH budget being tripled from PhP42 billion to PhP123 billion, the Sin Tax Law also resulted in the extension of free health insurance membership and coverage to senior citizens starting November 2014. A major contribution of the law in terms of governance perspective is the abolition of local government unit discretion in determining the poor who would qualify as indigent members for PhilHealth (Ibid.). The standardization of identifying indigents through DSWD's NHTS-PR likely reduced, to a certain extent, the incidence of leakages and political patronage. In this scheme the indigents' premium contributions are covered by the national government, funded in part by the revenues collected from sin taxes. Meanwhile, those whose free health insurance membership remain shouldered by local government units and other private funders, fall under the Sponsored Program of PhilHealth.

Despite the boon in the healthcare system, achieving gains are not without challenges. While various aspects of health utilization have seen substantial improvements over the years, the benefits of the country's healthcare system have remained fragmented, with persistent regional and socioeconomic disparities.

[1] Republic Act 10351, also known as the Sin Tax Law, restructured and increased the excise tax on alcohol and tobacco products. The law was enacted in December 2012 to earmark additional funds for PhilHealth (LAWPHiL 2018).

The World Health Organization (2018) reports that many vulnerable Filipinos continue to succumb to diseases that have medically-proven treatments, such as dengue fever, tuberculosis, and other lower respiratory infections due, in part, to their lack of awareness and enough knowledge to make appropriate decisions regarding their own health.

One of the critical barriers to healthcare utilization is the financial constraints faced by the poor (Gouda et al. 2016; Aldaba et al. 2011). Albeit government assistance, paying healthcare costs continues to be a burden to meeting the health needs of the population. Recent data from the Philippine national health accounts indicate a rising trend in total and per capita health expenditures of Filipinos beginning 2014. On average, every Filipino spent PhP6,345 for health in 2016, indicating an 8.7 percent increase in health spending from PhP5,840 in 2015 (see Table 2) (PSA 2018). In terms of total health expenditures by financing scheme in current prices, households spent the highest in 2016. Specifically, out-of-pocket expenditures posted 54 percent (PhP342 billion) of current health expenditures in 2016; government schemes and contributory healthcare financing schemes, including PhilHealth, covered 34 percent (PhP216 billion); and voluntary healthcare payment schemes amounted to PhP73 billion or 12 percent of the total in the same year (see Figure 1).

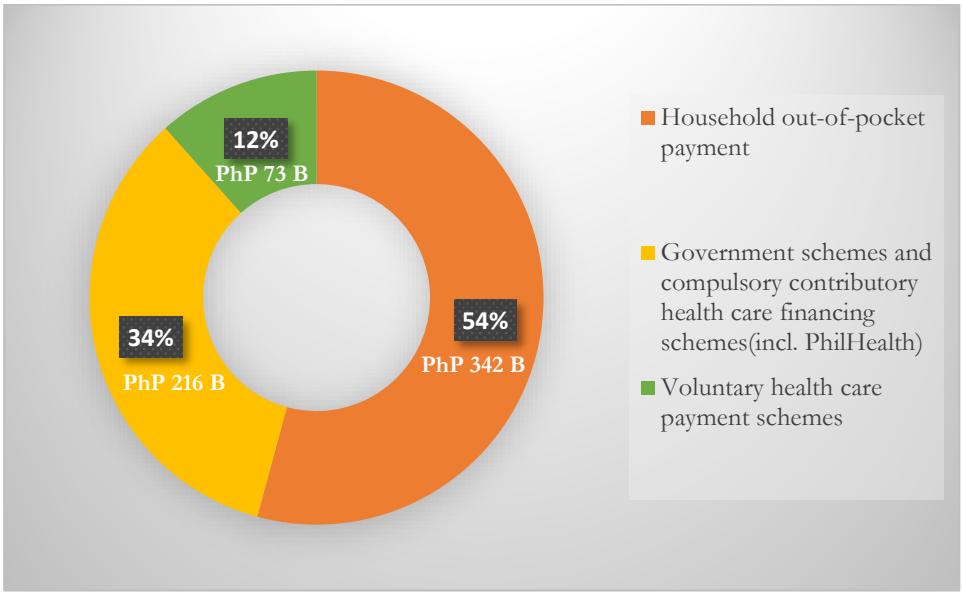
Indeed, various challenges on health information awareness, coupled with the financial toll of hospitalization, persist and potentially influence healthcare utilization. This poses a critical question on the extent to which SHI is effective in addressing healthcare demands and protecting against catastrophic medical costs among its intended beneficiaries. Producing up-to-date empirical evidence to gauge the effectiveness of social protection programs, such as PhilHealth coverage, is therefore critical to contribute to the formulation of more sustainable health policies in the future.

Table 2 Per Capita Health Expenditures

ITEM	AMOUNT			GROWTH RATE	
	2014	2015	2016	2014-2015	2015-2016
Per Capita Health Expenditure (in pesos, at current prices)	5,346	5,840	6,345	9.2	8.7
Per Capita Health Expenditure[a] (in pesos, at constant prices)	3,833	4,127	4,406	7.7	6.8
Population (in millions)	99.9	101.6	103.2	1.7	1.7

Source: Philippine Statistics Authority; [a] Computed based on the Consumer Price Index.

Figure 1 Health Expenditures by Financing Scheme, 2016
(in current prices)



Source: Philippine Statistics Authority

2.2 PhilHealth Coverage and Benefits

As per the 2013 amendment[2] to the NHIP, PhilHealth programs are classified into six major categories: formal economy, informal economy, indigents, sponsored members, senior citizens, and lifetime members. Detailed descriptions of each membership type are provided in Table 3. Based on the 2013 law, members belonging to the formal and informal economy are required to pay monthly premium contribution; the rest belongs to the non-paying category. In addition, principal members are allowed to have dependents or beneficiaries who fall under any of the following circumstances: a) legitimate spouse who is a non-member; b) children below 21 years old and are unmarried and unemployed; c) children over 21 years of age with disabilities who are totally dependent on the principal member for support; d) parents with permanent disability; e) parents who are 60 years old and above that are non-members; and f) foster children.

To be able to avail of benefit entitlements, premium contributions for at least three months must have been paid within the last six months by an enrolled individual (PhilHealth 2018). Premiums vary according to a member's income and membership category. The monthly premium is equally shared by the employee and the employer. As per Section 6 of the National Health Insurance Act of 2013 or Republic Act 10606, PhilHealth membership is mandatory nationwide. However, since some membership categories are not subsidized and, thus, not strictly monitored by the government, e.g., the informal economy, such

[2] The National Health Insurance Act of 2013 (R.A. 10606) is a major overhaul to the original National Health Insurance Act of 1995 (R.A. 7875). The 2013 amendment reclassified membership types i.e., to delineate sponsored members from indigent members, and include self-paying members and migrant workers into the informal economy (Pantig 2013: 42).

members "voluntarily enroll under the program and pay in full the prescribed premium contributions. Hence, the program remains voluntary despite the aforesaid provision of the law" (PhilHealth Circular 2017-0005: 1). The lack of mechanism to fully reinforce the law make PhilHealth a hybrid of both mandatory and voluntary health insurance scheme.

Table 3 PhilHealth Membership Categories

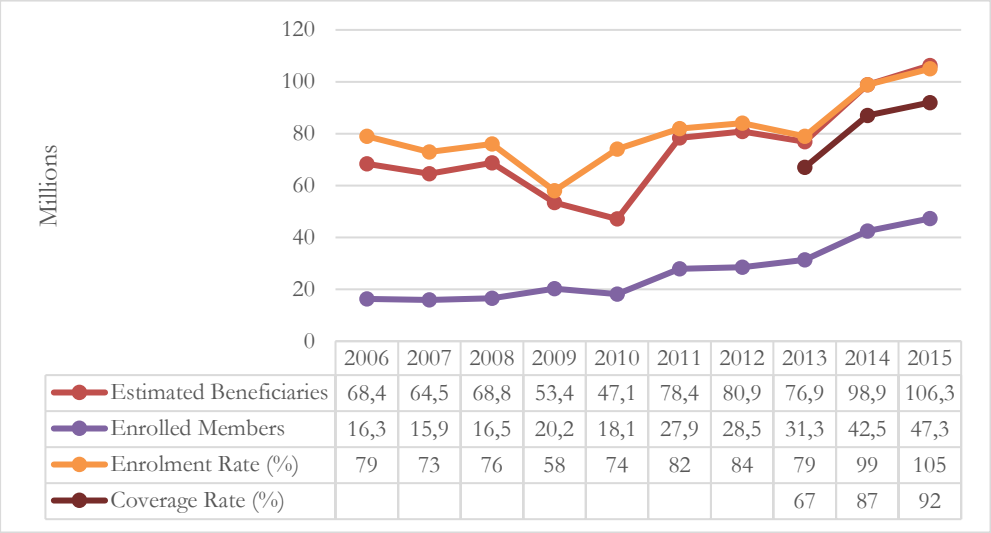
Membership Type	Premium Payment Category	Description
Formal Economy	Paying	Members with formal employment contracts, including employees in both private and public sectors, household staff, entrepreneurs, and family drivers; in this category premium contributions are proportionately shared between the employee and the employer.
Informal Economy	Paying	Members without formal or permanent contracts such as those in the informal sector, self-earning individuals, other organized groups; migrant workers are also included in this category.
Indigents	Non-paying	Members without visible source of income, or whose income is inadequate for family subsistence, as determined by the DSWD following the NHTS-PR criteria; the national government subsidizes their monthly premium contributions.
Sponsored Members	Non-paying	Members whose monthly premiums are being shouldered by another entity, such as local government units, government agencies, non-government organizations, and other private donors.
Senior Citizens	Non-paying	Members aged 60 years and above who are not currently covered by any of the existing PhilHealth membership categories; the national government has been subsidizing their monthly contributions since November 2014.
Lifetime members	Non-paying	Members in their retirement age who have made at least 120 monthly premium contributions. They are no longer required to pay monthly premium contributions.

Source: PhilHealth Website (www.philhealth.gov.ph), accessed August 2018.

In counting their members, PhilHealth differentiates between "enrollment" and "coverage" rates (Cabalfin 2016: 8). As defined in the NHIP Act of 1995, "enrollment" refers to the enlistment of members or dependents of the program wherein each gets a unique member identification number. Meanwhile, "coverage" refers to the entitlement of members or dependents to the benefits of PhilHealth. This means that individuals could be enlisted in the database but not covered by benefits unless a three-month contribution within the last six months has been paid. This is, however, not the case for the Indigent Program. Indigent members are compulsory members and—once enlisted by PhilHealth in its database—are automatically covered by the benefits. Figure 2 shows a detailed record of PhilHealth enrollment and coverage from 2006 to 2015. Except for 2007 and 2010, the number of enrolled members had been relatively increasing from 2006. Meanwhile, enrollment rate was particularly slow for the period 2006 to 2010, and even with a 18 percentage-point drop between 2008 and 2009. The surge in enrollment became more apparent in 2011 and 2014, largely due to massive enlistment of indigents to the program. Worth noting is the 106 million estimated beneficiaries in 2015 which is more than the projected population of that year. This is because the number of dependents for every principal member had been estimated per each membership type using multipliers (DOH 2010, as cited in Cabalfin 2016: 8). Finally, coverage rate posted steady increase between

2013[3] and 2015, recording a 25 percentage-point increase in coverage of the projected population during the period.

Figure 2 PhilHealth Enrollment and Coverage, 2006-2015



	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Estimated Beneficiaries	68,4	64,5	68,8	53,4	47,1	78,4	80,9	76,9	98,9	106,3
Enrolled Members	16,3	15,9	16,5	20,2	18,1	27,9	28,5	31,3	42,5	47,3
Enrolment Rate (%)	79	73	76	58	74	82	84	79	99	105
Coverage Rate (%)								67	87	92

Source: PhilHealth Statistics

In terms of insurance packages, PhilHealth classifies claims according to nature of illness: ordinary, intensive, and catastrophic cases. Based on these cases, and conditional on hospital accreditation, PhilHealth either implements the No Balance Billing Policy[4] or reimburses medical costs, covering professional and other fees, up to a fixed benefit ceiling per illness case (Pantig 2013). Indigents generally benefit at no cost from PhilHealth packages, however, some patients resort to reimbursement of fees if the membership databases have not yet been updated. In such cases, patients first need to pay their healthcare costs, sign a reimbursement form, follow up with PhilHealth on their membership update, and once updated, claim their reimbursement from the health facility where services are availed of. Additional costs beyond PhilHealth coverage must be shouldered out-of-pocket by patients, by the hospital facility, or through other health insurance membership. The benefit ceiling is standard across membership types but indigent and sponsored members as well as their dependents enjoy additional coverage for outpatient services. Other PhilHealth benefits include: Maternity Package, Newborn Care Package, Primary Care Benefit 1 Package (PBC1), Primary Care Benefit 2 Package (PCB2), and Z Benefit Package (Pantig 2013: 36). PhilHealth benefits also cover illnesses that are targeted to be eradicated under the Millennium Development Goals such as tuberculosis, HIV-AIDS, malaria and cataract, and animal bites. These benefits are categorized as PhilHealth's MDG Package (Ibid.). These packages are covered across membership types provided that a member has at least three-month contribution within six months prior to availment of health services. Per PhilHealth Circular 14, s-2013, case

[3] PhilHealth began monitoring coverage rate only in 2013 (Cabalfin 2016).

[4]Specifically, Section 34-A of the IRR of R.A. 10606 stipulates that "no other fee or expense shall be charged to the indigent patient, subject to the guidelines issued by the Corporation. All necessary services and complete quality care to attain the best possible health outcomes shall be provided to them."

rate amounts for certain medical conditions differ when services are availed from primary care facilities (PhilHealth 2018).

2.3 Targeting and Financing of the Indigent Program

The Indigent Program, whose members serve as the unit of analysis in this paper, underwent a series of reforms in identification and coverage following the NHIP amendment in 2013. The reforms aim for a more pro-poor and inclusive delivery of health services and financial protection, ensuring wider benefits for everyone, but especially for poverty-stricken families. Such efforts gained traction and led to a huge leap in coverage among indigents from 2013 onwards, as the poorest and near-poor families identified by the DSWD became compulsory members to the program and entitled to its benefits. Members of the Indigent Program do not need to actively register as they are automatically enlisted in PhilHealth and accredited hospital databases after selection and, thereafter, informed by PhilHealth.

The NHTS-PR, which has been the official targeting system being used beginning 2010 to identify indigents eligible for enrollment, involves three consecutive phases: geographic targeting, household assessment, and validation (Fernandez 2012: 7-8). The first step involves identification of priority areas based on measures of poverty incidence in provinces and municipalities. Once targeting and enumeration are implemented based on specific criteria, household assessment is then conducted. In this second step a team of field enumerators, supervisors, area coordinators and encoders collect information from households through a survey interview and applies the proxy means test approach to determine their welfare and economic situation. The data collected are electronically transmitted to the regional offices of DSWD for further assessment. Using the proxy means test model the average household income of households is computed and compared against the provincial poverty thresholds to gauge whether a household can be considered poor or non-poor. Finally, the third step is acquiring community feedback. The provisional list of poor households gets posted in communities to receive complaints and objections from village members, if any (Ibid.). Should there be instances of grievances, a two-parallel process namely complaints resolution system and social marketing campaign are conducted and handled by a municipal validation committee. Upon gathering of evidence, verification of data, and exclusion of the non-poor, the final list of households is obtained. Per Executive Order No. 867 of 2010, the NHTS-PR list is required to be updated every four years (Fernandez 2012: 9).

When it comes to financing the benefit payments of the Indigent Program, the national government primarily relies on the premium contributions of paying members (i.e., formal and informal economy) as well as private and public entities that sponsor the premiums of members (Pantig 2013: 11-12). Paying members' premium contributions comprise 85 percent of PhilHealth's total income and the remaining 15 percent is derived from grants, rents, interest income, dividends and income sourced from the Sin Tax Law (Ibid.).

Chapter 3 Review of Literature

This section provides relevant empirical evidence on the impacts of SHI with focus on healthcare utilization, out-of-pocket expenditures, and other related health outcomes, relative to different populations and contexts. These outcomes are of inherent interest to the current study and provides an understanding of what has been done already in the field as well as the gaps that need to be addressed. This section also presents a number of related concepts that provide a systematic way of understanding health insurance uptake and utilization. An important observation is that while there has been abundant work on this subject, the results are generally mixed and inconclusive owing to differences in methodological approach, target population and sample, and the institutional setup of various countries.

3.1 SHI and Concepts Related to Insurance Uptake

Attaining universal health care has been high on the policy agenda in many developing countries in recent times. This has led to the development or expansion of existing SHI programs that cater to the different needs of populations. Although governments typically put in place premium contributions to manage fiscal sustainability, the idea of achieving universal health care stems from concerns over inequities in access to healthcare services (Ziebarth 2017; Jowett 2004). Put differently, more affluent individuals could afford to pay higher premiums for greater insurance coverage and better care and facilities, while the poor could barely spare a proportion of their income on basic insurance premiums. Thus, SHI schemes are ideally designed not only to extend financial risk protection to a greater number of people who may already have some sort of insurance, but to give favored treatment for the poor and the vulnerable so that they, too, could avail of the needed healthcare services without incurring catastrophic medical payments. As Doetinchem, Carrin, and Evans (2010: 5) succinctly put, achieving universal coverage "does not necessarily mean enrollment in SHI for everybody, but it does mean that coverage by SHI for some must not reduce access, risk protection or equity for others." Unlike private health insurance, SHIs usually provide uniform benefits for all but ensure that the wealthy pay more premium contributions than the poor. However, in SHIs, the amount of contributions is independent of the health status of the individual (Ibid: 4). In such schemes, chronically ill people do not need to pay more than the healthy, to ensure that the financial burden is equitably shared across beneficiaries. This mechanism is facilitated as governments mobilize resources and pool funds to finance health services, through tax revenues and other sources of income. Therefore, all health insurance programs provided by the government and not by the private sector, are loosely referred to as social health insurance. (Ziebarth 2017: 3). SHIs are further classified by governments as compulsory, voluntary, or a mixture of both.

The widespread introduction of health insurance schemes in developing countries is partially motivated by concepts that evolved in the context of developed countries. In neoclassical economics, the very basic assumption on the existence of health insurance is the demand for it (see Besley 1989). Following the

economic theory of demand, health is a "good" that can be substituted or traded off against other commodities and, thus, demand for health is subject to the varying tastes and preferences of individuals (Besley 1991, as cited in Jowett 2004: 4). Similarly, the theory of adverse selection in the presence of asymmetric information can be applied in the context of health insurance. This generally refers to a situation where insured individuals have information that insurers do not have, or vice versa, about the probability of falling ill as well as other health-seeking behaviors (Jowett 2004). This is one lens to understand insurance uptake and healthcare utilization. Another concept that is widely used in the analysis of health insurance schemes is moral hazard. In health insurance, this refers to the tendency of insured individuals to expose themselves to risks or increase their consumption of health care as insurers bear the costs of these risks (see Arrow, 1963; Pauly, 1974; Cutler and Zeckhauser 2000). While this is applicable in private health insurance schemes, this may not be entirely the case in SHIs. It has been argued that in many low-income countries, where levels of unmet social needs among the poorest tend to be greater than the benefits they could gain from insurance, increase in healthcare consumption is not necessarily problematic (Silfverberg 2014; Jowett 2004). For instance, in the Philippines, membership to the national insurance program is compulsory and free for qualified indigents. Yet, despite the efforts to make SHI universal, evidence suggests low demand for health services among those who mostly need it (e.g., Quimbo et al. 2008).

3.2 Evidence of the Impacts on Healthcare Utilization

Various empirical research about SHI have focused on how it influences healthcare utilization among insured individuals (see Azam 2018; Bernal, Carpio and Klein 2017; Li and Zhang 2013; Liu 2016; Ma and Cen 2017; Sparrow, Suryahadi and Widyanti 2013; Chatterjee et al. 2018). Depending on definition and source of data, measures of healthcare utilization include the quantification of hospital or clinical visits for both preventive and curative care and the use of medication and treatments.

The study of Sparrow, Suryahadi and Widyanti (2013) in Indonesia explores the effects and the targeting approach of the country's SHI called 'Askeskin Program'. Drawing the analysis from a panel of more than 8,500 households using nationally-representative socioeconomic survey and applying differences-in-differences estimation, together with propensity score matching, the authors find that this SHI is successful at targeting its intended population—the poor and other marginalized sectors that are vulnerable to high out-of-pocket expenditures. They also find that the Askeskin Program increased access to healthcare services among the poor. A notable finding is that SHI did not provide protection against out-of-pocket spending and—in fact, even increased personal health expenditures—among insured individuals in urban areas. Similar evidence emerged from the recent work of Azam (2018) in India, and Bernal, Carpio and Klein (2017) in Peru on their impact evaluations of SHI in these respective countries.

Using a methodological design similar to Sparrow and colleagues' (2013), Azam (2018) examines the effects of India's national health insurance (also known as RSBY) on healthcare utilization for short- and long-term morbidity as

well as out-of-pocket expenditures. Overall, he finds positive effects of the national insurance on detection and treatment of long-term morbidity for rural households but not for urban beneficiaries. Furthermore, insurance coverage did not reduce out-of-pocket spending for both rural and urban households. A related study in India by Chatterjee and colleagues (2018), on the one hand, examines the role of peer effects in increasing utilization of hospital care among insured individuals. Using a panel data to evaluate the impacts of a health insurance program in Karnataka, India, they find that healthcare utilization induced by health insurance membership and insurance-related activities results in multiplier effects, thereby optimizing future use of health services through "spatial peer effects" (Ibid: 139).

Meanwhile, the study in Peru focuses on the impact of SHI on care consumption among poor individuals working in the informal labor sector. In their analysis of a cross-sectional data using regression discontinuity design, Bernal, Carpio and Klein (2017) find robust results on increased hospital visits for low-cost care consumption (e.g., medical tests) but less pronounced effects on preventive care. Moreover, they find that SHI is associated with increased personal spending on medicines and surgery, mostly due to supply-side constraints in Peru. There are two clear limitations in the abovementioned studies: first, none of the indicators they used measure direct health outcomes; second, supply-side factors are not considered in the analyses. Nevertheless, it is reasonable to argue that better healthcare access could ultimately lead to improved health outcomes, and in that respect, the objectives of the foregoing papers have been met.

In the case of China, Li and Zhang (2013) investigate the effects of three health insurance programs on healthcare consumption among elderly people in two provinces. The data is drawn from the 2008 pilot survey of the China Health and Retirement Longitudinal Study of over 1,500 households and 2700 individuals. Their findings indicate that in comparison with uninsured individuals, those who are members of two out of three health insurance programs are more likely to use outpatient services. Among those who have at least one instance of outpatient hospital visit, the three insurance programs do not statistically differ with regard to the total number of outpatient visits in both provinces. Complementing this study is the recent paper of Ma and Cen (2017) that examines the impact of the New Cooperative Medical Scheme on health service utilization in a Chinese rural region. Again, the focus is on inpatient and outpatient visits and the probability of receiving health examination. Using the 2000 and 2011 rounds of the China Health and Nutrition Survey and employing a difference-in-difference method in their long-term panel data, the researchers find no statistically significant effect on utilization outcomes. Health insurance membership also did not increase the probability of receiving a health examination from a long-term perspective. Following these results, Ma and Cen (2017) argue that there may be other factors such as healthcare demand and lifestyle considerations that influence utilization of health services.

3.2.1 Effects on Maternal Health and Delivery Care Services

Turning to the Philippines, two studies examine the impacts of national health insurance membership on the use of prenatal care and facility-based delivery for childbirth among mothers (Gouda et al. 2016; Kozhimannil et al. 2009). Using two waves of the country's National Demographic and Health Survey (i.e., 1998

and 2003), an earlier study of Kozhimannil and colleagues (2009: 2) examine the joint effects of two programs: the then-expanding national health insurance program or PhilHealth and a donor-funded franchise of midwife clinics called Well-Family Midwife Clinics. After employing a longitudinal multivariate logistic and linear regression models, they find that PhilHealth coverage increased the odds of receiving prenatal visits and first trimester pregnancy visits. In contrast, the presence of Well-Family Midwife Clinic Program was not associated with improved prenatal care among women. There could be a number of potential reasons as to why the two programs produced different results in terms of impacts on prenatal care standards. The authors argue that program differences in scale and substance may well be one of these reasons, particularly as the midwife clinic program is a smaller-scale intervention with much limited scope and reach, thus failing to achieve population-level impacts (Ibid: 10).

The more recent work of Gouda and colleagues (2016) exploit the natural experiment setup of the 2013 National Demographic and Health Survey and use propensity score matching to analyze the impact of health insurance on utilization of facility-based childbirth delivery among mothers. Their findings reveal that insured mothers who gave birth in the previous year were 5 to 10 percentage points more likely to use facility-based delivery services compared to those that were uninsured (Ibid: 11). Furthermore, the effects are higher and significant for poor women living in rural households. This indicates positive results and suggests that PhilHealth had been effective in increasing women's access to maternal care in the Philippines at that specific point in time.

3.3 Impacts on Out-of-Pocket Expenditures

While many studies in the past assess the impacts of health insurance on a string of healthcare utilization variables which already include out-of-pocket expenditures, there are also previous empirical work that focus mainly on the protective effect of insurance on personal health spending (Grigorakis et al. 2016; Liu, Wu and Liu 2014; Wagner et al. 2018; Zhang, Nikoloski and Mossialos 2017). One of the latest research on the topic is that of Wagner and colleagues (2018). Their study investigates the extent to which health insurance coverage or improved quality at the hospital level protects individuals from out-of-pocket spending. Using a randomized controlled experiment with over 3,000 child-patient observations in the Philippines, they find that health insurance coverage and improved hospital quality both had significant effects in reducing out-of-pocket payments. In particular, improved medical abilities of doctors reduced "unnecessary" diagnostic tests and prescriptions of medicines, thereby lessening out-of-pocket spending (Ibid: 57). Improved hospital quality is also seen enhancing the accountability of healthcare providers in terms of provision of services. This corroborates the findings of Liu, Wu and Liu (2014) in China, who likewise find a significant reduction in personal health spending owing to health insurance membership. Interestingly, these results are in contrast with the findings in India, Peru, and Indonesia mentioned earlier (e.g., Azam 2018; Bernal, Carpio and Klein 2017; Sparrow, Suryahadi and Widyanti 2013).

There are also studies indicating mixed results on the effects of SHI on out-of-pocket payments. Zhang, Nikoloski and Mossialos (2017) highlight these differences and find evidence indicating that mainly low- and medium-income

individuals benefit from reduced personal health expenditures. Yet, the financial protection for those that have huge medical costs remains limited due to minimal coverage of some health insurance programs. On the other hand, the study of Grigorakis and colleagues (2016) in Greece explores how the SHI program in the country protects insured members against out-of-pocket spending. Using a cross-sectional study with a final sample of 413 hospitalization cases, the authors employed a multivariate regression analysis to measure their study outcomes. Overall, they find that despite full coverage, health insurance did not protect its members from out-of-pocket expenditures, particularly among inpatient services in private hospitals. One methodological concern in their paper is that the authors implemented a non-probabilistic convenience sampling strategy to collect observations. Thus, the regression analysis employed to process the data likely produced biased estimates due to the nature of their data collection.

Clearly, the existing literature provides mixed results regarding the impact of SHI on a variety of outcomes. From a development studies perspective this rationalizes the need to constantly evaluate development programs to clearly establish links between past, current, and future development work, and assess whether such initiatives are going in the right direction or needing reorientation and improvement. In this sense, the current paper hopes to fill some potential gaps by assessing the role of SHI on healthcare use among Filipino indigents using both quantitative and qualitative approaches.

Chapter 4 Methodology

This section outlines the analytical framework used to measure the impact of SHI membership on various outcomes of healthcare utilization among Filipino indigents under PhilHealth. It begins with a description of the data followed by the empirical approach and estimation strategy used in the analysis. It also includes a discussion on a range of explanatory variables that are controlled for in the empirical specification as well as relevant summary statistics.

This paper exploits a natural experiment and employs a combination of quantitative and qualitative approaches to address the research questions and objectives of this paper: first, an econometrics method to assess how SHI membership affects healthcare utilization among poor and vulnerable households—identified and covered under PhilHealth's Indigent Program; second, a qualitative method via key informant interviews to supplement the quantitative findings and present information regarding healthcare utilization choices and perceptions of quality of care among selected members of the Indigent Program.

4.1 Data

4.1.1 Quantitative Data

To examine the effect of SHI membership on healthcare utilization outcomes, three waves of the Philippines' National Demographic and Health Survey (henceforth, NDHS) were employed in the analysis. The NDHS is a series of nationally-representative demographic and health surveys in the Philippines being conducted every five years by the Philippine Statistics Authority. It is designed to collect a wide array of socioeconomic and health indicators both at the individual and household level that are necessary for program planning, policy-making, and monitoring and evaluation of population and health programs. The NDHS uses a multi-stage sampling strategy with stratification by region and clustering by local settlements, which is at the *barangay* level. No ethical approval was necessary for this study given the use of anonymous and publicly available secondary data.

The target population are members as well as members' dependents under PhilHealth's Indigent Program. Members of said program refer to persons belonging to the two bottom quintiles of the population purposively identified by the DSWD through the NHTS-PR listing, whose insurance membership premiums are fully subsidized by the national government. PhilHealth indigent members are identified in the survey by asking respondents to report their health insurance membership types and categories. Thus, for the study, I use this subset of the NDHS data to analyze information on various indicators of healthcare utilization for inpatient and outpatient care, and out-of-pocket payments, together with corresponding demographic characteristics and socioeconomic information.

Data are drawn from the 2008, 2013, and 2017 rounds of the NDHS. This survey is standardized and conducted repeatedly with different cohorts participating at different time points (Li 2011: 12). Although it contains a time component, repeated cross-sectional data differ from the structure of a panel data, as the latter includes information on the same units that are collected at subsequent follow-up occasions, while the former consists of different subjects per specific period of time. The three waves of NDHS are combined and analyzed as a pooled cross-sectional data. Given the nature of introduction and expansion of PhilHealth across the Philippines, there are no conspicuous before-and-after intervention effects in this "natural experiment"; rather, the analysis of the multiple cross-sectional data allows us to observe how coefficients change over time and to control for observed and unobserved factors that do not change over time but may have an influence on healthcare utilization.

The three-year pooled data contains a total of 85,757 individual observations of both PhilHealth indigent members (i.e., the treatment group) and individuals who do not belong to PhilHealth or any insurance schemes (i.e., the control group). To ensure comparability of observations, the control group is constructed using a specific category of non-PhilHealth members—those individuals who, like the indigent members, also belong to the bottom two quintiles of the population that are equally poor but are not covered by PhilHealth benefits or any other health insurance programs. As discussed in Chapter 2, the indigent program has been expanded by the national government to include all poor and near-poor families that cannot afford basic health services. Yet, there remains a proportion of the target population that exhibits the same characteristics as the indigent members, that are not covered by the program[5] (see Bredenkamp et al. 2017; Silfverberg 2014). In effect, individuals belonging to the two poorest quintiles that may have been equally eligible to be part of the indigent program are likely, on average, to exhibit similar observable characteristics as that of the indigent members, except for their insurance treatment status. For this study, nearly two-thirds of the sample are non-members (62.5%) while the remaining 37.5% are indigent members and dependents (see Table 4). Non-responses to healthcare related questions, the top and bottom outliers, and PhilHealth indigent members who are also members of other insurance schemes have been omitted from the analysis.

As an additional check, we constructed an alternative specification of treatment and control groups for the two waves of the dataset: 2013 and 2017. The alternative groups include individuals who are members of the conditional cash transfer program (hereafter, CCT) of the Philippines. Considering that the selection of CCT beneficiaries uses exactly the same method as the identification of PhilHealth indigent members via the NHTS-PR listing, it is highly likely that members of the CCT program, conditional on their PhilHealth indigent status, exhibit the same observable and unobservable characteristics, and are therefore comparable in the current analysis. Table 5 shows that almost 29% of CCT members do not belong to PhilHealth Indigent Program or to any other health insurance schemes, whereas 71% of all CCT members in this sample are also PhilHealth indigent members. While the main units of analysis in this paper are the previous set of treatment and control groups in Table 4, selected regression

[5] This is referred to as "under-coverage" by Silfverberg (2014: 79)

results are also presented for the alternative CCT group to check the sensitivity of impact of SHI on healthcare utilization.

Table 4 Data on PhilHealth Indigent Status

PhilHealth Status	2008		2013		2017		Total	
	N	%	N	%	N	%	N	%
Non-Members[a]	20,019	77.6	12,872	39.2	20,753	76.6	53,644	62.6
Indigent members[b]	5,772	22.4	19,997	60.8	6,344	23.4	32,113	37.5
Total	25,791	100.0	32,869	100.0	27,097	100.0	85,757	100.0

Notes: [a]Non-members include individuals from the two bottom quintiles of the population who do not belong to any health insurance schemes. [b]Indigent members are also from the two bottom quintiles of the population who belong only to PhilHealth and not to other insurance programs.

Table 5 CCT Members, Conditional on PhilHealth Indigent Status

PhilHealth Status	2013		2017		Full Sample	
	N	%	N	%	N	%
Non-Members[a]	2,808	21.3	4,197	50.0	7,005	28.7
Indigent Members[b]	13,178	82.4	4,189	50.0	17,367	71.3
Total	15,986	100.0	8,386	100.0	24,372	100.0

Notes: [a]Non-members refer to CCT beneficiaries who do not belong to PhilHealth or any other health insurance schemes; [b]Indigent members include CCT beneficiaries who are also PhilHealth indigent members but are not members of any other health insurance programs. CCT members belong to the two bottom quintiles of the population as identified by the DSWD NHTS-PR *Listahanan*.

A key section of the NDHS also contains information on indicators of healthcare utilization and health expenditures. PhilHealth data are classified according to membership categories, and information on other types of health insurance and social protection program memberships are likewise provided. Similarly, data on incidence of outpatient visit in the last 30 days and inpatient visit or confinement in the last 12 months are recorded, along with the reasons for visiting or being confined in a health facility. Out of the total reported cases of outpatient utilization (see Table 6), 30% of uninsured individuals and approximately 43% of indigents had an outpatient visit. Across the years, the main reason cited by many for visiting a health facility is being sick or injured (63%), followed by medical check-up (17.2%) (see Table 7). For the 2013 and 2017 individual cross-sections, 10.7% and 3.1% members, respectively, reported visiting a health facility as required by being a recipient of the conditional cash transfer program.

The incidence of confinement is comparatively lower than outpatient visit with 16% among the uninsured and 23% among indigents for the entire sample (see Table 6). The primary reasons for confinement as reported by respondents are being sick or injured (79%) and giving birth (19.6%) (see Table 7).

Table 6 Incidence of Healthcare Utilization

PhilHealth Status	2008	2013	2017	Full Sample
A. Outpatient Care Use				
Non-member	6,170	4,803	5,200	16,173
(%)	(30.8)	(37.3)	(25.1)	(30.0)
Indigent Member	2,110	9,695	1,942	13,747
(%)	(35.6)	(48.5)	(30.6)	(42.8)
B. Inpatient Care Use				
Non-member	3,340	2,411	2,957	8,708
(%)	(16.7)	(18.7)	(14.2)	(16.2)
Indigent Member	1,505	4,843	1,317	7,665
(%)	(26.1)	(24.2)	(20.8)	(23.4)

Table 7 Reasons for Visiting Health Facility, %

	Outpatient Care Use				**Inpatient Care Use**			
Reported Reasons	2008	2013	2017	Full Sample	2008	2013	2017	Full Sample
Sick/injured	72.3	59.4	61.6	63.3	87.5	77.8	71.1	79.0
Gave birth		0.5	0.5		10.4	21.3	27.2	19.6
Executive check-up					0.7	0.3	1.2	0.6
Dental care	2.0	0.9	0.4	1.1				
Medical check-up	23.3	20.9	25.3	17.2				
Medical requirement	0.7	1.0	4.1	1.6				
Pre-/post-natal check-up		3.7	4.8					
CCT requirement		10.7	3.1					
Immunization/vaccination		2.6						
Family planning		0.2						
Miscarriage						0.4		
Premature baby						0.2		
Other	1.6	0.2	0.1	0.5	1.4		0.5	
N	1,965	3,778	1,739	7,482	901	1,357	779	3,037

4.1.2 Data Limitations

In terms of health expenditures, the NDHS records the total costs for outpatient and inpatient care as well as the amount paid by PhilHealth during confinements. These information as well as additional descriptive statistics on socioeconomic characteristics, household level characteristics, wealth quintiles, and wealth characteristics conditional on PhilHealth membership status are summarized in Section 4.4. There are also a number of data limitations in this study that must be pointed out. First, while it may be worthwhile to compare the type of healthcare providers used for outpatient and inpatient care by respondents, these information are categorized differently among the three rounds of surveys, thus

making observations incomparable. Second, there are no information on payment source for inpatient care, and the information on payment source for outpatient care is available only for a fraction of the total respondents that reported visiting a health facility in the past 30 days. Third, the three survey rounds are not completely uniform in all of its variables, including those that are pertinent for this study. For this reason, some key variables were analyzed only for the combination of years where applicable. Finally, the analyses of the effect of SHI on healthcare utilization outcomes is limited to the PhilHealth membership status of the individual and not on the actual use of PhilHealth benefits.

4.1.3 Qualitative Data

For the qualitative part, key informant interviews were conducted to collect information regarding healthcare utilization choices and perceptions of care quality in terms of medical services and PhilHealth benefits availed of. Considering the time and financial constraints, I opted for convenience sampling to select and interview five (5) key informants: three males age 46, 32, and 48; and two females who are 54 and 59 years old. The in-person interviews were conducted among selected indigent members of PhilHealth from Central Luzon and the National Capital Region of the Philippines, who have, at least once, used their SHI to avail of facility-based healthcare services. Sample questions and brief profiles of interviewees are provided in the appendices 2 and 3. The interviews were conducted between August 10 and 15, 2018 and the duration for each interview was approximately 30 to 45 minutes. Key informants freely mentioned indicators of quality of care other than those that have been asked in the guide interview sheet. The qualitative findings are incorporated in the Results Section in Chapter 5 as quoted text supplementing the quantitative discussion. All the names used in this paper are aliases and not the interviewees' real names to ensure their anonymity.

4.2 Empirical Approach

The focus of the analysis is to determine the impact of a dichotomous treatment variable, that is, being a PhilHealth indigent member or dependent, on a set of outcome variables characterizing healthcare utilization, while controlling for observable characteristics that might confound the outcomes. Healthcare utilization is defined by two outcomes of health facility use: (1) incidence of hospital visit in the past 30 days (i.e., outpatient care) and (2) incidence of hospital confinement in the last 12 months (i.e., inpatient care). The effect of health insurance coverage on out-of-pocket payments is measured in terms of its effect on (3) the total cost of outpatient care (4) the total cost of inpatient care and (5) the amount paid by salary, loan, or sale of properties for confinement. These outcomes are compared for the overall healthcare utilization among PhilHealth indigent individuals and non-insured individuals, and differentiated between adults and children age 15 and below. Selected results are also presented for the alternative treatment and control groups of CCT members.

A crucial empirical problem for inferring causal effects in natural experiments is the existence of selection bias (Rosenbaum 1996; Caliendo and Kopeinig 2008; Li 2011: 2). This endogeneity problem pertains to the manner of

selection into SHI, considering the simultaneous nature of insurance uptake and healthcare demand (e.g., Sparrow, Suryahadi and Widyanti 2013; Zhang, Nikoloski, Mossialos 2017). In the present case, participation in PhilHealth is non-voluntary. Indigent members are selected into the program through targeting based on the selection criteria of the DSWD NHTS-PR method. While self-selection is generally not an issue in the nature of PhilHealth indigent membership, we must be cautious in claiming causality from the relationship between SHI and healthcare utilization considering that membership into the Indigent Program, albeit compulsory, is still non-random.

While there are various econometrics methods[6] to correct or minimize endogeneity biases in observational data that use household surveys, two of the possible regression-based strategies that are applicable in the current case are matching methods and fixed effects models. The basic intuition of matching methods is to compare the treatment group to a large group of non-participants with similar pre-treatment observable characteristics using balancing scores (Rosenbaum and Rubin 1983, as cited in Caliendo and Kopeinig 2008: 32). The matching procedure based on balancing scores is known as propensity score matching (hereafter, PSM). To isolate the effect of PhilHealth the main strategy is to compare the healthcare utilization probabilities between PhilHealth indigents and uninsured individuals identified earlier in the data section. PSM relies on the identifying assumption that unobservable factors do not influence healthcare utilization among indigents as well as affecting the selection into the program.

Following the basics of Roy-Rubin Framework (Roy 1951, Rubin 1974; as cited in Caliendo and Kopeinig 2008: 1), identifying the impact of PhilHealth membership on the outcome probabilities of beneficiaries rests on the alternative scenario of how the outcomes would have been different had they not received the treatment. As proposed in the Roy-Rubin Model, for a dichotomous treatment variable, let $\boldsymbol{D_i}$ be equal to 1 if the individual is a PhilHealth Indigent member and 0 otherwise. The outcome probabilities are then defined as $\boldsymbol{Y_i(D_i)}$ for each individual $\boldsymbol{i}$ and the treatment effect may be written as $\tau = Y_i(1) - Y_i(0)$, estimated using logit regression as a function of observable characteristics. Outcome variables for out-of-pocket payments are predicted as a tobit model. The counterfactual outcomes for the treatment participants are then estimated via average treatment effect on the treated (hereafter, ATT) (Heckman, Ichimura and Todd 1997), given as

$$\tau_{ATT}^{PSM} = E(\tau|D_i = 1) = E(Y_{1i}|Pr(X), D_i = 1) - E(Y_{0i}|Pr(X), D_i = 0) \qquad (1)$$

The predicted values from logit and tobit are used to generate propensity scores, $\boldsymbol{Pr(X)}$, for all treatment and control group units. The propensity scores are computed mainly as the probability of receiving the treatment condition of being in the SHI, given the observable characteristics $\boldsymbol{X}$. Variables $\boldsymbol{Y_{1i}}$ and $\boldsymbol{Y_{0i}}$ represent the outcome variables i.e., healthcare utilization outcomes and out-of-pocket payments. The ATT is calculated using five nearest-neighbor matching, and the estimates are restricted to the region of common support. After PSM we assessed the quality of the matched units to determine whether a "balance"

[6] Endogeneity-correcting econometric variables include, for instance, instrumental variables approach, selection-correction procedures, structural equations models, and fixed effects panel models, among others (see Wooldridge 2012).

was achieved between the treatment and control groups, then implement post-matching regressions using observations that are on common support.

More formally, the following main regression model is considered for the outcomes of healthcare utilization and out-of-pocket payments denoted by $\boldsymbol{Y_{it}}$. For a given subject $\boldsymbol{i}$ at time $\boldsymbol{t}$, let $\boldsymbol{SHI_{it}}$ denote treatment indicator (SHI = 1 for being a PhilHealth indigent member and 0 for being in the control group).

The potential outcomes are treated as a function of observed characteristics, that is,

$$Y_{it} = \beta_0 + \beta_1 SHI_{it} + \gamma SEC_{it} + \varphi HH_{it} + \theta T_i + \varepsilon_{it} \qquad (2)$$

Where $\boldsymbol{SEC_{it}}$ refers to a vector of individual-level socioeconomic characteristics, $\boldsymbol{HH_{it}}$ denotes a range of household level characteristics, including wealth indicators and household size, and $\boldsymbol{T}$ denotes the year of observation (i.e., 2008, 2013, or 2017). The parameter $\boldsymbol{\beta_1}$ represents the treatment effects, $\boldsymbol{\gamma}$ and $\boldsymbol{\varphi}$ are the coefficients of the explanatory variables, and the stochastic error term $\boldsymbol{\varepsilon}$, which is assumed to be normally distributed, represents the unobservable characteristics.

To control for time-invariant observed and unobserved characteristics that might influence the treatment status and outcomes we took advantage of the longitudinal aspect of the data and controlled for the cluster or enumeration area fixed effects (i.e., at the *barangay*/village level). This accounted for the time-invariant similarity, variation, as well as the unobserved heterogeneity across *barangays* in terms of infrastructure, economic development, health resources, and public health infrastructure, among others. Furthermore, the time effects or differences among the survey years were accounted for by including fixed effects for time through dummy variables in the model. Considering both time-invariant and entity-invariant unobserved characteristics, the equation is given as

$$Y_{it} = \beta_0 + \beta_1 SHI_{it} + \beta_2 X_{it} + \alpha_i + \theta T_t + \varepsilon_{it} \qquad (3)$$

a model that conditions out the unit and period specific effects, whereby the cluster area fixed effect, $\boldsymbol{\alpha_i}$, denotes the time-invariant unobserved characteristics across *barangays* and, $\boldsymbol{\theta_t}$, is approximated by time dummies. A range of time-varying household level covariates are also controlled for in the model ($\boldsymbol{X_{it}}$). Equation (3) is estimated before matching, and subsequently after matching, using only the treated and control observations that are on common support. Inverse probability weighting (IPW) approach is also implemented in this study to estimate the average treatment effect on the treated units. The standard errors are clustered at the *barangay* level to allow for any random correlation of unobservable characteristics within the enumeration area.

To check the robustness and sensitivity of results, particularly when it comes to unobserved shocks that could influence healthcare use and overestimate the effect of PhilHealth membership, I controlled for a measure of self-reported health status in some specifications (see, for example, Sparrow, Suryahadi and Widyanti 2013). Considering that health status might be considered an outcome variable itself and is subject to measurement error and reporting bias, the analysis for specifications with self-reported health status is presented separately in Appendix 9. This would allow us to see the possible bias, if any, of

unobserved health shock such as perceived illness condition, that could possibly drive up healthcare demand among individuals.

4.3 Explanatory Variables

The PhilHealth membership status of an indigent is the key explanatory variable to identify the effect of SHI. The main hypothesis is that, PhilHealth membership among indigents, or being a dependent thereof, positively influences utilization of healthcare among members and dependents of a household, considering that the benefit packages are extended to the dependents of the principal indigent member.

For the analysis, I also took into account the presence of alternative targeted poverty programs that might confound and bias the outcomes of healthcare utilization. In the case of PhilHealth, a likely confounding variable is the existence of the nationwide conditional cash transfer program, the *Pantawid Pamilyang Pilipino Program* (4P), which shares the same targeting system and criteria with the PhilHealth Indigent Program. Given the possibility of overlap between the two programs in terms benefits and requirements, I included a 4P dummy variable in the main specification to control the potential confounding effects.

In terms of individual socioeconomic characteristics, educational attainment, age, sex, and wealth index quintiles (bottom two quintiles) are controlled for. For demographic traits of the household, the number of children age 5 and below, household size, sex of head of household, and age of head of household are some of the variables that could influence healthcare utilization. The island distribution of households (i.e., Luzon, Visayas, and Mindanao) and the indicators of household wealth are controlled for in all specifications. These include the presence of electricity, radio, mobile phone, television, refrigerator, motorcycle or scooter and washing machine. The type of place of residence, whether rural or urban, is likewise controlled for in a number of specifications.

4.4 Summary Statistics

The main outcomes of this study are outpatient care use, inpatient care use, and measures of healthcare spending. Table 8 presents the summary statistics before matching for the outcomes of interest and for a range of explanatory variables conditional on PhilHealth membership. The statistics presented here are for the pooled sample. The separate descriptive statistics for the years 2008, 2013, and 2017 are provided as supplemental appendices 4, 5, and 6. Overall, the average incidence of outpatient utilization is about 35% for the full sample. Outpatient utilization is higher for PhilHealth indigent members (43%) compared to the uninsured (30%). Meanwhile, the incidence of inpatient visit or confinement is 19% for the pooled sample. Again, indigents (24%) share a higher proportion of confinement cases compared to non-members (16%). When it comes to the total cost of confinement, the average amount is PhP34,015 (1USD≈53.55 as of August 2018). Indigents tend to get higher average hospital bill for confinement at PhP41,054, compared to non-PhilHealth members at PhP27,003. Indigents also tend to pay higher average cost for outpatient treatments compared to non-members (PhP7,193 vs. PhP4,717). However, the former spends 35% less, on average, in the amount paid using income, savings, and loan.

In terms of socioeconomic characteristics insured indigents are, on average, young at 25 years old, many are residing in Mindanao Island (44%) specifically in rural areas (81%), has an average household size of six members, has electricity (60%) and possesses household items such as television (45%), radio (46%), and mobile phones (70%). Thirty-two percent have incomplete primary education, 21% reported having no education at all, and only 6% reach some level of tertiary education. Additional information in 2013 and 2017 further reveals that two-thirds of all insured indigents are likewise recipients of conditional cash transfer benefits. Based on these characteristics, it appears that PhilHealth is on track when it comes to targeting indigent beneficiaries. In terms of wealth quintiles, 46% and 54% of all indigents in this sample belong to the first and second bottom quintiles, respectively.

On the one hand, uninsured individuals in the sample are intentionally drawn and constructed from the two poorest quintiles of the population to compare with the indigent group. About 44% of non-members come from Mindanao Island, more than half are males, and only 32% live in urban areas, which is slightly higher than the indigent group. The average age of uninsured individuals is 24 years old, has a household size of approximately six members, and majority has male household heads (86%). Twenty-six percent of non-PhilHealth members reported having no education at all, 29% has some elementary education, and 5% reach college level. Additional household level characteristics indicate that uninsured individuals have at least one child below five years old in the household, two-thirds have electricity, the average age of household head is 46 years old, and that households own a television(40%), radio (39%), and a mobile phone (61%). Based on the 2013 and 2017 data, around 22% and 20%, respectively, are conditional cash transfer beneficiaries.

In spite of the apparent similarity of characteristics between indigents and non-members, the means comparison test indicates that there remains statistically significant differences between the two groups. Nevertheless, the total cost of inpatient care, age of household head, number of children below 5 years old, and residents of Visayas and Mindanao Islands are not statistically different between the two groups. To address this issue and reduce the sources of compositional differences, we carried out propensity score matching and implemented post-matching regressions using only the matched units that are on common support. As one would see later in Section 5.1.1 of Chapter 5, the difference in means tests after matching improved the results and reduced, albeit not completely, the substantive differences between the treatment and control groups (see Table 14), suggesting that the matching approach helped eliminate statistically significant differences in the covariates between the groups.

Table 8 Descriptive Statistics Conditional on PhilHealth Indigent Membership Before Matching, Full Sample (2008, 2013, and 2017)

	Non-member		Indigent Member		Means Test	Total	
	n=53,644		n=32,113		$H_0: \bar{x}_{NM} = \bar{x}_{Indigent}$	n=85,757	
	Mean	Std. Dev	Mean	Std. Dev	*p*-value	Mean	Std. Dev
Incidence of outpatient visit (1/0)	0.30	0.46	0.43	0.49	0.030	0.35	0.48
Incidence of inpatient visit (1/0)	0.16	0.37	0.24	0.43	0.088	0.19	0.39
Total cost of inpatient care (in PhP)	27003.23 (n=1,528)	138604.30	41053.59 (1,522)	175828.90	0.220	34014.59 (n=3,050)	15408.00
Total cost of outpatient care (in PhP)	4,717.22 (n=2,683)	1,679.79	7,192.58 (n=1,021)	1082.02	0.091	6009.191 (n=3,704)	827.41
Amount of inpatient care paid for by income/savings/loan (in PhP)	5801.72 (n=403)	8842.66	4297.26 (n=836)	10927.15	0.027	4786.60 (n=1,239)	10316.09
1st wealth quintile (poorest)	0.55	0.50	0.46	0.50	0.066	0.52	0.50
2nd wealth quintile	0.45	0.50	0.54	0.44	0.074	0.38	0.48
No education	0.26	0.44	0.21	0.40	0.092	0.23	0.42
Incomplete primary education	0.29	0.45	0.32	0.47	0.021	0.31	0.46
Complete primary education	0.12	0.33	0.14	0.35	0.033	0.14	0.34
Incomplete secondary education	0.14	0.35	0.15	0.36	0.043	0.15	0.35
Complete secondary education	0.13	0.34	0.12	0.33	0.087	0.13	0.33
Tertiary education	0.05	0.23	0.06	0.24	0.041	0.06	0.24
Luzon	0.32	0.47	0.36	0.48	0.012	0.34	0.47
Visayas	0.19	0.39	0.19	0.39	0.880	0.19	0.39
Mindanao	0.44	0.50	0.44	0.50	0.143	0.44	0.50
National Capital Region	0.05	0.22	0.01	0.11	0.052	0.04	0.19
Male	0.53	0.50	0.51	0.50	0.043	0.53	0.50
Urban	0.32	0.47	0.19	0.39	0.093	0.27	0.45
Household Size	5.83	2.63	6.17	2.41	0.074	5.96	2.56
Male household head	0.86	0.35	0.91	0.29	0.013	0.89	0.32
Age of household head	45.96	14.20	45.98	12.04	0.932	45.97	12.93
No. of children below 5 years old	1.00	1.08	0.99	1.01	0.210	1.00	1.04
Age	23.57	18.70	25.47	20.09	0.012	24.28	19.26
Has electricity	0.67	0.47	0.60	0.49	0.070	0.64	0.48
Has radio	0.39	0.49	0.46	0.50	0.054	0.41	0.49
Has tv	0.40	0.49	0.45	0.50	0.051	0.42	0.49
Has refrigerator	0.04	0.21	0.13	0.33	0.012	0.08	0.26
Has motorcycle	0.14	0.34	0.21	0.41	0.000	0.16	0.37
Has cellphone	0.61	0.49	0.70	0.46	0.000	0.65	0.48
Has washing machine	0.04	0.20	0.10	0.29	0.000	0.06	0.24

Chapter 5 Results and Discussion

The discussion of findings are separated into several sections based on the five outcome variables of this study. Meanwhile, the qualitative data regarding healthcare utilization choices and perceptions of quality of care are incorporated in the quantitative sections, as appropriate, to supplement the findings.

5.1 Estimating Healthcare Utilization Outcomes

This section presents results from the analysis of the impacts of SHI on healthcare utilization and expenditures. Using a pooled cross-sectional data from PhilHealth indigent members and a selected control group of non-insured individuals, we employed propensity score matching, fixed-effects model, and inverse probability weighting to assess the outcomes. As a preliminary analysis, logit estimation was initially applied to individual cross sections to estimate the probability of outpatient and inpatient utilization; and a tobit model to predict the effect on out-of-pocket payments, total cost of outpatient care and total cost of confinement. Logit and tobit estimates are presented in Tables 9, 10, and 11; the PSM results in Tables 12 and 13; post-matching descriptive statistics in Table 14; fixed effects results before and after matching in Tables 15 and 16; IPW results in Table 17; alternative treatment and control group results in Table 18; and supplementary regression tables in appendices 7 to 13.

5.1.1 SHI and Outpatient Care Utilization

We begin the discussion on the probability or incidence of outpatient care utilization. Table 9 shows logit estimates for the individual cross-sections as well as for the pooled samples. Without correcting for the potential endogeneity in the model, the estimates for individual cross sections across survey years indicate that participation in PhilHealth program increases the likelihood of visiting a health facility for consultation or treatment by about 6 to 6.5 percentage points for adults and 4.7 to 8.1 percentage points for children below 15 years old compared to those who are not members of the program. For the pooled sample, on the other hand, PhilHealth indigent membership is associated with a slightly higher probability of outpatient care use at around 12 percentage points for adults and 15 percentage points for children. The current findings remain statistically significant, for instance, even when excluding regional differences and educational attainment. However, for the years 2013 and 2017, specifications that do not control for the effect of conditional cash transfer program on the probability of outpatient utilization produced coefficients that are 3.9 percentage points more or 65% higher for adults' use of healthcare services in 2013 and 2.3 percentage points or 36% increase in 2017 (see appendix 7). The magnitude is even more pronounced for children where the effect without CCT is 6.6 percentage points higher (108% increase) for 2013. This confirms the need to control for the influence of other social protection programs that are similarly targeted to the poor, as the additional impact estimates may have been picked up

from the effect of the CCT scheme (e.g., Sparrow, Suryahadi, and Widyanti 2013).

The propensity score matching estimates reveal a similar statistically significant results on the effect of SHI on outpatient care use. For the pooled sample, the effect is much smaller than the logit estimates at 3.2 percentage points for adults and 1.4 percentage points for children under 15. For individual years, the increase in the likelihood of outpatient care utilization ranges between 1.4 to 9.7 percentage points for adults and 1.2 to 7.6 percentage points for children. With the differences in coefficients per year, albeit minimal, it may well be the case that there are time and fixed effects that must be taken into account in the analysis. To see these differences, we assessed the sensitivity of the results by implementing fixed effects regressions before and after matching as well as inverse probability weighting. Before proceeding with the findings, let us first turn to Table 14 which provides pre- and post-matching descriptive statistics along with a means comparison test for the matched sample that helped assessed the quality of the matching. Except for a number of household wealth indicators and type of area of residence, we find, based on the *p*-values, that the substantive differences between the means of the treatment and the control groups have been significantly reduced as a result of the matching.

Moving on to the results, the pre-matching fixed effects estimates in Table 15 shows a higher likelihood of outpatient care use among indigents at 6.6 to 7.6 percentage points for the pooled sample. The analysis of time fixed effects show that the probability of outpatient care utilization is much more pronounced in 2013 than in 2008 and 2017 (specifications 1 and 2, 9.1-9.2 p.p.), but not for 2017 compared to 2013 (specification 3, -10.2 p.p.).

The fixed effects results after matching in Table 16 does not change much the earlier findings in terms of significance. Again, the figures reveal positive relationship between PhilHealth indigent membership and the probability of outpatient visit by 5.2 to 6.6 percentage points, which is slightly lower than the pre-matching results. As an additional sensitivity test, we implemented regressions that controlled for an indicator of health status to see if this could be driving the probability of increase in healthcare use among PhilHealth indigents. The results of this analysis as well as the IPW findings are presented in Section 5.3 of this chapter together with the other outcome variables of this study.

In terms of other explanatory variables that predict the incidence of outpatient care, our findings reveal that the effect of education is not straightforward. Meanwhile, household size predict outpatient care use. Across all survey years, bigger households are more likely to use outpatient care compared to smaller households, especially those that have children below 5 years old. On the contrary, male-headed households are less likely to use outpatient care by about 3.5 percentage points for adults and 6 percentage points for children in the year 2008. The effects are somewhat lower though statistically significant for the year 2017. While we are unable to detect why patriarchal households have lower probability of using outpatient care, the qualitative findings provide a succinct explanation as to why this could be the case. One of this study's male interviewees, who is also the head of their household, explained that, the decision to visit a health facility for regular health checks is not always the priority unless treatment is needed, considering that he is most of the time spending hours on the field for farming or looking for another job when it is off season, *"My wife and I need to spend many hours in the farm. We are often loaded with work and could not always*

look after our children or ourselves especially during harvest season. We do not visit a health clinic unless we do not feel well. If it is just a flu or a fever, sometimes just taking a rest already does the job." [Totoy, 48, married, 4 dependents, farmer in Bulacan Province, Region III].

The abovementioned remark is not uncommon among the rest of the key informants of this study and, perhaps, in the context of low-income families with many child dependents in the developing world. It has been mentioned by the key informants that outpatient care visits for consultations are considered a second priority when it comes to household needs, as these entail costs of time and money (e.g., transport costs) and somewhat heightens the fear of getting diagnosed with an illness. Nevertheless, the key informants acknowledged the "relief" of having a government-sponsored health insurance as they found it considerably helpful in reducing the amount of personal money spent on outpatient treatments such as, minor wound surgeries, medical attention for dog and snake bites, skin burns, and stomach aches. Some informants also said they get these treatments covered by PhilHealth for free (i.e., the *zero balance billing*) in accredited hospitals and clinics, both private and public. As such, the key informants mentioned that they feel more "comfortable" and "relaxed" when availing outpatient care treatments, especially when they are already aware of the procedures for claiming PhilHealth benefits.

5.1.2 SHI and Inpatient Care Utilization

This study is also interested to estimate the link between participation in PhilHealth and use of inpatient care or hospital confinement among indigents. As in outpatient care use, the logit estimates in Table 10 shows a similar pattern across individual years and for the full sample. Among adults, the probability of hospital confinement increases by 4.1 to 8.2 percentage points among PhilHealth indigent members compared to non-members. The effect of SHI membership is statistically significant and much higher for children below 15 years old compared to adults. In 2008, the increase in probability of children using inpatient care is 7.3 percentage points or a 7% percent difference from adults' probability of utilization. The difference in probability of utilization between adults and children is around 33% in 2013, 26% in 2017, and 13% for the full sample. The propensity score matching estimates reveal the same results and the coefficients are not very different from the logit estimates (see Table 12). For individual years, the effect of SHI on the probability of inpatient care is between 3.3 to 6.6 percentage points for adults and 5.0 to 6.8 percentage points for children. In both approaches, we find that the effect in 2017 is much higher compared to the two previous surveys.

When it comes to the pre- and post-matching fixed effects results for the full sample, the coefficients remain positive and statistically significant, not much difference between the before and after effects, although a bit smaller compared to the logit and PSM estimates. That is, pre-matching estimates indicate a 3.8 to 4.2 percentage-point increase in the probability of inpatient visit among indigents whereas post-matching results reveal a 3.8 to 4.9 percentage-point increase. The year effect on inpatient care is only statistically significant for the years 2013 and 2017, indicating that in the latter period, indigents are 1.9 percentage points less likely to use inpatient services. The higher coefficient for 2013 may be explained, in part, by the expansion of PhilHealth membership and

coverage beginning 2011, and the impacts could have taken effect in the next two years.

In terms of sociodemographic variables, age appears to have a slight negative effect on the use of inpatient care. A one-year increase in age is associated with a .8 to 1.4 percentage-point reduction in the probability of hospital confinement among adults and children. Being male shows a positive correlation with the use of inpatient care but the effect is not statistically significant. Similar to the use of outpatient care, household size is also associated with inpatient care use. Individuals from bigger households are about 2 percentage points more likely to be confined in a hospital compared to smaller households. At the same time, those with children age 5 and below have a higher probability of being confined in a hospital.

Although the reasons for the differences in effects cannot be directly established through our estimates, it is safe to assume that the level of awareness regarding benefits is a crucial factor to improve the utilization of inpatient care among indigent members. Almost all key informants of this study remarked that the lack of information regarding the benefits and coverage of PhilHealth prevents them from availing of its benefits, even though they have been a member of the program for quite some time. As one respondent puts it,

> *It is only recently that we learned about our benefits and the extent of coverage of PhilHealth. Back then we did not know what benefits we are entitled of. Recently, we asked for this brochure from the local office and we have kept it since to guide us every time any member of our family needs to see a doctor. There are still many things about this list that we do not understand. Most of the time we just rely on the medical staff to apply our PhilHealth benefits and we do not ask questions. It is too complicated for us. We do not understand very much how it works and how much money they actually deduct from our bill.* [Elena, 54, married, 3 dependents, housewife in Bulacan Province, Region III].

The key informants also noted that they sometimes get advised by medical professionals from private health facilities to get confined even if their condition can be treated under outpatient care because, this way, they could maximize their benefits compared to when they only use outpatient treatment. In terms of PhilHealth's effectivity, this finding highlights the critical question as to whether all indigents benefit from the program. Although indigents do not have to actively register as they get automatically enrolled in the program, some of them may not be fully aware of their benefits and are dependent on medical staff to assist or inform them about the inpatient health packages that they could avail of. Some interviewees likewise mentioned that bureaucratic inefficiencies, such as government delays in the renewal of indigent membership has entailed costs on their part, for example, by paying their confinement bills first and only getting reimbursed three weeks later when their names appear on the updated database. Individuals who do not have any visible means of income, and are completely relying on PhilHealth for their healthcare needs, could not afford such delays. Needless to say, the indigents' lack of awareness about their privileges as well as the inefficiencies in the release of benefits are just some of the issues about inpatient care utilization that health policymakers could improve on and facilitate better.

5.2 SHI and Healthcare Spending

5.2.1 Total Cost Paid for Outpatient and Inpatient Care

This study also examines the effect of PhilHealth participation on average healthcare spending of individuals. The tobit estimates for the three indicators of healthcare spending i.e., total cost paid for outpatient care, total cost paid for inpatient care, and amount paid for confinement from income, loan or savings are presented in Table 11. Notably, the number of observations for healthcare spending regressions are much smaller compared to the total sample size for the reported incidence of inpatient and outpatient care use, due to the fact that only a proportion of those who reported inpatient care use in the last 12 months provided information about their cost of care.

Our findings on healthcare spending indicate that the influence of SHI on the total cost paid for both outpatient and inpatient care is not statistically different from zero across individual survey years (see Panels A and B). For the full three-year sample, however, we find a reduction in the total cost spent for outpatient care among indigents of about PhP2,600 for adults and PhP669 for children. Notwithstanding, this effect did not hold up in the subsequent PSM regressions (see Table 13) as well as in the pre- and post-matching fixed effects analyses (see Tables 15 and 16). Based on our estimates, there is no evidence of reduction in total outpatient care cost among the indigents that provided these information.

On the one hand, PhilHealth participation seems to increase the average total cost of inpatient care for children, however, the effect is not overwhelming. Looking at the propensity score matching coefficients in Table 13 and fixed effects regressions in Tables 15 and 16, the findings are consistent and we find that the results remain statistically not different from zero for individual years and for the pooled sample. Overall, the results do not provide statistically significant effect of SHI on the total cost of healthcare utilization. This might be partially due to the fact that healthcare spending in the Philippines is financed via multiple sources (e.g., income, savings, loan, donation), and PhilHealth only covers a fixed amount in these costs, that may be more or less than the total hospital bill. As mentioned earlier, some indigent interviewees benefit from the zero-balance billing of PhilHealth in which outpatient treatments are fully covered by the program; but, in some cases, they need to pay more than what is being covered by PhilHealth or resort to inpatient care use in order to maximize their benefits. Clearly, the effect of SHI in this case is not straightforward and while some indigents benefit in certain illness categories, others need to source money elsewhere to pay for additional costs beyond PhilHealth coverage.

An alternative scenario is to proceed to public health facilities or primary care centers which entails free healthcare services. However, the qualitative findings show that indigents prefer to go to private facilities over public health centers. The preference for private healthcare providers is a recurrent theme among the key informants of this study, and cited mainly as the reason for having a satisfactory experience. Public facilities have been regarded as unsatisfactory and least preferred by patients, *"public hospitals make you beg for your life. Yes, you get healthcare for free but then you need to line up for long hours before they could accommodate you. When you are in so much pain this system just do not work.* [Mario, 32, cohabiting with a partner, 2 dependents, construction worker, National Capital Region].

The perception that private healthcare facilities are more satisfying for patients compared to public healthcare providers point to the crucial influence of supply-side factors on healthcare utilization outcomes. For instance, the female respondents said that even though they are aware that medical consultation or outpatient care are for free in public primary care providers, they still opt to consult with private medical professionals, albeit with a fee, as it is seen as more trustworthy and efficient. The caveat in this view is the fact that patients rely on multiple medical opinions to get their desired treatments for outpatient and inpatient care, thus, possibly bringing their total costs and utilization up, instead of simply maximizing their PhilHealth benefits.

5.2.2 Amount Paid for Confinement from Income, Savings or Loan

Although we did not find evidence of reduction in the total amount paid for both outpatient and inpatient care use among Filipino indigents, the tobit results for out-of-pocket payments indicate that participation in PhilHealth is associated with a decline in the amount paid for hospital confinement sourced from income, savings or loan. This corroborates the recent findings of Wagner and colleagues (2018) in their experimental study about health insurance coverage and out-of-pocket payments in the Philippines. The coefficients presented in Panel C of Table 11 are for the years 2013, 2017 and for the two years combined, in current Philippine peso (PhP) prices. In 2013, PhilHealth membership reduces the average amount spent out-of-pocket of individuals by PhP2,995 for adults and PhP2,588 for children. For 2017 the reduction in out-of-pocket payments among adults is approximately PhP8,921 and about PhP1,729 for children under the age of 15. For the pooled sample the reduction is, on average, PhP4,204 for adults and a modest PhP1,747 for children. Again, we find a similar pattern in the propensity score estimates in Panel C of Table 13. The reduction in the total amount paid for confinement in 2013 was around PhP1,168 for adults and PhP1,321 for children. Without correcting for inflation, the decline in out-of-pocket payments for 2017 is slightly much higher than the previous survey round. Meanwhile, the fixed effects before and after matching for the pooled sample reveal the same statistically significant results, albeit more modest and significant only at the 90 percent confidence interval. Before matching, our estimates indicate a reduction of PhP3,363 in the amount paid using from income, savings or loan; and after matching, we find a reduction of PhP3,450, which is a close estimate to the former.

While the findings demonstrate encouraging results regarding the effect of PhilHealth on out-of-pocket spending, the data does not allow us to examine further the sources of the decreases in healthcare spending. Notwithstanding, it may be inferred that the recent expansion of PhilHealth benefits and coverage beginning 2011 could have contributed to the decline in out-of-pocket spending among indigent members. This implies that the poor may have benefitted from the extended coverage of PhilHealth packages, particularly for inpatient care. Overall, while the reasons for the reduction in out-of-pocket payments cannot be clearly established in this study and, thus, requires further investigation, there is a consistent, statistically significant, and substantial decline in the amount paid for hospital confinement from income, salary or loan, among children and adults based on the current data. This is an encouraging outcome for the expansion of PhilHealth membership and coverage, considering that it addresses some of the

major healthcare concerns among the poorest segments of the population, particularly in terms of underutilization of healthcare services and financial protection from catastrophic expenditures.

With regard to the qualitative data on healthcare utilization choices among indigents, a key takeaway from the interviews is the respondents' perception that PhilHealth membership is easily the "passport" to getting better treatments from hospitals and other health facilities, particularly among private healthcare providers. Almost all interviewees mentioned that they feel welcome and treated fairly every time they visit a health facility due mainly to their PhilHealth membership. They also acknowledged that PhilHealth is a "big help" when it comes to financing their healthcare needs, especially for treatments that they could have otherwise not afforded. As one respondent noted, *"We are being accommodated right away, and I think that it is mainly due to the fact that I am a PhilHealth member. Well, in general, you get better treatments if you go to a private hospital because they charge you for their services. With PhilHealth membership, they tend to maximize what can be deducted from the benefits. At the end of the day, it all boils down to business"* [Totoy, 48, married, 4 dependents, farmer in Bulacan Province, Region III].

This is a common sentiment among the interviewees who emphasized the corporatization of hospitals rather than prioritizing the health needs and welfare of the patients. Rodolfo, 46 years old, a farmer who had to seek three medical opinions from different private healthcare facilities to find out the best treatment option for his chronic kidney disease shared the same sentiment and said, *"they will just try to milk your pockets out until it is empty, convince you to get into expensive treatments even if you cannot afford it, and then keep you blindsided about cheaper, alternative options."* In the end he opted for a non-invasive treatment (i.e., medicinal maintenance) instead of an open surgery considering his budgetary constraints and the limited coverage of PhilHealth.

5.3 Sensitivity Analysis and Robustness Check

The findings of this study show for both propensity score matching estimates and fixed effects results that participation in SHI among Filipino indigents is robustly and positively correlated with outpatient and inpatient care utilization, and negatively associated with out-of-pocket payments. Although the coefficients change slightly depending on methodology and specifications, the results are consistently significant for the individual cross-sectional analysis as well as for the pooled sample. The overall flavor that emerges from the analysis is that SHI membership is associated with increases in healthcare utilization and reduction in the amount of personal income, loan, or savings used to finance hospital confinement. However, the evidence linking PhilHealth membership with the reduction in total amount paid for outpatient and inpatient care cannot be established. To further test the sensitivity and robustness of the results, we implemented post-matching fixed effects regressions that control for self-reported health status of individuals. This is measured by a binary variable in which the patient reported whether he or she was ill in the previous month. This allows us to check whether health status could be driving the probability of increase in healthcare use among PhilHealth indigents. At the same time, we also conducted inverse probability weighting, and additional analyses for the alternative treatment and control groups under the CCT program.

Table 17 presents the inverse probability weighting (IPW) results while Appendix 9 shows the post-matching fixed effects results of PhilHealth's impact on healthcare utilization and spending, while taking into account self-reported health status. Consistent with our previous results, our IPW estimates provide evidence of increase in the likelihood of outpatient care use among indigents for the pooled sample by 12.5 percentage points (see Table 17). This is rather similar to the earlier logit estimates for the full sample and much higher compared to the PSM and fixed effects results. PhilHealth indigent members are also 6.7 percentage points more likely to use inpatient care compared to non-members, and the amount they paid for hospital confinement from income, loan, or savings is reduced by PhP3,220, an estimate that is almost similar to the fixed effects results.

Even when controlling for self-reported health status (see specifications 2 in Appendix 9), the coefficients support the earlier estimates and persistently reveal that PhilHealth coverage does improve healthcare utilization among the indigents. Specifically, the likelihood of using outpatient care is 5.1 percentage points, and inpatient care is equivalent to 3.4 percentage points for PhilHealth indigent members. Expectedly, we also find that health status is significantly correlated with healthcare utilization. Out-of-pocket spending is also reduced by approximately PhP3,260 in current prices for the combined 2013 and 2017 survey years, although the effect is not as robust as the earlier estimations.

Finally, our estimates for the alternative treatment and control groups are presented in Table 18, with additional regressions in appendices 10 to 13. The alternative groups are constructed using individuals belonging to the CCT program of the country. The treatment group includes CCT members who are also PhilHealth indigent members, and the control group includes CCT members who are not members of any health insurance schemes. Both groups belong to the two bottom quintiles of the population and are targeted into the CCT scheme via NHTS-PR criteria. Similar to the main analysis of this paper, the alternative group is assessed using propensity score matching, inverse probability weighting, and fixed effects before and after matching. The findings emerging from this group is similar to our preferred units of observations earlier. That is, CCT PhilHealth indigent members exhibit increased probability of using outpatient care compared to the non-insured CCT members (PSM: 8.4 to 11.5 p.p.; IPW: 10.2 p.p.). However, compared to the main groups of observation in this paper, the CCT indigents' probability of outpatient care use have lower and less robust coefficients when analyzed using post-matching fixed effects (i.e., 2.4 to 2.6 p.p.). Meanwhile, we also find positive and significant relationship between SHI membership and inpatient care use among CCT PhilHealth members. The coefficients are between 3.7 to 4.9 percentage points using PSM, 1.1 to 2.6 percentage points via fixed effects after matching, and about 4.1 percentage points using inverse probability weighting. There is no evidence linking PhilHealth membership and total amount paid for outpatient and inpatient care among CCT members, but again, PhilHealth coverage is associated with a reduction in out-of-pocket payments for the CCT group by about PhP1,080 to PhP2,885 based on the different analytical methods used in our analysis.

While causality cannot be claimed and the possibility of unobservable characteristics confounding the outcomes cannot be completely ruled out in all the above analyses, it is safe to infer that, with the various approaches implemented

to check the robustness of the results, SHI has some positive influence on addressing the healthcare needs of the poor.

Table 9 Effect of SHI on the Probability of Outpatient Utilization: Logit Estimates, Marginal Effects

Variables	2008		2013		2017		Full Sample (three years)	
	Adults	Children (<15 years)	Adults	Children (<15 years)	Adults	Children (<15 years)	Adults	Children (<15 years)
PhilHealth Indigent	0.060***	0.047*	0.056***	0.061***	0.065***	0.081***	0.123***	0.150***
	(0.021)	(0.027)	(0.015)	(0.021)	(0.020)	(0.030)	(0.009)	(0.012)
Socioeconomic Characteristics								
1st Wealth Quintile (Ref: 2nd Quintile)	0.101**	0.028	-0.048	-0.072	-0.042	0.962***	0.004	-0.029
	(0.084)	(0.126)	(0.050)	(0.071)	(0.183)	(0.013)	(0.033)	(0.052)
Incomplete Primary (Ref: No Education)	0.059***	0.029*	0.001	0.024				
	(0.026)	(0.016)	(0.022)	(0.017)				
Complete Primary	0.078***	0.078**	0.035	0.063**				
	(0.027)	(0.030)	(0.024)	(0.029)				
Incomplete Secondary	0.083***	0.057*	0.038	0.073**				
	(0.031)	(0.035)	(0.026)	(0.030)				
Complete Secondary	0.066***	-0.001	0.045*	0.017				
	(0.029)	(0.139)	(0.026)	(0.119)				
Tertiary Education	0.116***		0.041	0.184				
	(0.035)		(0.029)	(0.255)				
Conditional Cash Transfer Program Member			0.100***	0.123***	0.050***	0.060***		
			(0.018)	(0.021)	(0.015)	(0.021)		
Demographic Characteristics								
Age	0.001**	-0.010***	0.000	-0.009***	-0.001***	-0.010***	-0.001***	-0.012***
	(0.000)	(0.002)	(0.000)	(0.002)	(0.000)	(0.002)	(0.000)	(0.001)
Sex (Male = 1)	-0.003	0.009	-0.012**	0.000	-0.017***	-0.007	-0.018***	-0.001
	(0.005)	(0.009)	(0.005)	(0.009)	(0.005)	(0.009)	(0.003)	(0.005)
Urban	0.010	0.004	-0.013	0.006	-0.022	-0.004	-0.005	0.003
	(0.020)	(0.026)	(0.021)	(0.027)	(0.015)	(0.024)	(0.011)	(0.015)
Household Size	0.008***	0.010**	0.013***	0.010**	0.014***	0.010**	0.026***	0.023***
	(0.004)	(0.005)	(0.004)	(0.005)	(0.003)	(0.004)	(0.002)	(0.002)
Sex of Household Head (Male=1)	-0.035**	-0.060*	-0.026	-0.053*				
	(0.024)	(0.033)	(0.022)	(0.030)				
Age of Household Head	-0.001	-.001	- 0.001	0.001				
	(0.001)	(0.001)	(0.000)	(0.000)				
Number of Children 5 below	0.066***	0.045***	0.105***	0.080***				
	(0.009)	(0.011)	(0.009)	(0.010)				

Variables	2008		2013		2017		Full Sample (three years)	
	Adults	Children (<15 years)	Adults	Children (<15 years)	Adults	Children (<15 years)	Adults	Children (<15 years)
Region / Group of Island								
Luzon (Ref: National Capital Region)	0.013	-.021	0.073*	0.082**	0.070*	0.050	0.039	0.019
	(0.046)	(0.067)	(0.037)	(0.041)	(0.042)	(0.055)	(0.024)	(0.030)
Visayas	0.035	0.018	0.071*	0.067	0.088*	0.058	0.048*	0.030
	(0.049)	(0.071)	(0.040)	(0.044)	(0.046)	(0.059)	(0.025)	(0.032)
Mindanao	-0.064	-0.117*	-0.033	-0.048	-0.029	-0.065	-0.059**	-0.099***
	(0.046)	(0.067)	(0.037)	(0.042)	(0.040)	(0.054)	(0.024)	(0.030)
Household Wealth Characteristics								
Has electricity	0.011	0.022	0.063***	0.061**	0.022	0.017	0.038***	0.044***
	(0.021)	(0.026)	(0.021)	(0.027)	(0.019)	(0.025)	(0.011)	(0.015)
Has radio	0.006	-0.010	-0.006	0.009	0.005	0.003	-0.004	-0.005
	(0.014)	(0.019)	(0.015)	(0.018)	(0.012)	(0.018)	(0.008)	(0.011)
Has TV	-0.004	-0.013	-0.002	0.005	0.006	0.011	0.000	0.001
	(0.020)	(0.024)	(0.019)	(0.023)	(0.014)	(0.021)	(0.010)	(0.014)
Has refrigerator	0.039	0.052	-0.009	-0.001	0.020	0.016	0.007	0.009
	(0.033)	(0.047)	(0.024)	(0.031)	(0.029)	(0.041)	(0.015)	(0.022)
Has motorcycle	0.027	0.031	-0.001	-0.010	0.036*	0.016	0.013	0.002
	(0.027)	(0.031)	(0.019)	(0.023)	(0.016)	(0.021)	(0.011)	(0.014)
Has mobile phone	0.024	0.021	0.009	-0.024	0.008	-0.003	0.000	0.015
	(0.016)	(0.020)	(0.018)	(0.021)	(0.015)	(0.020)	(0.009)	(0.011)
Has washing machine	0.003	0.053	0.017	0.032	0.022	-0.012	0.003	0.010
	(0.037)	(0.054)	(0.026)	(0.034)	(0.031)	(0.037)	(0.017)	(0.022)
Observations	14,291	10,860	18,405	13,295	16,002	10,595	48,807	34,837
Pseudo R-squared	0.039	0.033	0.068	0.059	0.031	0.031	0.041	0.041
Log pseudolikelihood	-8,452.145	-6,758.348	-11,633.891	-8,664.718	-8,665.923	-6,175.659	-29,595.694	-22,187.950

Notes: Average marginal effects (probabilities) are reported for the logit model. Cluster robust standard errors in parenthesis; ***, **, and * denote statistical significance at 0.01, 0.05, and 0.10 levels, respectively. Some covariates are unavailable for other years, but similar ones are used for all three years.

Table 10 Effect of SHI on the Probability of Inpatient Utilization: Logit Estimates, Marginal Effects

Variables	2008		2013		2017		Full Sample (three years)	
	Adults	Children (<15 years)	Adults	Children (<15 years)	Adults	Children (<15 years)	Adults	Children (<15 years)
PhilHealth Indigent	0.068***	0.073***	0.041***	0.057***	0.082***	0.106***	0.063***	0.072***
	(0.017)	(0.021)	(0.012)	(0.017)	(0.017)	(0.026)	(0.008)	(0.010)
Socioeconomic Characteristics								
1st Wealth Quintile (Ref: 2nd Quintile)	0.111*	0.035*	-0.043*	-0.020	0.058	-0.206	0.010	-0.011
	(0.064)	(0.085)	(0.038)	(0.053)	(0.117)	(0.189)	(0.027)	(0.038)
Incomplete Primary (Ref: No Education)	0.017	0.036***	0.010	0.063***				
	(0.022)	(0.014)	(0.020)	(0.014)				
Complete Primary	0.019	0.065*	0.008	0.152***				
	(0.023)	(0.029)	(0.022)	(0.032)				
Incomplete Secondary	0.037	0.081*	0.029	0.150***				
	(0.026)	(0.032)	(0.023)	(0.034)				
Complete Secondary	0.041	0.077	0.027	0.267**				
	(0.026)	(0.101)	(0.023)	(0.111)				
Tertiary Education	0.060*		0.035	0.283				
	(0.031)		(0.026)	(0.247)				
Conditional Cash Transfer Program Member			.015	0.003	0.007	0.010		
			(0.014)	(0.017)	(0.012)	(0.015)		
Demographic Characteristics								
Age	0.000	-0.007***	0.000	-0.014***	0.000	-0.011***	-0.001	-0.008***
	(0.000)	(0.002)	(0.000)	(0.002)	(0.000)	(0.001)	(0.000)	(0.001)
Sex (Male = 1)	-0.001	-0.002	0.001	0.004	-0.004	0.005	-0.004	0.001
	(0.004)	(0.008)	(0.004)	(0.007)	(0.004)	(0.007)	(0.003)	(0.004)
Urban	0.006	0.003	0.060***	0.052***	0.009	0.037**	0.028***	0.035***
	(0.016)	(0.019)	(0.017)	(0.020)	(0.012)	(0.017)	(0.009)	(0.010)
Household Size	0.009***	0.010***	0.013***	0.015***	0.017***	0.018***	0.019***	0.018***
	(0.003)	(0.002)	(0.003)	(0.003)	(0.002)	(0.003)	(0.001)	(0.002)
Sex of Household Head (Male=1)	-0.021	-0.023	0.017	-0.007				
	(0.021)	(0.028)	(0.018)	(0.025)				
Age of Household Head	0.001	0.000	0.001***	0.001				
	(0.001)	(0.004)	(0.000)	(0.001)				
Number of Children 5 below	0.024***	0.013*	0.046***	0.035***				
	(0.008)	(0.009)	(0.007)	(0.009)				

Variables	2008		2013		2017		Full Sample (three years)	
	Adults	Children (<15 years)	Adults	Children (<15 years)	Adults	Children (<15 years)	Adults	Children (<15 years)
Region / Group of Island								
Luzon (Ref: National Capital Region)	0.094*	0.049	0.092***	0.072	0.132***	0.211***	0.097***	0.090***
	(0.053)	(0.070)	(0.035)	(0.044)	(0.044)	(0.069)	(0.023)	(0.030)
Visayas	0.076	0.048	0.093**	0.076	0.143***	0.261***	0.092***	0.090***
	(0.058)	(0.075)	(0.039)	(0.050)	(0.051)	(0.084)	(0.025)	(0.035)
Mindanao	0.099*	0.051	0.114***	0.095**	0.073**	0.139***	0.083***	0.079***
	(0.052)	(0.070)	(0.034)	(0.043)	(0.035)	(0.053)	(0.022)	(0.029)
Household Wealth Characteristics								
Has electricity	0.032**	0.001	0.025	0.036*	0.016	0.014	0.018**	0.012
	(0.016)	(0.019)	(0.016)	(0.019)	(0.014)	(0.019)	(0.008)	(0.011)
Has radio	-0.004	-0.003	-0.002	0.000	0.006	0.008	0.003	0.002
	(0.012)	(0.014)	(0.012)	(0.014)	(0.010)	(0.013)	(0.006)	(0.008)
Has TV	0.009	0.007	-0.020	-0.011	-0.018	-0.017	-0.007	-0.004
	(0.017)	(0.020)	(0.015)	(0.019)	(0.012)	(0.017)	(0.009)	(0.011)
Has refrigerator	0.024	0.031	-0.014	-0.010	0.054	0.072	0.019	0.023
	(0.026)	(0.037)	(0.018)	(0.024)	(0.026)	(0.040)	(0.013)	(0.017)
Has motorcycle	0.064	0.047*	0.030**	0.036**	0.033*	0.019*	0.035*	0.031**
	(0.024)	(0.026)	(0.015)	(0.019)	(0.012)	(0.017)	(0.009)	(0.011)
Has mobile phone	0.015	0.019	0.004	-0.004	0.010	0.027	0.003	0.012
	(0.014)	(0.016)	(0.014)	(0.018)	(0.012)	(0.016)	(0.007)	(0.009)
Has washing machine	0.064	0.029	0.008	0.018	0.007	0.049	0.016	0.002
	(0.032)	(0.039)	(0.021)	(0.029)	(0.021)	(0.022)	(0.013)	(0.017)
Observations	14,291	10,860	18,403	13,290	16,002	10,595	48,805	34,832
Pseudo R-squared	0.037	0.026	0.045	0.042	0.046	0.054	0.037	0.033
Log pseudolikelihood	-6,623.072	-5,130.515	-9,223.625	-6,795.411	-6,374.997	-4,631.586	-22,540.167	-16,768.862

Notes: Average marginal effects (probabilities) are reported for the logit model. Cluster robust standard errors in parenthesis; ***, **, and * denote statistical significance at 0.01, 0.05, and 0.10 levels, respectively. Some covariates are unavailable for other years, but similar ones are used for all three years.

Table 11 Effect of SHI on Healthcare Spending: Tobit Estimates, Marginal Effects

	2008		2013		2017		Full Sample (3 years)	
	Adult	Children (<15 years)	Adult	Children (<15 years)	Adult	Children (<15 years)	Adult	Children (<15 years)
A. Total Cost of Confinement (in PhP)								
PhilHealth Indigent	-1112.827	2169.106	2089.188	6149.609	-4729.097	7951.385	-2002.196	5852.253*
	(4804.63)	(1587.20)	(2798.70)	(4763.80)	(6383.30)	(10444.00)	(1772.00)	(2143.30)
Observations	591	298	886	453	508	260	1985	1011
Log pseudolikelihood	-6957.2385	-3316.1355	-10144.997	-4993.9418	-4943.0652	-2570.8499	-22177.36	-11138.601
B. Total Cost of Outpatient Care (in PhP)								
PhilHealth Indigent	182.653	897.133			-106.516	652.752	-2600.018*	-668.877*
	(2068.100)	(721.250)			(2705.700)	(1579.600)	(1348.200)	(611.700)
Observations	810	1138			766	963	1576	2101
Log pseudolikelihood	-7837.197	-10607.670			-4067.783	-4843.062	-11978.575	-15726.352
C. Amount paid for Confinement from Income								
PhilHealth Indigent			-2994.091***	-2587.482***	-8921.102***	-1728.862 **	-4204.105***	-1746.837***
			(807.510)	(845.680)	(1699.700)	(824.410)	(764.540)	(603.300)
Observations			818	395	405	212	1223	607
Log pseudolikelihood			-7438.763	-3060.465	-3444.571	-1367.98	-10995.06	-4494.4977

The main explanatory variable is PhilHealth membership status. Predicted out-of-pocket health expenditures are based on tobit estimates truncated at a lower bound of zero and an upper limit of PhP300,000. Standard errors in parenthesis; ***, **, and * denote statistical significance at 0.01, 0.05, and 0.10 levels, respectively. Other covariates are not shown for the sake of brevity but were included in the model (i.e., wealth quintiles, education, age, sex, type of place of residence, household size, age of household head, sex of household head, number of children age 5 and below, group of island/region, household wealth characteristics).

Table 12 Effect of SHI on Outpatient and Inpatient Utilization: PSM Estimates

	2008		2013		2017		Full Sample (2008, 2013, 2017)	
	Adult	Children (<15 years)	Adult	Children (<15 years)	Adult	Children (<15 years)	Adult	Children (<15 years)
A. Incidence of Outpatient Visit								
PhilHealth Indigent	0.061***	0.039***	0.014***	0.012***	0.097***	0.076***	0.032*	0.014**
	(0.012)	(0.014)	(0.014)	(0.018)	(0.017)	(0.021)	(0.014)	(0.012)
Observations	13,162	10,258	14,037	10,754	5,980	4,399	48,107	34,237
B. Incidence of Inpatient Visit								
PhilHealth Indigent	0.066***	0.068***	0.033***	0.050***	0.038***	0.050***	0.033**	0.038*
	(0.011)	(0.012)	(0.012)	(0.014)	(0.014)	(0.017)	(0.014)	(0.012)
Observations	13,162	10,258	14,037	10,754	5,980	4,399	48,107	34,237

The ATT is estimated via propensity score matching using five nearest-neighbor matching restricted to the region of common support. Standard errors in parenthesis; ***, **, and * denote statistical significance at 0.01, 0.05, and 0.10 levels, respectively. Other covariates are not shown for the sake of brevity but were included in the model (i.e., wealth quintiles, education, age, sex, type of place of residence, household size, age of household head, sex of household head, number of children age 5 and below, group of island/region, household wealth characteristics).

Table 13 Effect of SHI on Healthcare Spending: PSM Estimates

	2008		2013		2017		Full Sample	
	Adult	Children (<15 years)	Adult	Children (<15 years)	Adult	Children (<15 years)	Adult	Children (<15 years)
A. Total Cost of Confinement (in PhP)								
PhilHealth Indigent	5217.266	2133.586	2148.934	3193.871	4062.445	9025.417	6965.229	13123.857
	(8338.881)	(2134.77)	(1846.68)	(5315.74)	(2997.95)	(2051.45)	(9516.57)	(11619.28)
Observations	591	298	886	453	508	260	1985	1011
Log pseudolikelihood	-252.414	-151.264	-316.45	-147.295	-111.384	-166.725	-1001.527	-551.892
B. Total Cost of Outpatient Care (in PhP)								
PhilHealth Indigent	9564.506	5593.462			3848.727	6221.617	4557.101	4631.815
	(1096.580)	(5555.016)			(6115.092)	(8794.844)	(8727.994)	(5088.470)
Observations	810	1138			766	963	1576	2101
Log pseudolikelihood	-312.186	-451.895			-292.513	-371.594	-797.855	-991.752
C. Amount paid for Confinement from income/savings (in PhP)								
PhilHealth Indigent			-1167.584***	-1320.934***	-7080.787***	-2382.23*	-3704.553***	-637.642**
			(1243.027)	(1399.427)	(6022.755)	(1503.219)	(2053.376)	(821.737)
Observations			818	395	405	212	1223	607
Log Likelihood			-292.208	-121.71	-804.577	-506.172	-488.25	-243.837

The ATT is estimated via propensity score matching using five nearest-neighbor matching restricted to the region of common support. Standard errors in parenthesis; ***, **, and * denote statistical significance at 0.01, 0.05, and 0.10 levels, respectively. Other covariates are not shown for the sake of brevity but were included in the model (i.e., wealth quintiles, education, age, sex, type of place of residence, household size, age of household head, sex of household head, number of children age 5 and below, group of island/region, household wealth characteristics).

Table 14 Descriptive Statistics Conditional on PhilHealth Indigent Membership After Matching, Full Sample (2008, 2013, and 2017)

	Non-member		Indigent		Postmatching diff. in means
	Prematch-ing mean	Postmatching mean	Prematching mean	Postmatching mean	p-value H_0: $\bar{x}_{NM} = \bar{x}_{Indigent}$
Incidence of outpatient visit (1/0)	0.30	0.30	0.43	0.43	0.098
Incidence of inpatient visit (1/0)	0.16	.17	0.24	0.23	0.145
Total cost of inpatient care (in PhP)	27003.23 (n=1,528)	27051.18 (n=1,516)	41053.59 (n=1,522)	41208.05 (n=1,514)	0.199
Total cost of outpatient care (in PhP)	4,717.22 (n=2,683)	4,710.01 (n=2,510)	7,192.58 (n=1,021)	7,105.78 (n=1,011)	0.591
Amount of inpatient care paid for by income/savings/loan (in PhP)	5801.72 (n=403)	5,672.12 (n=400)	4297.26 (n=836)	4,306.50 (n=827)	0.127
1st wealth quintile (poorest)	0.55	.55	0.46	0.46	0.100
2nd wealth quintile	0.45	.45	0.26	0.26	0.156
No education	0.26	0.26	0.21	0.21	0.192
Incomplete primary education	0.29	0.29	0.32	0.32	0.221
Complete primary education	0.12	0.12	0.14	0.13	0.233
Incomplete secondary education	0.14	0.14	0.15	0.16	0.443
Complete secondary education	0.13	0.12	0.12	0.12	0.687
Tertiary education	0.05	0.05	0.06	0.06	0.141
Luzon	0.32	0.32	0.36	0.36	0.166
Visayas	0.19	0.18	0.19	0.19	0.620
Mindanao	0.44	0.45	0.44	0.43	0.493
National Capital Region	0.05	0.05	0.01	0.01	0.076
Male	0.53	0.54	0.51	0.50	0.153
Urban	0.32	0.33	0.19	0.19	0.000
Household Size	5.83	5.84	6.17	6.16	0.311
Male household head	0.86	0.85	0.91	0.91	0.413
Age of household head	45.96	45.99	45.98	46.00	0.932
No. of children below 5 years old	1.00	1.00	0.99	0.90	0.210
Age	23.57	24.07	25.47	25.44	0.182
Has electricity	0.67	0.66	0.60	0.59	0.010
Has radio	0.39	0.38	0.46	0.46	0.004
Has tv	0.40	0.41	0.45	0.45	0.021
Has refrigerator	0.04	0.04	0.13	0.13	0.076
Has motorcycle	0.14	0.13	0.21	0.20	0.080
Has cellphone	0.61	0.61	0.70	0.71	0.012
Has washing machine	0.04	0.04	0.10	0.09	0.065
N	53,644	53,210	32,113	32,001	

Table 15 PhilHealth's Impact on Healthcare Utilization and Health Spending, Fixed Effects Before Matching (Full Sample)

	Outpatient Visit			Inpatient Visit			Total Cost of Outpatient Care	Total Cost of Confinement			Amount Paid from Income
	(1) 3 years	(2) 2008& 2013	(3) 2013& 2017	(1) 3 years	(2) 2008& 2013	(3) 2013& 2017	(1) 2008&2017	(1) 3 years	(2) 2008& 2013	(3) 2013& 2017	(1) 2013& 2017
PhilHealth Indigent	0.076***	0.069***	0.066***	0.042***	0.040***	0.038***	3593.053	5463.808	-5541.788	5008.590	-3362.749*
	(0.010)	(0.012)	(0.011)	(0.008)	(0.010)	(0.010)	(1968.740)	(1269.300)	(1389.620)	(1706.790)	(1702.867)
Year Effects	0.091***	0.092***	-0.102***	0.010	0.008	-0.019*	515.110	2784.85*	3078.48*	-2579.01	2216.287
	(0.013)	(0.013)	(0.016)	(0.011)	(0.011)	(0.011)	(1877.770)	(1508.680)	(1214.320)	(1744.280)	(2178.108)
	2013	2013	2017	2013	2013	2017	2017	2013	2013	2017	2017
N	85,675	58,578	59,704	85,667	58,570	59,696	3,704	3,047	2,268	2,140	1,860
Adj. R-squared	0.140	0.165	0.176	0.105	0.112	0.161	0.078	0.349	0.108	0.145	0.294

Notes: Specifications include enumeration area fixed effects, time fixed effects, socioeconomic characteristics (wealth quintiles, wealth characteristics), and time-varying demographic characteristics (age, number of children below 5 years old, household size). Standard errors in parentheses are clustered at the enumeration area/barangay level;***, **, and * denote statistical significance at 0.01, 0.05, and 0.10 levels, respectively.

Table 16 PhilHealth's Impact on Healthcare Utilization and Health Spending, Fixed Effects After Matching (Full Sample)

	Outpatient Visit			Inpatient Visit			Total Cost of Outpatient Care	Total Cost of Confinement			Amount Paid from Income
	(1) 3 years	(2) 2008& 2013	(3) 2013& 2017	(1) 3 years	(2) 2008& 2013	(3) 2013& 2017	(1) 2008&2017	(1) 3 years	(2) 2008& 2013	(3) 2013& 2017	(1) 2013& 2017
PhilHealth Indigent	0.066***	0.057**	0.052**	0.049***	0.038***	0.044***	3405.066	5187.265	4556.260	8111.272	-3,450.494*
	(0.009)	(0.011)	(0.010)	(0.008)	(0.010)	(0.009)	(6116.092)	(9116.491)	(1714.800)	(9892.470)	(2005.540)
Year Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	85,651	58,158	59,635	85,643	58,149	59,627	3,521	3,030	1,770	1,745	1,507
Adj. R-squared	0.142	0.151	0.180	0.105	0.106	0.143	0.120	0.073	0.036	0.205	0.190

Notes: Specifications include enumeration area fixed effects, time fixed effects, socioeconomic characteristics (wealth quintiles, wealth characteristics), and time-varying demographic characteristics (age, number of children below 5 years old, household size). Standard errors in parentheses are clustered at the enumeration area/barangay level;***, **, and * denote statistical significance at 0.01, 0.05, and 0.10 levels, respectively. Nearest-neighbor matching was used to create a sample of treated and matched controls.

Table 17 PhilHealth's Impact on Healthcare Utilization and Health Spending, IPW (Full Sample)

	(1) Outpatient Visit	(2) Inpatient Visit	(3) Total Cost of Outpatient Care	(4) Total Cost of Confinement	(5) Amount Paid from Income
PhilHealth Indigent	0.125***	0.0668***	-1,871	2,649	-3,220***
	(0.004)	(0.003)	(6827.000)	(9175.000)	(835.500)
Observations	85,651	85,643	3,521	3,030	1,507

Notes: The figures are estimated using inverse probability weighting (IPW) by logit regression. Robust standard errors in parenthesis; ***, **, and * denote statistical significance at 0.01, 0.05, and 0.10 levels, respectively. Other covariates are not shown for the sake of brevity but were included in the model (i.e., wealth quintiles, education, age, sex, type of place of residence, household size, group of island/region, household wealth characteristics). The ATT is based on propensity score matching scores using five nearest-neighbor matching restricted to the region of common support.

Table 18 PhilHealth's Impact on Healthcare Utilization and Health Spending among CCT Members: PSM, F.E. After Matching, IPW (2013 & 2017)

	Outpatient Visit			Inpatient Visit			Total Cost of Outpatient Care	Total Cost of Confinement			Amount Paid from Income
CCT MEMBER	(1) Adults	(2) Children	(3) Full Sample	(1) Adults	(2) Children	(3) Full Sample	(1) Full Sample	(1) Adults	(2) Children	(3) Full Sample	(1) Full Sample (2013 & 2017)
PSM Estimates[a]	0.084***	0.115***	0.097***	0.049***	0.041***	0.037***	6449.599	-9110.511	3448.914	-5076.624	-1653.747*
	(0.013)	(0.014)	(0.009)	(0.011)	(0.012)	(0.007)	(1188.913)	(5486.205)	(1512.913)	(1617.854)	(795.532)
N	12,338	11,240	23,319	12,336	11,235	24,311	366	507	350	876	770
Pseudo R-squared	0.130	0.108	0.089	0.130	0.108	0.089	0.119	0.164	0.116	0.102	0.199
Log Likelihood	-6780.715	-5650.336	-13292.201	-6779.536	-5647.399	-13287.682	-103.684	-216.209	-161.902	-406.674	-322.589
Fixed Effects[b]	0.026**	0.024**	0.025**	0.016*	0.026*	0.011**	-1631.450	-9454.72	-1226.600	-3904.570	-2884.171*
	(0.016)	(0.023)	(0.016)	(0.142)	(0.019)	(0.014)	(3522.170)	(9098.740)	(1318.900)	(1586.190)	(1708.550)
N	12,333	11,213	23,209	12,331	11,208	23,209	345	498	311	870	632
Adj. R-squared	0.265	0.296	0.289	0.227	0.257	0.253	0.175	0.263	0.184	0.260	0.148
IPW[c]	-	-	0.102***	-	-	0.0412***	5,532**	-	-	-4,609	-1,080*
			(0.008)			(0.006)	(6795.000)			(4242.000)	(601.9)
N			23,209			23,209	345			870	632

Notes: [a] The ATT is estimated via propensity score matching using five nearest-neighbor matching restricted to the region of common support. [b] For the fixed effects, specifications include enumeration area fixed effects, time fixed effects, socioeconomic characteristics (wealth quintiles, wealth characteristics), and time-varying demographic characteristics (age, number of children below 5 years old, household size). Standard errors in parenthesis are clustered at the enumeration area/barangay level. Nearest neighbor matching was used to create a sample of treated and matched controls. [c] The figures are estimated using inverse probability weighting (IPW) by logit regression. Robust standard errors in parenthesis; ***, **, and * denote statistical significance at 0.01, 0.05, and 0.10 levels, respectively. Other covariates are not shown for the sake of brevity (i.e., wealth quintiles, education, age, sex, type of place of residence, household size, group of island/region, household wealth characteristics).

Chapter 6 Conclusions, Implications, and Policy Recommendations

The Philippines is one of the pioneering countries in South East Asia to embark upon universal health care, with the ultimate goal of ensuring equal access to healthcare services for everyone regardless of their socioeconomic status and financial situation. Since the establishment of PhilHealth, the country's SHI system, the national government has continuously invested in the program to expand its membership coverage, increase benefit packages, stabilize and grow existing funding sources, and enhance public accountability in disbursement and utilization of funds. While PhilHealth has since been accessible and open to the entire Filipino citizenry, the foremost priority is to improve access and healthcare demand among the poor and vulnerable sectors of society, specifically defined by PhilHealth as "indigents" who have no visible means of income and sustainable livelihood to afford monthly health insurance premiums. Although the expansion of the program has been largely successful over the years in terms of targeting universal coverage, some studies indicate the persistence of underutilization among PhilHealth's targeted beneficiaries (e.g., Quimbo et al. 2008). The present study sought to examine the effects that recent developments in the Philippines' SHI system may have had on Filipino indigent members' healthcare use and out-of-pocket expenditures. The paper also provided a qualitative perspective regarding Filipino indigents' healthcare utilization decisions—an aspect that has remained understudied in the Philippine context. Overall, the objective of this research is to examine how SHI impacts healthcare utilization outcomes and health spending among individuals under the Indigent Program.

To address the research objective, a combination of quantitative and qualitative approaches was undertaken as the research methodology. First, the empirical focus was healthcare utilization outcomes and out-of-pocket payments as a function of SHI membership. This was carried out using an econometrics analysis of a pooled sample or three rounds of a nationally-representative survey on demographics and health in the Philippines, while putting in place measures to reduce potential biases. The outcome variables include: incidence of outpatient and inpatient health facility visit for healthcare utilization outcomes; total amount paid for outpatient care use, total amount paid for inpatient care use, and amount paid for confinement using income, savings, and loan as measures of health spending. Second, the quantitative estimates were supplemented by qualitative data through key-informant interviews conducted in selected indigent members in Region III and National Capital Region in the Philippines.

Overall the findings of this study reveal that participation in SHI is robustly and positively correlated with inpatient and outpatient care utilization for both adults and children under 15 years of age across individual survey rounds and for the pooled sample. This study also finds that SHI is associated with a reduction in the amount paid out-of-pocket for hospital confinement, whereas the impact on the total amount paid for outpatient care and for hospital confinement is not statistically significant. Apart from the minimal changes in the magnitude of the coefficients due to methodological approach and changes in specifications, these results are consistent throughout the analysis.

While the analysis and findings of this research are robust, it is important to acknowledge a number of methodological limitations. First, we cannot infer a causal relationship between SHI and the outcome variables. Although the estimates indicate a strong relationship between and among the variables of interest, the analysis may still be subject to biases due primarily to the fact that PhilHealth insurance uptake is not based on random selection and there are potentially various other factors as to why some people are more likely to use healthcare compared to others. Furthermore, there remains the possibility of unobserved heterogeneity in healthcare utilization that cannot be controlled for in the econometric specifications, especially as endogeneity issues persist in the decision to use healthcare services and facilities. Second, due to data limitations, this paper was not able to use all the explanatory variables for all three rounds. Some independent variables were available only for two years (i.e., a combination of 2008 and 2017; 2008 and 2013; 2013 and 2017). For instance, the controls for the CCT variable were present only for the years 2013 and 2017. The absence of this dummy variable in 2008 may explain the higher coefficients obtained for that year, which might have potentially biased our results upwards. Third, the analysis relied on observational data instead of a randomized controlled trial, which is regarded as the best approach for impact evaluation studies. This study acknowledges that surveys are prone to potential unobserved confounders that might influence the outcomes and produce biased results. Fourth, albeit having a panel structure in the data, the nature of PhilHealth intervention did not allow for a before-and-after observation of the units; hence a pooled sample of the three rounds of the survey had to be the next best option. Fifth, although we ensured in the analysis that the control group included only the two poorest quintiles of the population without SHI to match with the indigent treatment group, the incidences of under-coverage and leakage in the enrollment of members to the Indigent Program, as identified by Silfverberg (2014), might have entailed differences in characteristics between the treatment and the control group. Finally, the measurement discrepancies between PhilHealth's administrative data and household surveys, owing to the automatic enrollment of indigent members in the program (see Bredenkamp et al. 2017), might have undermined measures of healthcare utilization given that some members might not be even aware of their health insurance privileges and entitlements.

Despite these limitations, the findings of this study provide useful information regarding the impact or effectivity of PhilHealth insurance system in terms of making healthcare more accessible to the marginalized sectors of society. The Philippines' Department of Health is clear in its objective of inducing healthcare demand among the targeted indigent population, to make a healthier, more productive Filipino population. In this regard, the present study is able to provide a recent picture of how the expansion in the program influences healthcare use among the poor. As the key informants of this study confirmed, the provision of free SHI helps them to a great extent considering that PhilHealth coverage makes them feel less burdened on the pain and costs of being sick. This allows them to utilize their healthcare benefits more, when needed, compared to when insurance is unavailable. Of course, the ideal and ultimate scenario is to measure actual improvements in health outcomes and to determine how this contributes to a more productive participation in society.

Apart from assessing the impact of SHI on healthcare use, a number of critical issues have also emerged from this study. First is the role of PhilHealth

membership on outpatient care utilization. The key informants of this study revealed their strong preference for private healthcare providers in seeking medical advice and treatment instead of public facilities due to their perceived satisfaction in the services of the former. Considering that PhilHealth coverage on medical consultation and treatment only covers a fixed amount on fees in private facilities, and only in public or primary healthcare facilities do they cover the entire services for free, members are unable to fully maximize their benefits and still pay for outpatient care use. Thus, for future policy decisions, there is a need to ensure that the provision of public health services is improved to be on par with, or exceed the standards of private health facilities, as this might have an influence on healthcare utilization choices and satisfaction of members. At the same time, it would be equally interesting and challenging for future research to examine the impacts of such supply-side variables on healthcare utilization outcomes. A second emerging issue is the role of information management and advocacy on healthcare utilization outcomes. PhilHealth members ought to be aware of their benefits to be able to properly utilize it. It is therefore recommended that the Department of Health, in collaboration with PhilHealth, be actively engaged in informing the public, especially the indigent members, about their healthcare benefits and how to maximize such. Finally, and most importantly, is to determine how SHI coverage improves actual health outcomes among indigents. While improved utilization does not automatically equate to better health, it is the first step towards attaining such goals. On the financing side, the sustainability of this program is a necessary inquiry that will have to be assessed at some point later. Policymakers are well aware that providing free health insurance for the longer term would require earmarking huge funds in the health sector. An evidenced-based intervention is therefore needed to ensure the sustainability of the program and to establish proper mechanisms that would guarantee proper targeting and coverage of the true poor.

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Appendices

Appendix 1 Description of Variables

Variables	Description
Outcome Variables	
Incidence of outpatient visit (1/0)	Visited a healthcare facility for outpatient care, such as consultation, advice, and treatment in the past 30 days.
Incidence of inpatient visit (1/0)	Visited a healthcare facility for inpatient care, such as confinement for treatment or injury in the last 12 months.
Amount of inpatient care paid for by income/savings/loan (in PhP)	Amount of inpatient care paid by salary/loan/sale of properties
Total cost of inpatient care (in PhP)	Total amount paid for confinement
Total cost of outpatient care (in PhP)	Total amount paid for treatment and consultation for outpatient services
Patient Satisfaction (1/0)	Indicates whether a patient is satisfied with healthcare services during confinement; 1= yes; 0=No
PhilHealth Indigent	Indicate whether an individual is a member of the PhilHealth Indigent Program – a type of membership intended for the two bottom quintiles of the population whose premium contribution of members are sponsored by the National Government.
Socioeconomic Characteristics	
Wealth Quintiles	A three-step procedure is conducted by the DHS Program to produce national-level wealth quintiles being assigned to a de jure household member, ranking each person in the population by their score and then dividing the ranking into 5 equal parts, from quintile one (lowest-poorest) to quintile five (highest-wealthiest), each having approximately 20 percent of the population (NDHS Report 2013: 13)
Education	Education level of an individual (no education, incomplete primary education, complete primary education, incomplete secondary education, complete secondary education, tertiary education)
CCT Program Recipient	Indicates whether an individual is enrolled in the conditional cash transfer program or *Pantawid Pamilyang Pilipino Program* (4P).
Demographic Characteristics	
Age	Age in complete years
Sex	Refers to the sex of individual respondent; Male = 1
Urban	Refers to the type of place of residence; Urban = 1
Household Size	Number of individuals living in one household
Sex of Household Head	Indicates whether the household head is male or female; Male = 1
Age of Household Head	Refers to the age of the household head
Number of Children below 5 years old	Number of living children below 5 years old
Region / Group of Island	Refers to the main islands of the Philippines (i.e., Luzon, Visayas, and Mindanao) plus the National Capital Region (Metro Manila)
Household Wealth Characteristics	Refers to the physical wealth / welfare characteristics of a household e.g., presence of electricity, radio, television, refrigerator, motorcycle, mobile phone, and washing machine.

Appendix 2 Characteristics of Indigent Interviewees

Alias/Age/No. of Dependents/Province/Nature of Work	Background Information
1. Totoy, 48, married, 4 dependents, Bulacan, farmer	PhilHealth indigent member since 2011. He works in a farm with his wife and generally feels satisfied with the inpatient care services provided by private hospitals. His 4 dependents are all covered by PhilHealth as they are less than 21 years old.
2. Elena, 54, married, 3 dependents, Bulacan, housewife	PhilHealth indigent member since 2013. She used to be unaware of her social health insurance benefits and was completely relying on the medical staff to provide necessary medical discounts during outpatient treatments and hospital confinements. She emphasized the need to inform the members of their benefits and coverage in an easily comprehensible and simple manner.
3. Rodolfo, 46, married, 5 dependents, Bulacan, farmer	PhilHealth indigent member since 2011. He benefited from social health insurance coverage on multiple occasions for inpatient care. He had to seek three medical opinions from different private healthcare facilities to find out the best treatment option for his chronic kidney disease.
4. Mario, 32, cohabiting, 2 dependents, National Capital Region, construction worker	PhilHealth indigent member since 2014. His job as a construction worker is irregular and he relies on family members and relatives to aid him and his 2 dependents in hospitalization fees that are beyond the coverage of PhilHealth. He expressed a strong preference for private healthcare providers than public ones.
5. Ana, 59, single parent, 3 dependents, National Capital Region, part-time manicurist and pedicurist	PhilHealth indigent member since 2012. She has 3 young dependents who are all covered under the PhilHealth indigent program. She also strongly prefers private healthcare providers over public health facilities, as she perceived the former more efficient than the latter. She visits health facility for outpatient care only when she feels an unbearable pain or if she feels completely unwell, rendering her unable to do her part-time job.

Source: Author's interviews

Appendix 3 Interview Questions

To situate the context of narratives, the interviews provide qualitative information to the following related questions:

i. In using healthcare facilities and services for both preventive and curative care, what are your expectations in terms of quality of care from health care providers?

ii. Based on these expectations, how would you rate your experience of quality of care in terms of sufficiency of supplies and equipment, management, accommodation, infrastructure, and staff skills? Does it differ between private and public health facilities? Please narrate your experience.

iii. Overall, how satisfied are you with your experiences in hospital or clinical care? Have your expectations been met? Why or why not?

iv. Finally, how does PhilHealth coverage and benefits affect your overall healthcare utilization and satisfaction on medical services?

Appendix 4 Descriptive Statistics Conditional on PhilHealth Indigent Membership Before Matching, 2008

	Non-member		Indigent			Total	
	N=20,019		N=5,772			N=25,791	
Variable	Mean	Std. Dev	Mean	Std. Dev	*p*-value	Mean	Std. Dev
Incidence of outpatient visit (1/0)	0.31	0.46	0.37	0.48	0.056	0.32	0.47
Incidence of inpatient visit (1/0)	0.17	0.37	0.26	0.44	0.010	0.19	0.39
Total cost of outpatient care (in PhP)	7494.22 (n=1,475)	82108.80	9980.90 (n=490)	90369.55	0.570	8114.31 (n=1,965)	84227.84
Total cost of inpatient care (in PhP)	18922.22 (n=593)	10810.50	25822.75 (n=308)	12263.20	0.390	21281.11 (n=901)	114992.90
1st wealth quintile	0.56	0.50	0.45	0.48	0.065	0.51	0.50
2nd wealth quintile	0.44	0.50	0.55	0.48	0.410	0.42	0.49
No education	0.28	0.45	0.20	0.40	0.507	0.27	0.44
Incomplete primary education	0.32	0.47	0.29	0.45	0.010	0.31	0.46
Complete primary education	0.14	0.35	0.14	0.35	0.526	0.14	0.35
Incomplete secondary education	0.12	0.33	0.16	0.36	0.034	0.13	0.34
Complete secondary education	0.09	0.29	0.13	0.34	0.076	0.10	0.30
Tertiary education	0.04	0.19	0.08	0.26	0.081	0.05	0.21
Luzon	0.35	0.48	0.37	0.48	0.097	0.36	0.48
Visayas	0.22	0.41	0.17	0.38	0.098	0.21	0.41
Mindanao	0.41	0.49	0.44	0.50	0.096	0.42	0.49
National Capital Region	0.02	0.14	0.01	0.10	0.047	0.02	0.13
Male	0.53	0.50	0.52	0.50	0.081	0.52	0.50
Urban	0.23	0.42	0.23	0.42	0.260	0.23	0.42
Household size	6.12	2.65	6.19	2.36	0.574	6.14	2.59
Male household head	0.89	0.31	0.91	0.29	0.088	0.90	0.30
Age of household head	44.94	13.39	45.55	11.89	0.055	45.08	13.07
Age	23.65	19.36	25.61	19.72	0.021	24.09	19.46
Number of children below 5 years old	1.07	1.07	0.95	1.00	0.076	1.04	1.05
Has electricity	0.55	0.50	0.73	0.44	0.000	0.59	0.49
Has radio	0.47	0.50	0.60	0.49	0.030	0.50	0.50
Has tv	0.33	0.47	0.54	0.50	0.090	0.38	0.48
Has refrigerator	0.03	0.18	0.18	0.39	0.054	0.07	0.25
Has motorcycle	0.07	0.26	0.15	0.36	0.000	0.09	0.29
Has cellphone	0.40	0.49	0.60	0.49	0.000	0.44	0.50
Has wash_machine	0.02	0.14	0.13	0.34	0.000	0.05	0.21

Appendix 5 Descriptive Statistics Conditional on PhilHealth Indigent Membership Before Matching, 2013

	Non-member		Indigent		Means Test	Total	
	N=12,872		N=19,997		$H_0: \bar{x}_{Non} = \bar{x}_{Indigent}$	N=32,869	
	Mean	Std. Dev	Mean	Std. Dev	*p*-value	Mean	Std. Dev
Incidence of outpatient visit (1/0)	0.37	0.48	0.48	0.50	0.050	0.44	0.50
Incidence of inpatient visit (1/0)	0.19	0.39	0.24	0.43	0.022	0.22	0.41
Amount of inpatient care paid for by income/savings/loan (in PhP)	5801.72 (n=403)	8842.66	4297.26 (n=836)	10927.15	0.027	4786.60 (n=1,239)	10316.09
Total cost of inpatient care (in PhP)	26937.91 (n=442)	140864.80	43148.58 (n=928)	181450.10	0.106	37918.56 (n=1,370)	169539.50
Patient Satisfaction (1/0)	0.91 (n=444)	0.29	0.92 (n=928)	0.28	0.470	0.91 (n=1,372)	0.28
1st wealth quintile (poorest)	0.52	0.50	0.36	0.48	0.022	0.42	0.49
2nd wealth quintile	0.48	0.50	0.28	0.45	0.074	0.36	0.48
No education	0.26	0.44	0.21	0.40	0.092	0.23	0.42
Incomplete primary education	0.29	0.45	0.32	0.47	0.021	0.31	0.46
Complete primary education	0.12	0.33	0.14	0.35	0.033	0.14	0.34
Incomplete secondary education	0.14	0.35	0.15	0.36	0.043	0.15	0.35
Complete secondary education	0.13	0.34	0.12	0.33	0.087	0.13	0.33
Tertiary education	0.05	0.23	0.06	0.24	0.041	0.06	0.24
Luzon	0.28	0.45	0.38	0.49	0.110	0.34	0.47
Visayas	0.16	0.36	0.21	0.40	0.230	0.19	0.39
Mindanao	0.45	0.50	0.40	0.49	0.143	0.42	0.49
National Capital Region	0.11	0.31	0.01	0.11	0.299	0.05	0.22
Male	0.53	0.50	0.51	0.50	0.010	0.51	0.50
Urban	0.47	0.50	0.19	0.39	0.060	0.30	0.46
Household size	5.99	2.69	6.37	2.42	0.020	6.22	2.53
Male household head	0.86	0.35	0.91	0.29	0.003	0.89	0.32
Age of household head	45.96	14.20	45.98	12.04	0.932	45.97	12.93
Number of children below 5 years old	1.00	1.08	0.99	1.01	0.210	1.00	1.04
Age	24.18	19.22	24.94	19.68	0.005	24.65	19.50
Has electricity	0.66	0.47	0.75	0.43	0.075	0.72	0.45
Has radio	0.36	0.48	0.45	0.50	0.086	0.42	0.49
Has tv	0.43	0.50	0.55	0.50	0.006	0.50	0.50
Has refrigerator	0.06	0.23	0.15	0.36	0.004	0.11	0.32
Has motorcycle	0.13	0.34	0.24	0.43	0.041	0.20	0.40
Has cellphone	0.70	0.46	0.75	0.43	0.030	0.73	0.44
Has washing machine	0.05	0.22	0.11	0.32	0.070	0.09	0.28
CCT	0.22	0.41	0.66	0.47	0.090	0.49	0.50

Appendix 6 Descriptive Statistics Conditional on PhilHealth Indigent Membership Before Matching, 2017

	Non-member		Indigent			Total	
	N=20,753		N=6,344			N=27,097	
Variable	Mean	Std. Dev	Mean	Std. Dev	*p*-value	Mean	Std. Dev
Incidence of outpatient visit (1/0)	0.25	0.43	0.31	0.46	0.120	0.26	0.44
Incidence of inpatient visit (1/0)	0.14	0.35	0.21	0.41	0.601	0.16	0.36
Amount of inpatient care paid for by income/savings/loan (in PhP)	6401.30 (n=417)	19078.24	2804.59 (n=210)	8623.71	0.091	5196.66 (n=627)	16419.28
Total cost of inpatient care (in PhP)	36781.96 (n=493)	166135.00	50658.34 (n=286)	200247.10	0.300	41876.50 (n=779)	179411.50
1st wealth quintile	0.57	0.49	0.87	0.34	0.056	0.64	0.48
2nd wealth quintile	0.43	0.49	0.11	0.31	0.043	0.35	0.48
Luzon	0.31	0.46	0.28	0.45	0.088	0.31	0.46
Visayas	0.18	0.38	0.15	0.36	0.065	0.17	0.38
Mindanao	0.46	0.50	0.55	0.50	0.044	0.48	0.50
National Capital Region	0.04	0.20	0.01	0.10	0.121	0.03	0.18
Male	0.55	0.50	0.53	0.50	0.098	0.54	0.50
Urban	0.32	0.47	0.17	0.37	0.070	0.28	0.45
Household size	5.46	2.54	5.52	2.29	0.048	5.48	2.48
Age	23.12	17.70	27.01	21.55	0.056	24.03	18.75
Has electricity	0.79	0.41	0.00	0.00	0.020	0.60	0.49
Has radio	0.33	0.47	0.34	0.48	0.311	0.33	0.47
Has tv	0.46	0.50	0.05	0.21	0.020	0.36	0.48
Has refrigerator	0.05	0.21	0.01	0.11	0.001	0.04	0.19
Has motorcycle	0.20	0.40	0.18	0.38	0.020	0.19	0.39
Has cellphone	0.77	0.42	0.64	0.48	0.006	0.74	0.44
Has washing machine	0.06	0.24	0.01	0.09	0.008	0.05	0.21
CCT	0.20	0.40	0.66	0.47	0.005	0.31	0.46

Appendix 7 Effect of SHI on the Probability of Outpatient Utilization: Logit Marginal Effects without CCT, (Full Sample)

Variables	2013	2017
PhilHealth Indigent	0.112***	0.092***
	(0.015)	(0.022)
Socioeconomic Characteristics		
1st Wealth Quintile (Ref: Richest Quintile)	0.028	0.057
	(0.051)	(0.185)
Incomplete Primary (Ref: No Education)	-.015**	
	(0.008)	
Complete Primary	0.010	
	(0.011)	
Incomplete Secondary	0.006	
	(0.011)	
Complete Secondary	0.016	
	(0.012)	
Tertiary Education	0.009	
	(0.016)	
Demographic Characteristics		
Age	-0.001*	-0.001***
	(0.001)	(0.001)
Sex (Male = 1)	-0.010**	-0.012***
	(0.005)	(0.005)
Urban	-0.023	-0.020
	(0.022)	(0.017)
Household Size	0.017***	0.015***
	(0.004)	(0.003)
Sex of Household Head (Male=1)	0.040*	
	(0.023)	
Age of Household Head	0.000	
	(0.001)	
Number of Children 5 below	0.093***	
	(0.009)	
Region / Group of Island		
Luzon (Ref: National Capital Region)	0.065*	0.068
	(0.036)	(0.043)
Visayas	0.052	0.083*
	(0.038)	(0.047)
Mindanao	-0.053	-0.036
	(0.036)	(0.042)
Household Wealth Characteristics		
Has electricity	0.069**	0.020
	(0.022)	(0.019)

Variables	2013	2017
Has radio	0.005	0.005
	(0.015)	(0.013)
Has TV	0.006	0.009
	(0.019)	(0.015)
Has refrigerator	-0.008	0.016
	(0.025)	(0.030)
Has motorcycle	-.002	0.027
	(0.019)	(0.016)
Has mobile phone	-.007	0.004
	(0.018)	(0.016)
Has washing machine	0.027	0.004
	(0.027)	(0.030)
Observations	32,757	27,097
Pseudo R-squared	0.061	0.028
Log pseudolikelihood	-21,105.641	-15,187.873

Appendix 8 Descriptive Statistics Conditional on PhilHealth Indigent Membership After Matching, 2013

Variable	Non-member		Indigent		Postmatching diff. in means
	Prematching mean	Postmatching mean	Prematching mean	Postmatching mean	*p*-value H0: $\bar{x}NM = \bar{x}Indigent$
Incidence of outpatient visit (1/0)	0.37	0.37	0.48	0.47	0.198
Incidence of inpatient visit (1/0)	0.19	0.18	0.24	0.23	0.098
Amount of inpatient care paid for by income/savings/loan (in PhP)	5801.717 (n=403)	5816.065 (n=401)	4297.257 (n=836)	3814.249 (n=490)	0.450
Total cost of inpatient care	26937.91 (n=442)	27586.49 (n=438)	43148.58 (n=928)	42133.09 (n=536)	0.110
Patient satisfaction	0.91 (n=444)	0.91 (n=440)	0.92 (n=928)	0.92 (n=536)	0.467
1st wealth quintile (poorest)	0.52	0.52	0.36	0.56	0.100
2nd wealth quintile	0.48	0.48	0.28	0.43	0.096
No education	0.26	0.26	0.21	0.22	0.200
Incomplete primary education	0.29	0.29	0.32	0.30	0.657
Complete primary education	0.12	0.12	0.14	0.15	0.256
Incomplete secondary education	0.14	0.14	0.15	0.16	0.119
Complete secondary education	0.13	0.13	0.12	0.12	0.387
Tertiary education	0.05	0.05	0.06	0.06	0.132
Luzon	0.28	0.28	0.38	0.38	0.078
Visayas	0.16	0.16	0.21	0.21	0.053
Mindanao	0.45	0.45	0.40	0.41	0.074
National Capital Region	0.11	0.11	0.01	0.01	0.003
Male	0.53	0.53	0.51	0.51	0.924
Urban	0.47	0.48	0.19	0.24	0.000
Household size	5.99	5.70	6.37	6.17	0.521
Male household head	0.86	0.85	0.91	0.91	0.109
Age of household head	45.96	45.99	45.98	46.00	0.456
Number of children below 5 years old	1.00	1.00	0.99	0.90	0.512
Age	24.18	24.20	24.94	25.00	0.187
Has electricity	0.66	0.66	0.75	0.75	0.000
Has radio	0.36	0.35	0.45	0.40	0.005
Has tv	0.43	0.43	0.55	0.40	0.310
Has refrigerator	0.06	0.06	0.15	0.04	0.023
Has motorcycle	0.13	0.13	0.24	0.15	0.078
Has cellphone	0.70	0.71	0.75	0.70	0.714
Has washing machine	0.05	0.05	0.11	0.03	0.065
CCT	0.22	0.21	0.66	0.67	0.043
N	12,872	12,709	19,997	12,748	

Appendix 9 Sensitivity Analysis of PhilHealth's Impact on Healthcare Utilization and Health Spending: Fixed Effects with Self-Reported Health Status, 2013 and 2017

	Outpatient Visit		Inpatient Visit		Total Cost of Confinement		Amount Paid from Income	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
PhilHealth Indigent	0.066***	0.051***	0.038***	0.034***	5008.590	9838.895	-3362.749*	-3260.487*
	(0.011)	(0.011)	(0.010)	(0.090)	(1706.790)	(1701.070)	(1702.867)	(1711.091)
Year Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ill last Month	No	Yes	No	Yes	No	Yes	No	Yes
N	59,704	59,704	59,696	59,696	2,140	2,140	1,860	1,860
Adj. R-squared	0.176	0.277	0.161	0.146	0.145	0.146	0.294	0.293

Notes: Specifications include enumeration area fixed effects, time fixed effects, socioeconomic characteristics (wealth quintiles, wealth characteristics), self-reported illness status, and time-varying demographic characteristics (age, number of children below 5 years old, household size). Standard errors in parentheses are clustered at the enumeration area/barangay level;***, **, and * denote statistical significance at 0.01, 0.05, and 0.10 levels, respectively. Specifications 1 do not control for self-reported illness status in the previous month. Cost of outpatient care is excluded due to unavailability of self-reported illness indicator for the 2008 data.

Appendix 10 Probability of Healthcare Utilization among CCT Phil-Health Members and Non-Members: Logit Estimates, Marginal Effects (All Years)

Variables	Outpatient Care Use		Inpatient Care Use	
	Adult	Children	Adult	Children
CCT Members	0.124***	0.150***	0.0445***	0.0495***
	(0.0170)	(0.0207)	(0.0126)	(0.0160)
1st wealth quintile	-0.0592	-0.185	0.0294	0.109
	(0.121)	(0.141)	(0.119)	(0.122)
	(0.113)	(0.122)	(0.134)	(0.169)
Luzon	0.158***	0.150**	0.241***	0.166**
	(0.0588)	(0.0629)	(0.0730)	(0.0815)
Visayas	0.151**	0.123*	0.250***	0.180*
	(0.0606)	(0.0656)	(0.0828)	(0.0930)
Mindanao	0.0352	0.00892	0.216***	0.174**
	(0.0583)	(0.0646)	(0.0596)	(0.0709)
Sex (male=1)	-0.0145**	0.00160	0.000701	0.00483
	(0.00598)	(0.00960)	(0.00462)	(0.00760)
Urban	0.0116	0.0147	0.0505**	0.0497**
	(0.0295)	(0.0324)	(0.0206)	(0.0227)
Household size	0.0257***	0.0248***	0.0238***	0.0224***
	(0.00391)	(0.00453)	(0.00297)	(0.00343)
Age	-0.000441	-0.0118***	-0.000579**	-0.00697***
	(0.000302)	(0.00127)	(0.000255)	(0.00109)
Electricity	0.0933***	0.0808***	0.0212	0.0251
	(0.0239)	(0.0267)	(0.0187)	(0.0221)
Radio	-0.00150	-0.0189	0.0123	0.0137
	(0.0170)	(0.0199)	(0.0145)	(0.0159)
TV	0.00581	0.0246	-0.0239	-0.000840
	(0.0227)	(0.0245)	(0.0182)	(0.0213)
Has refrigerator	0.00171	-0.0114	-0.00704	-0.00912
	(0.0361)	(0.0404)	(0.0291)	(0.0336)
Has motorcycle	-0.0104	-0.0306	0.0399**	0.0260
	(0.0230)	(0.0262)	(0.0189)	(0.0211)
Has mobile phone	-0.0309	-0.0412*	0.00860	0.000705
	(0.0201)	(0.0215)	(0.0163)	(0.0177)
Has washing machine	-0.00375	0.00616	0.0240	0.0122
	(0.0375)	(0.0420)	(0.0322)	(0.0374)
Observations	12,338	11,240	12,336	11,235

The above analyses represent estimates for alternative treatment and comparison groups, which include CCT individuals or those who are members of the country's conditional cash transfer program. Average marginal effects (probabilities) are reported for the logit model. Cluster robust standard errors in parenthesis; ***, **, and * denote statistical significance at 0.01, 0.05, and 0.10 levels, respectively.

Appendix 11 Effect of Social Health Insurance on Healthcare Spending among CCT PhilHealth Members and Non-Members: Tobit Estimates, Marginal Effects (Full Sample)

Variables	Total Cost of Outpatient Care	Total Cost of Inpatient Care	Amount Paid for Confinement from Income
CCT members	6,585*	-1,141	-1,531***
	(3,387)	(3,019)	(569.5)
1st wealth quintile		-3,763	-2,026
		(24,112)	(4,406)
		(25,405)	(4,370)
Luzon	-2,766	-1,003	-419.2
	(10,806)	(12,181)	(1,939)
Visayas	-1,505	-1,807	-17.63
	(10,832)	(12,123)	(2,011)
Mindanao	2,776	-3,052	-70.51
	(12,230)	(12,227)	(1,979)
Male	3,184**	2,589	550.8
	(1,491)	(2,304)	(407.1)
Urban	-1,220	1,546	1,925***
	(1,781)	(3,290)	(635.1)
Household size	1,387***	-175.0	89.69
	(345.5)	(488.4)	(88.92)
Age	50.46	3.636	28.57***
	(37.68)	(59.98)	(10.47)
Has Electricity	3,643	5,616*	-612.8
	(4,512)	(3,021)	(552.5)
Has Radio	-822.8	3,391	341.9
	(1,479)	(2,428)	(421.7)
Has TV	3,455	-6,618**	249.3
	(2,852)	(3,030)	(538.9)
Has Refrigerator	-4,052	-3,735	1,814*
	(4,751)	(5,046)	(1,099)
Has motorcycle	856.1	3,698	-1,234***
	(2,044)	(3,005)	(465.7)
Has mobile phone	-424.4	-2,751	-195.4
	(1,712)	(2,792)	(480.0)
Has washing machine	4,163	-7,778*	-2,018***
	(5,184)	(4,423)	(654.3)
Observations	573	876	770

The above analyses represent estimates for alternative treatment and comparison groups, which include CCT individuals or those who are members of the country's conditional cash transfer program. The main explanatory variable is PhilHealth membership status. Predicted out-of-pocket health expenditures are based on tobit estimates truncated at a lower bound of zero and an upper limit of PhP300,000. Standard errors in parenthesis; ***, **, and * denote statistical significance at 0.01, 0.05, and 0.10 levels, respectively.

Appendix 12 PhilHealth's Impact on Healthcare Utilization among CCT Members: Fixed Effects Before Matching, All Years

Variable	Outpatient Care Use			Inpatient Care Use		
	(1) Adult	(2) Children	(3) Full Sample	(1) Adult	(2) Children	(3) Full Sample
CCT Members	0.0261*	0.0238	0.0250*	0.0157*	0.0254	0.0111*
	(0.0163)	(0.0225)	(0.0159)	(0.0142)	(0.0190)	(0.0137)
Observations	12,338	11,240	24,319	12,336	11,235	24,311
R-squared	0.327	0.357	0.320	0.293	0.321	0.285

Notes: The above analyses represent pre-matching estimates for alternative treatment and comparison groups, which include CCT individuals or those who are members of the country's conditional cash transfer program. Specifications include enumeration area fixed effects, time fixed effects, socioeconomic characteristics (wealth characteristics), and time-varying demographic characteristics (age, household size). Standard errors in parentheses are clustered at the enumeration area/barangay level;***, **, and * denote statistical significance at 0.01, 0.05, and 0.10 levels, respectively.

Appendix 13 PhilHealth's Impact on Healthcare Spending among CCT Members: Fixed Effects Before Matching, All Years

Variable	Total Cost of Outpatient Care	Total Cost of Inpatient Care			Amount Paid for Confinement from Income
		Adult	Children	Full Sample	
CCT Members	4,755	-14,120	-114,166	-24,398	-2,152
	(2,150)	(88,654)	(135,324)	(45,243)	(1,794)
Observations	573	507	350	876	770
R-squared	0.622	0.800	0.778	0.661	0.543

Notes: The above analyses represent pre-matching estimates for alternative treatment and comparison groups, which include CCT individuals or those who are members of the country's conditional cash transfer program. Specifications include enumeration area fixed effects, time fixed effects, socioeconomic characteristics (wealth characteristics), and time-varying demographic characteristics (age, household size). Standard errors in parentheses are clustered at the enumeration area/barangay level;***, **, and * denote statistical significance at 0.01, 0.05, and 0.10 levels, respectively.