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Analysis of the Individually Paying Program of the Philippine Health Insurance Corporation

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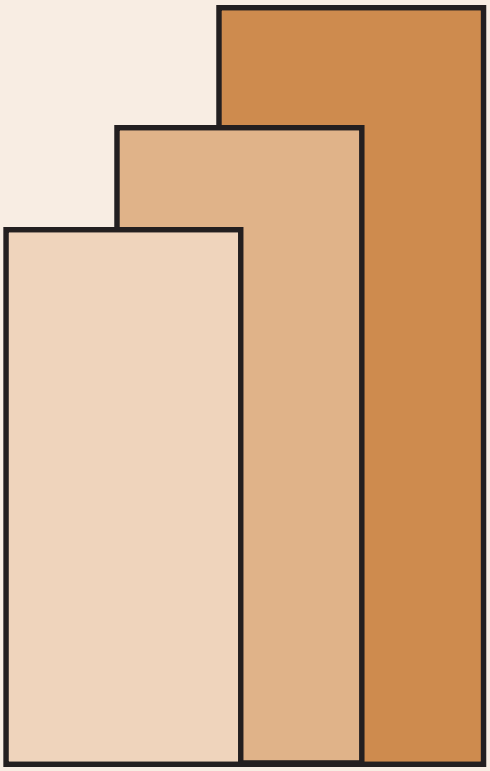

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Health System Research Management Project

Analysis of the Individually Paying Program of the Philippine Health Insurance Corporation

FINAL REPORT

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ABSTRACT

The Individually Paying Program (IPP) is the voluntary component of the Philippines' social health insurance program. The program caters to those in the informal sector and those without a formal employer-employee relationship. Coverage levels for the IPP were found to be considerably low with a regional average of 57% and a provincial average of 53%. Massive variation between provinces was found. Four important factors were identified when looking into said variation. First, availability and accessibility is an issue. Second, substitution effect between private and public facilities was observed. Third, income levels do not appear to be a factor in determining the level of insurance coverage. Lastly, the size of certain sectors had a significant effect on the coverage levels observed in the province. Although there is a need to corroborate the findings with an individual-level analysis, these results are good indicators to start with in order to address the lack of coverage in the voluntary program of PhilHealth.

Keywords: Health care financing, universal coverage, informal sector, voluntary program, social health insurance

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Acronyms

ARMM	Autonomous Region of Muslim Mindanao
CAR	Cordillera Administrative Region
IPP	Individually Paying Program
FIES	Family Income and Expenditure Survey
GDP	Gross Domestic Product
LFS	Labor Force Survey
NCR	National Capital Region
NSO	National Statistics Office
OLR	Ordered Logit Regression
OLS	Ordinary Least Squares
PhilHealth	Philippine Health Insurance
PHIC	Philippine Health Insurance Corporation
SHI	Social Health Insurance

SUMMARY

The social health insurance scheme of the Philippines, known as the Philippine Health Insurance (PhilHealth), was enacted in 1995[1]. PhilHealth has five schemes, one of which is the Individually Paying Program (IPP), which is the focus of this study.

The Individually Paying Program is the voluntary segment of PhilHealth. Due to its nature, it is important to identify the determinants of enrolment into the program. Identifying these factors will allow for better and more efficient targeting of the sectors of the population that are otherwise difficult to capture.

The decision to enroll should be analyzed at the individual level. However, due to data constraints, this is not possible for this particular study. Instead, the coverage rates were determined by province and the factors causing the variation between provinces were identified. The study was done using the 2010 Labor Force Survey (LFS) and the 2009 Family Income and Expenditure Survey (FIES).

Coverage rates were estimated using membership count data from the Philippine Health Insurance Corporation (PHIC) and the merged LFS-FIES datasets. Provincial characteristics were then identified and proxied by data largely taken from the National Statistics Office (NSO). These provincial characteristics were then used as independent variables in an Ordered Logistic Regression (OLR) in order to identify which ones led to the province more likely having undercoverage, full coverage or leakage.

Coverage levels for the IPP are considerably below the government's full coverage target. The regional average was found to be at 57% while provincial average was at 53%. Massive variation between provinces was found with a range of 2.4% to 166%.

The OLR highlighted four points in terms of the characteristics of the provinces and its relationship to the level of health insurance coverage. First, availability and accessibility is an issue. Provinces with higher bed-population and health professionals-population ratios were more likely to have higher coverage rates. Second, there appears to be a substitution effect between private and public facilities. The greater the number of private hospitals in the province, the more likely for the province to have higher coverage rates. This is not a surprising result given that the country's social health insurance scheme can be used in both private and public facilities.

Third, income levels do not appear to be a factor in determining the level of insurance coverage of the province. This is demonstrated by two results – the

[1] This study was done prior to the enactment of the National Health Insurance Act of 2013 (RA 10606), which amends a considerable portion of RA 7875.

magnitude and significance of the average household income of the non-poor population and the real GDP per capita of the province. Lastly, the size of certain sectors had a significant effect on the coverage levels observed in the province.

The first two results are consistent with economic theory and are therefore, somewhat expected. The last two results are a bit more interesting as these may highlight certain aspects of enrolment that might be particular to the Philippine picture. It cannot be stressed enough that these results need to be corroborated by an analysis done on the individual level, as the decision-making process is an individual activity. However, these results are good indicators to start with in order to address the lack of coverage in the voluntary program PhilHealth.

INTRODUCTION

Background on the National Health Insurance Program

The National Health Insurance Act (R.A. 7875) was promulgated in 1995. The national health insurance program "seeks to provide universal health insurance coverage and ensure affordable, acceptable, available, accessible, and quality health care services for all citizens of the Philippines" (PHIC, 2012). The Philippine Health Insurance (PhilHealth) replaced the Medicare Program and expanded coverage from government to private employees to include individuals in the informal sector.

PhilHealth is divided into the following schemes:

a. **Employed Program**. This covers people in the government and private sectors with a formal employer-employee relationship.
b. **Individually Paying Program.** This refers to people who opt to pay for their own membership. This generally includes the self-employed, self-earning and those in occupations without a formal employer-employee relationship.
c. **Sponsored Program.** This covers the "lowest 25% of the Philippine population" and families targeted by the Department of Social Welfare and Development (DSWD) under the National Household Targeting System for Poverty Reduction (PHIC, 2013).
d. **Lifetime.** This encompasses individuals 60 years and over who were previously covered by any of the four schemes and have accumulated 120 premium monthly contributions.
e. **Overseas Workers.** This refers to active land-based Overseas Filipino Workers (OFW).

This study focuses on the Individually Paying Program (IPP). The national health insurance scheme allows members to enlist any number of dependents. Qualified dependents include the legal spouse, parents over 60 years of age who are non-members or have inactive memberships and children below 21 years of age who are unmarried and unemployed. Children over the age of 21 suffering from disabilities that render them completely reliant on the member are also included in the scheme. Dependents are collectively allowed 45 days of coverage per calendar year.

The Value of Health Insurance

Philippine medical care remains expensive and the government has aimed at achieving universal health coverage in order for the poorer segments of the population to utilize health care without it being impoverishing. Health insurance allows people access to care that they would otherwise not be able to afford. It also ameliorates the risk of financial loss. In the past decades, an increasing number of governments in developing and underdeveloped countries are providing social health insurance as a mechanism to address financial barriers to accessible health care, especially for the marginalized sectors of the population.

Joseph Newhouse (1977) studied the determinants of the quantity of resources a country allocated to medical care. His findings have since been dubbed the "first law of health economics." This law consists of two parts, the first being income elasticity of medical care as 1.0 or larger and the second being 90% of the variation in health expenditures per capita is explained by the variation in income per capita (van der Gaag, et al., 2008). Applying the same regression to the Philippines provides the following numbers:

Dependent Variable: Log Health Expenditures per capita	
Constant	-13.37*** (0.000)
Log GDP/capita	2.24*** (0.000)
R-squared	0.97
N	16

Note: *** indicates 1% significance level. N is the number of observations.
GDP and Health Expenditures are PPP at constant 2005 prices.

The results above show an income elasticity of 2.24, making it very elastic and hence, a luxury good. The r-squared indicates that income per capita explains 97% of health expenditures per capita. In the case of Vietnam, it is recommended that as health expenditures increase, it would be efficient and equitable to channel spending through insurance and pre-payment (Ekman, et al., 2008).

The Concept of Universal Coverage

Universal coverage has three components: breadth, depth and height. Breadth refers to population coverage; depth refers to service coverage including inpatient and outpatient services; height refers to the level of financial protection (Tangcharoensathien, et al., 2011).

Quimbo, et.al. (2011:7) found that, for the Philippines, "increased insurance or better financial protection confers better health and non-health (e.g., food) consumption of the patient in the future." Although the study was not able to disaggregate whether the benefit was driven by breadth or depth, it nonetheless indicates a good starting point for promotion of universal coverage.

A joint study conducted by the Department of Health and PhilHealth in 2008 "highlighted the need to increase enrollment coverage, improve availment of

benefits and increase support value for claims in order for the National Health Insurance Program to provide Filipinos substantial risk protection" (DOH AO 2010-0036). The Benefit Delivery Review found that the benefit delivery rate nationwide is only around 8 percent.(DOH, 2010).

This study will only focus on the breadth aspect of coverage. Looking at coverage levels will help determine the reasons for under-coverage and leakage in different regions and provinces. Establishing the issues pertaining to coverage will help in formulating the steps necessary towards universal coverage.

REVIEW OF LITERATURE

Voluntary Health Insurance: Experiences from Other Countries

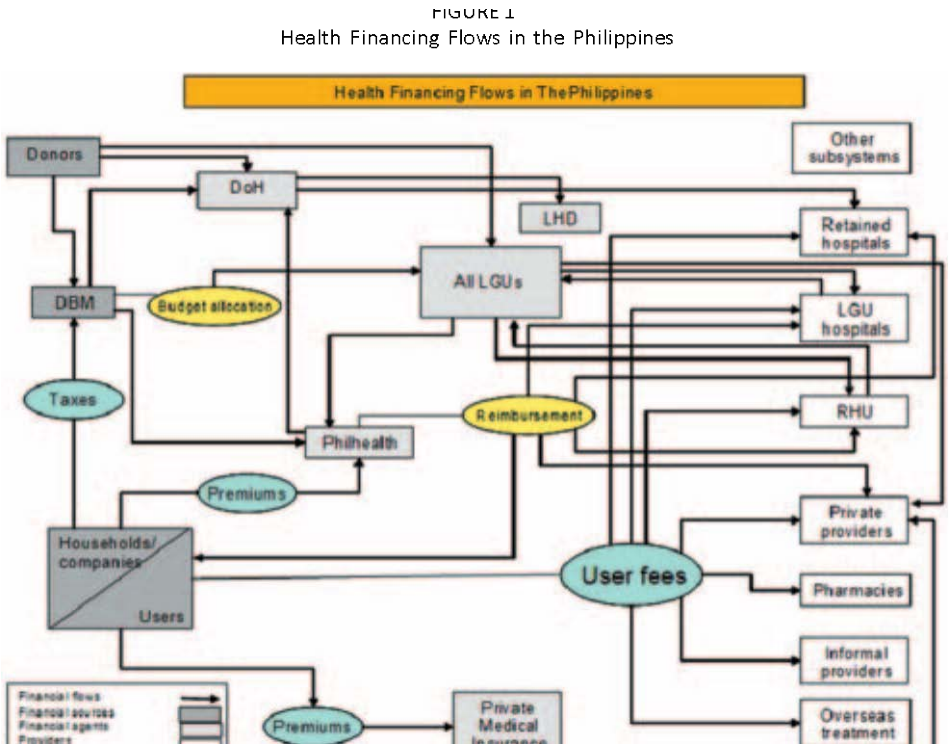
There are two types of health care systems most commonly observed. One is the national health system seen in some European countries like the Nordic countries (Sweden, Norway, Denmark), and the United Kingdom. This type of health system is funded through taxation and the supply of health care is mainly organized by the state (Hassenteufel, et.al., 2007). The second type is the health insurance system. This type is funded by health insurance funds financed by social contributions and the supply of health care is often a combination of private and public services (Hassenteufel, et.al., 2007).

The latter health system is the type often adapted by low and middle-income countries. This is because the former needs a well-established taxation system for it to work seamlessly, which is absent in the said countries. There are different variations of the health insurance system – some have social health insurance systems, others have private health insurance "sickness funds" and there are a number with hybrids of both social health insurance and private health insurance.

Liu (2002) highlights the three main functions of health insurance, namely, resource mobilization, risk-pooling and provider payment. Health insurance should "provide financial resources to the health system, making sure that individuals have adequate access to public health and personal health care, and setting financial incentives for providers to deliver healthcare services in a cost-effective way" (Liu, 2002:136).

In the Philippines, the National Health Accounts show four main sources of financing: (1) national and local government, (2) government and private insurance, (3) user fees or out-of-pocket expenditures, (4) donors. Figure 1 below is an illustration of the health financing flow in the Philippines.

Fig. 1 Health Financing Flows in the Philippines



Source: HSRA Monograph on Health Financing, Department of Health

Based on the above illustration, the Philippine health care system is a hybrid of the two systems earlier described. The expansion of PhilHealth, however, signaled the objective to move towards financing through an insurance system.

Theory on Determinants of Health Insurance Enrolment

There are several theories of decision-making when it comes to enrolling into a health insurance scheme. Consumer theory is often used to explain the decision individuals take when it comes to health insurance. These decisions are made under uncertainty and Cameron et.al. (1988) argue that individuals do not base the decision solely on their utility but also on their expectations about certain factors. A number of theories for decision-making under uncertainty have sprung up over the years, including 'expected utility theory', 'state-dependent utility theory', 'endowment effect theory', 'status quo bias theory', 'regret and disappointment paradigms', and 'prospect theory' (Schneider, 2004).

Studies on enrolment determinants have seen an array of approaches. Nyman (1999) looks into the 'access motive' of acquiring health insurance. He argues that the long-standing explanation for health insurance status is something that should be incorporated into theory – the value of health insurance is that it makes otherwise unobtainable health care obtainable.

There are demand-side and supply-side aspects to the decision-making process of availing health insurance. Ultimately, the decision is down to the individual level. The state-dependent theory, for instance, suggests, "consumers' utility levels and tastes are influenced by their state, such as their health or socio-economic status" (Schneider, 2004:350). The supply-side aspects of the decision can be attributed to the concept of 'trust' as that put forward by Mechanic (1998). Trust is defined as "the expectation that individuals and institutions will meet their responsibilities to us" (Mechanic, 1998:662). Both availability and accessibility of health care services form part of the trust equation. Consumers need to know that the services will be there when needed – otherwise, getting health insurance would be for naught.

Factors affecting choice: Cases of other Developing Countries

Castel, et.al. (2011) identified three factors that affected the willingness of individuals to participate in the health insurance scheme in Vietnam. First, the health insurance fee versus the benefits expected. Benefits can range from quality of services to availability of services and to depth of coverage. Second, the drop out rate was affected by increases in health insurance premiums. This could mean: 1.) health insurance is no longer affordable or, 2.) the higher premium paid is no longer congruent to the benefits derived from the insurance. The third factor has to do with the individuals' rational behavior and their discount factor. Castel, et.al. (2011) point out that there is a trade-off between individuals' short-term and long-term desires.

In Vietnam, the significant determinants of enrolment were found to be affordability, the quality of existing scheme which included both administrative issues and supply of health care services, and a lack of understanding about health risks and pooling (Castel, et.al., 2011).

In Thailand, Supakankunti (2000) found that the educational level, average number of employed members in the household, average annual household income and the presence of illness were significant factors in determining whether or not the individual participated in voluntary health insurance.

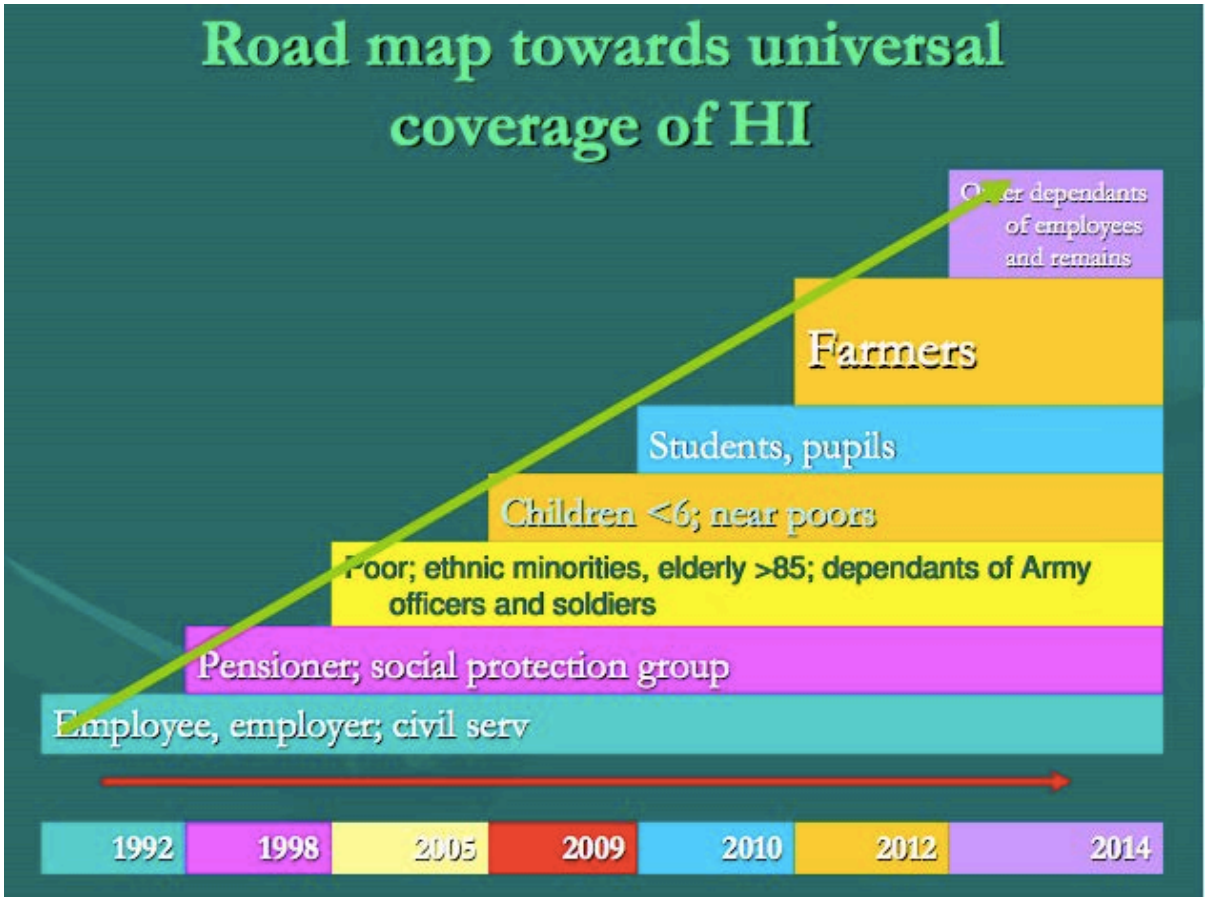
Similarly, Jehu-Appiah, et.al. (2011) found that for Ghana, the significant factors included income, educational level and technical quality of care, services delivery adequacy and "health beliefs and attitudes" in determining the individual's decision to enroll. He also found that female-headed households were more likely to participate in health insurance schemes.

Expansion of Health Insurance Program

In order to achieve universal health coverage, making health insurance mandatory remains the easiest way of assuring coverage of all population segments. However, this is not always an option especially if there is no clear mechanism for implementation. The second best option is to expand the voluntary program in order to cover different segments of the population.

In Vietnam, the expansion of the social health insurance program was achieved by targeting different population groups. They started with the formal sector and later on expanded to the poor population, the veterans, children under 6 years old and students (Castel, et.al., 2011). Figure 2 shows the expansion of Vietnam's social health insurance.

Fig. 2 Vietnam's road map towards universal coverage



Source: Presentation by Vietnam's Ministry of Health, 2012, www.ilo.org

Ghana took a different approach in expanding health insurance coverage. The strategy was to create a hybrid wherein a single payer scheme would be available for the formal sector and a multiple payer semi-autonomous mutual health organizations for the informal sector (Agyepong, et.al., 2008).

Importance of Political Will

Carrin, et.al. (2001) identified four main reasons why there is a difficulty in implementation of SHI in developing countries. One of the reasons cited is the lack of strong and steady political support. Kwon (2008:70) makes a similar observation for South Korea, stating "Political will and commitment are crucial for universal coverage of the population in these countries."

In Castel, et.al.'s (2011) recommendations for Vietnam, they emphasize the efficiency of making health insurance mandatory. In their recommendations, they propose the possibility of increasing registration of small business to the tax authorities. Such a policy would be cumbersome and will most likely prove to be unpopular, especially among small-business owners. Adapting such a policy would then require strong political support and thorough follow-throughs from the administration.

McIntyre et.al. (2003) also reiterates the importance of key stakeholders in implementation and in the actual process of designing SHI. In South Africa, the decisions taken by the Department of Health "were heavily influenced by attempts to accommodate the concerns of the national Treasury" (McIntyre, et.al., 2003:56). The importance of political feasibility is highlighted in examples given which include the experiences of Egypt and Israel. It is therefore important to remember the political aspect of the whole process, as it will, in part, determine the failure or success of the SHI.

METHODOLOGY

The main objective of this study is to assess the coverage levels of the voluntary scheme and determine the causes of variation between provinces.

The level of coverage was computed using the following formula:

$$IPP\ Coverage = \frac{Number\ \ of\ IPP\ members}{Number\ \ of\ informal\ \ wrokers} (1)$$

Three steps were employed in order to assess the level of coverage per province. First, the number of people employed in the informal sector was estimated from the merged 2010 Labor Force Survey (LFS) and 2009 Family Income and Expenditure Survey (FIES). Estimates were done on national, regional and provincial levels. Second, the number of potential dependents was estimated from the same dataset in order to exclude them from the denominator in Eq. (1). Third, the coverage rates were computed by employing Eq. (1) using data provided by PHIC as a numerator.

Estimation of the Informal Sector

Using the merged LFS-FIES dataset, the steps taken to arrive at the given estimates are as follows:

1. The total population of the country was taken from the 2010 Census released by the National Statistics Office (NSO).
2. Given that only individuals 15 years and older are legally allowed to work, those aged 14 years and below were removed from the population sample.
3. The proportions of employed, unemployed and those who are not part of the labor force[2] were estimated. Using the estimated proportion of employed individuals, the total number of employed people was obtained using the population derived in step 2.
4. The proportion of individuals classified as non-poor was estimated by clustering the third to fifth income quintiles. This proportion was subsequently used to estimate the total number of employed non-poor population.
5. The class of workers listed in the dataset comprised of:
    (0) Private Household
    (1) Private Establishment
    (2) Government / Government Corporation
    (3) Self-Employed
    (4) Employer
    (5) Family owned business (with pay)
    (6) Family owned business (without pay)

    Individuals counted in the informal sector are those belonging to groups (0), (3), (4), (5) and (6). Using the proportions generated, the total number of employed non-poor was estimated for the informal sector.

Estimation of Potential Dependents in the Informal Sector

Potential dependents were removed from the informal population before calculating the coverage rates. Conservative and liberal estimates of the potential dependents are provided.

Some individuals working in the informal sector are potential dependents of individuals working in the formal sector. Working under the assumption that those who are part of the informal sector who qualify as dependents of individuals working in the formal sector will not enroll into the IPP program, the proportion of potential dependents is estimated. This assumption is grounded on the notion that employers automatically enroll those in the formal sector. The proportions are

[2] Individuals who are not willing or able to work are not counted as part of the labor force.

estimated using the LFS/FIES dataset. The following people are included as potential dependents:

1. If the household head is employed in the formal sector (private or government):
    a. Child of household head aged between 15 and 20 in the informal sector
    b. Spouse of household head in the informal sector
    c. Parent of household head aged over 60 in the informal sector

2. If the spouse of the household head is employed in the formal sector:
    a. Household head in the informal sector
    b. Child of spouse and household head aged between 15 and 20 in the informal sector

3. If the household head is employed in the informal sector:
    a. Child of household head aged between 15 and 20 in the informal sector
    b. Spouse of household head in informal sector

The estimated number of potential dependents was then subtracted from the estimated number of employed people in the informal sector. The figures derived from these steps constitute the conservative estimates of potential dependents. The liberal estimates are comprised of the conservative estimate and the rest of the informally employed under the age of 21.

The aforementioned steps for both the informal sector population and the potential dependents were used to estimate the figures for national, regional and provincial levels. For the provincial level, two estimates are provided. The first is a direct estimate of the data while the second estimate uses the jackknife method to get the proportions. The LFS-FIES dataset has been stratified by region, which indicates that the provincial level numbers might not be representative of the true population. Although the estimates are not expected to be biased, the variance would be expected to be higher than desired given the small sample sizes of some of the provinces. The jackknife method addresses this issue by replicating the sample for each province. This method is used as a form of robustness check. The population estimates for the country, regions and provinces are found in Appendix A.

After deriving the population for the informal sector, the coverage rate per province was estimated. Using Eq. (1) provides a ratio between 0 and infinity. The ratio is interpreted as follows:

1. If 0<Ratio<1, there is under-coverage.
    a. If Ratio<=0.5, the province is classified as having severe under-coverage.
    b. If 0.5<Ratio<=0.75, the province is classified as having moderate under-coverage.

c. If 0.75<Ratio<=.9, the province is classified as having mild under-coverage.

2. If Ratio=1, full coverage has been achieved.
   If 0.9<Ratio<1.1, the province is classified as having full coverage. A 10% margin on both sides has been set to allow for error in estimates.

3. If Ratio>1.1, leakage exists.
   a. If 1.1<Ratio<=1.25, the province is classified as having mild leakage.
   b. If 1.25<Ratio<=1.5, the province is classified as having moderate leakage.
   c. If Ratio>1.5, the province is classified as having severe leakage.

Determination of Factors Leading to Under-Coverage and Leakage

In order to assess the difference in levels of coverage between the provinces, an ordered logistic regression (OLR) was employed. OLR is similar to a logistic regression model except that it considers the event and all other events that are ordered before it.

The OLR is modeled as follows:

$$C_{ij} = \Pr(y_i \leq j) = \sum_{k=1}^{j} \Pr(y_i = k)$$

where C_{ij} is the cumulative probability that the province is in the j_{th} category or higher. The cumulative probability can be converted into a cumulative logit.

$$logit(C_{ij}) = \log\left(\frac{C_{ij}}{1 - C_{ij}}\right)$$

The OLR model then becomes

$$logit(C_{ij}) = \propto_i - \beta \boldsymbol{X_i}$$

which models the cumulative logit as a linear function of the independent variables.

The ordered categories are as follows:

(1) Severe Under-coverage
(2) Moderate Under-coverage
(3) Mild Under-coverage
(4) Full coverage
(5) Leakage

The OLR is run on identified demand-side and supply-side provincial level characteristics. The vectors of variables identified are:

X = vector of socio-demographic characteristics of the provinces

1. Education Index taken from the 2009 Human Development Index
2. Health Index taken from the Good Governance Index
3. Male-female ratio
4. Average household income of non-poor population
5. Age brackets: Percent of the population aged 0 to 14; aged 15 to 64; aged 65 and over
6. Sectoral Employment: Percent of employed population in agriculture, sales, services, manual work, processing/manufacturing, mining, skilled work, and education/academe
7. Nature of Employment: Percent of employed population with permanent job, short term job

S = vector of supply-side variables (provincial level)

1. Real GDP/capita of province (deflated by the 2006 Consumer Price Index)
2. Health expenditures/capita of province
3. Population ratios: beds and health professionals
4. Number of private hospitals
5. Number of government hospitals

A linear regression was also estimated using the same vector of variables but restricted to the provinces with under-coverage. For this particular regression, the actual ratios were used as a dependent variable. This second regression was employed due to the highly skewed nature of the coverage rates generated, with approximately 85% of the provinces being categorized under under-coverage.

DESCRIPTION OF VARIABLES

The vector of variables chosen addresses both the demand-side and supply-side aspects of the decision-making process. All the determinants are provincial-level variables.

Vector of Demand-Side Variables

Education Index. This serves as a proxy for the level of education in the province. The level of education could affect the choices taken. Individuals with higher levels of education are expected to make more informed decisions – they are more likely to have better access to different sources of information ad may have the capability to process this information better.

Health Index. This was taken from the Administrative Governance Index of the Good Governance Index[3]. This serves as the provincial level proxy of the health status of the population.

Male-Female Ratio. Provincial ratio of make to female population. Some studies have shown that female-headed households or at least households whose health decisions are made by the woman are more likely to enroll into health insurance as well as avail of health services.

Average Income of Non-Poor Population. Mean income of the population belonging to quintiles 3, 4 and 5. Income is considered an important predictor on both utilization and health insurance availment. It is expected to have a positive impact on enrolment.

Age brackets. Age is a factor in health insurance enrolment for a number of reasons. Certain age groups might have a higher possibility of having well-established employment and thus, higher income. A study by ____ found that young adults were the least likely group to have health insurance. Concurrently, it can also be argued that with age can come more education and experience which would allow for more informed decision-making.

Sectoral Employment. The types of occupation in each sector might lead to some being more likely to enroll into a health insurance scheme. This could be due to the nature of the occupation in terms of health risks and in terms of awareness of the existence as well as the need to avail of certain social security measures.

Nature of Employment. The nature of employment in terms of permanency is a possible predictor of enrolment. Those with short-term jobs might be more likely to enroll in the voluntary program if employers do not provide coverage. On the other hand, the lack of employment would discourage them from enrolling or maintaining their health insurance status.

Vector of Supply-Side Variables

Real GDP per capita of the province. The GDP per capita of the province signals the over-all level of wealth of the province. This is also an indication of the capacity of the provincial government to provide services to its population.

Health Expenditures per capita of the province. Government health expenditure per capita is used as a proxy for availability as well as accessibility. It is plausible

[3] Computation of health index: Ave (Health Personnel Per 10,000 Population Index + Percent of Households with Access to Safe Water Index + Live Births Less Than 250 Grams Per 1000 Births Index + Number of Barangay Health Stations per 100,000 Population Index). Source: NSCB Technical Notes on Good Governance Index. Available at: http://www.nscb.gov.ph/ggi/techNotes.asp.

that the more the government spends on health care, the more the quantity of public services is made available, at the very least, and the better the quality, at best.

Population Ratios: Beds and Health Professionals. Both these variables serve as proxies for availability of services. Availability of services where health insurance can be used is important in the decision of individual to enroll. The ratios are the number per 10,000 people.

Number of hospitals: Government and Private. Due to the in-patient inclination of services covered under PhilHealth, the existence of hospital can be considered an indicator for enrolment. Private and government hospitals are separated to see whether the service provider plays a role in the decision to avail of health insurance.

RESULTS AND DISCUSSION

Coverage Rates for Individually Paying Program

The coverage rates were obtained for the national, regional and provincial levels.

Table 1. National Coverage for Individually Paying Program

	Coverage Rate (Conservative Estimate of Dependents)	Remarks	Coverage Rate (Liberal Estimate of Dependents)	Remarks
Philippines	55.93%	Moderate undercoverage	58.34%	Moderate undercoverage

Table 2. Regional Coverage for Individually Paying Program (Using Conservative Estimates of Informal Population)

Region	Coverage Rate	Remarks
I - Ilocos Region	56.78%	Moderate undercoverage
II - Cagayan Valley	42.80%	Severe undercoverage
III - Central Luzon	79.95%	Mild undercoverage
IVA - Calabarzon	79.24%	Mild undercoverage

IVB - Mimaropa	45.25%	Severe undercoverage
V - Bicol Region	23.58%	Severe undercoverage
VI - Western Visayas	39.60%	Severe undercoverage
VII - Central Visayas	41.85%	Severe undercoverage
VIII - Eastern Visayas	28.95%	Severe undercoverage
IX - Zamboanga Peninsula	41.49%	Severe undercoverage
X - Northern Mindanao	63.53%	Moderate undercoverage
XI - Davao	124.80%	Moderate leakage
XII-Socksargen	94.80%	Full coverage
NCR	71.51%	Moderate undercoverage
CAR	69.95%	Moderate undercoverage
ARMM	5.66%	Severe undercoverage
Caraga	65.60%	Moderate undercoverage

Table 3. Provincial Coverage Rates for Individually Paying Program (Using Conservative Estimates of Informal Population)

Province	No Jackknife		Jackknife	
	Coverage Rate	Remarks	Coverage Rate	Remarks
REGION I				
Ilocos Norte	48.36%	Severe undercoverage	48.48%	Severe undercoverage
Ilocos Sur	50.65%	Moderate undercoverage	50.53%	Moderate undercoverage
La Union	69.17%	Moderate undercoverage	69.79%	Moderate undercoverage
Pangasinan	57.35%	Moderate undercoverage	57.43%	Moderate undercoverage
REGION II				
Batanes	17.29%	Severe undercoverage	17.29%	Severe undercoverage

Cagayan	29.04%	Severe undercoverage	28.94%	Severe undercoverage
Isabela	55.77%	Moderate undercoverage	55.94%	Moderate undercoverage
Nueva Vizcaya	56.76%	Moderate undercoverage	56.81%	Moderate undercoverage
Quirino	17.81%	Severe undercoverage	18.04%	Severe undercoverage
REGION III				
Aurora	38.66%	Severe undercoverage	38.32%	Severe undercoverage
Bataan	68.26%	Moderate undercoverage	70.12%	Moderate undercoverage
Bulacan	70.57%	Moderate undercoverage	69.90%	Moderate undercoverage
Nueva Ecija	76.03%	Mild undercoverage	75.27%	Moderate undercoverage
Pampanga	104.12%	Full coverage	102.20%	Full coverage
Tarlac	69.65%	Moderate undercoverage	70.61%	Moderate undercoverage
Zambales	93.62%	Full coverage	90.96%	Full coverage
REGION IVA				
Batangas	99.88%	Full coverage	100.32%	Full coverage
Cavite	58.68%	Moderate undercoverage	58.36%	Moderate undercoverage
Laguna	76.50%	Mild undercoverage	75.70%	Mild undercoverage
Quezon	166.77%	Severe leakage	164.30%	Severe leakage
Rizal	50.93%	Moderate undercoverage	50.97%	Moderate undercoverage
REGION IVB				
Marinduque	37.29%	Severe undercoverage	36.73%	Severe undercoverage
Occidental Mindoro	37.38%	Severe undercoverage	38.06%	Severe undercoverage
Oriental Mindoro	48.49%	Severe undercoverage	48.98%	Severe undercoverage
Palawan	47.05%	Severe undercoverage	47.46%	Severe undercoverage
Romblon	41.73%	Severe undercoverage	41.46%	Severe undercoverage
REGION V				
Albay	27.12%	Severe	26.90%	Severe

		undercoverage		undercoverage
Camarines Norte	47.01%	Severe undercoverage	47.38%	Severe undercoverage
Camarines Sur	23.90%	Severe undercoverage	23.99%	Severe undercoverage
Catanduanes	14.90%	Severe undercoverage	14.97%	Severe undercoverage
Masbate	9.23%	Severe undercoverage	9.31%	Severe undercoverage
Sorsogon	22.52%	Severe undercoverage	22.69%	Severe undercoverage
REGION VI				
Aklan	38.50%	Severe undercoverage	38.90%	Severe undercoverage
Antique	29.17%	Severe undercoverage	29.50%	Severe undercoverage
Capiz	55.15%	Moderate undercoverage	55.43%	Moderate undercoverage
Guimaras	18.62%	Severe undercoverage	18.52%	Severe undercoverage
Iloilo	22.15%	Severe undercoverage	22.20%	Severe undercoverage
Negros Occidental	39.43%	Severe undercoverage	39.83%	Severe undercoverage
REGION VII				
Bohol	51.17%	Moderate undercoverage	51.76%	Moderate undercoverage
Cebu	36.33%	Severe undercoverage	36.04%	Severe undercoverage
Negros Oriental	54.20%	Moderate undercoverage	53.50%	Moderate undercoverage
Siquijor	53.23%	Moderate undercoverage	50.52%	Severe undercoverage
REGION VIII				
Biliran	24.20%	Severe undercoverage	24.18%	Severe undercoverage
Eastern Samar	25.19%	Severe undercoverage	24.78%	Severe undercoverage
Leyte	38.30%	Severe undercoverage	39.30%	Severe undercoverage
Northern Samar	10.26%	Severe undercoverage	10.15%	Severe undercoverage
Samar (Western)	20.85%	Severe undercoverage	20.81%	Severe undercoverage

Southern Leyte	33.30%	Severe undercoverage	33.36%	Severe undercoverage
REGION IX				
Isabela City	53.53%	Moderate undercoverage	49.80%	Severe undercoverage
Zamboanga del Norte	24.83%	Severe undercoverage	24.90%	Severe undercoverage
Zamboanga del Sur	58.51%	Moderate undercoverage	58.46%	Moderate undercoverage
Zamboanga Sibugay	14.99%	Severe undercoverage	15.52%	Severe undercoverage
REGION X				
Bukidnon	53.97%	Moderate undercoverage	53.92%	Moderate undercoverage
Camiguin	31.86%	Severe undercoverage	31.96%	Severe undercoverage
Lanao del Norte	66.62%	Moderate undercoverage	62.39%	Moderate undercoverage
Misamis Occidental	116.50%	Mild leakage	115.97%	Mild leakage
Misamis Oriental	59.06%	Moderate undercoverage	59.39%	Moderate undercoverage
REGION XI				
Compostela Valley	68.91%	Moderate undercoverage	68.99%	Moderate undercoverage
Davao del Norte	125.89%	Moderate leakage	124.21%	Mild leakage
Davao del Sur	150.80%	Severe leakage	147.62%	Moderate leakage
Davao Oriental	94.58%	Full coverage	96%	Full coverage
REGION XII				
Cotabato City	93.73%	Full coverage	88.54%	Mild undercoverage
North Cotabato	76.83%	Mild undercoverage	79.82%	Mild undercoverage
Sarangani	69.90%	Moderate undercoverage	69.89%	Moderate undercoverage
South Cotabato	140.41%	Moderate leakage	133.91%	Moderate leakage
Sultan Kudarat	66.12%	Moderate undercoverage	65.96%	Moderate undercoverage
ARMM				
Basilan	18.17%	Severe undercoverage	17.82%	Severe undercoverage
Lanao del Sur	12.72%	Severe undercoverage	11.11%	Severe undercoverage
Maguindanao	16.96%	Severe	17.07%	Severe

		undercoverage		undercoverage
Sulu	2.39%	Severe undercoverage	2.44%	Severe undercoverage
Tawi-Tawi	2.57%	Severe undercoverage	2.61%	Severe undercoverage
CARAGA				
Agusan del Norte	114.73%	Mild leakage	114.39%	Mild leakage
Agusan del Sur	51.54%	Moderate undercoverage	52.24%	Moderate undercoverage
Surigao del Norte	54.60%	Moderate undercoverage	54.10%	Moderate undercoverage
Surigao del Sur	52.96%	Moderate undercoverage	52.61%	Moderate undercoverage
CAR				
Abra	54.67%	Moderate undercoverage	54.4.%	Moderate undercoverage
Apayao	40.02%	Severe undercoverage	40.19%	Severe undercoverage
Benguet	94.87%	Full coverage	95.27%	Full coverage
Ifugao	33.10%	Severe undercoverage	33.51%	Severe undercoverage
Kalinga	38.54%	Severe undercoverage	38.44%	Severe undercoverage
Mountain Province	45.10%	Severe undercoverage	45%	Severe undercoverage
NCR				
First District NCR	71.17%	Moderate undercoverage	70.32%	Moderate undercoverage
Second District NCR	80.51%	Mild undercoverage	81.19%	Mild undercoverage
Third District NCR	93.98%	Full coverage	94.35%	Full coverage
Fourth District NCR	50.75%	Moderate undercoverage	50.29%	Severe undercoverage

Tables 2 and 3 show the coverage rates for the regions and the provinces. As can be seen from the tables, most provinces suffer from under-coverage, with a regional average of 57% and a provincial average of 53%. The variation between provinces is sizable, ranging from a coverage rate of 2.4% to 166%. Provinces with the lowest coverage rates are concentrated in the ARMM region. All provinces in this region are classified under severe under-coverage with Sulu and Tawi-Tawi trailing behind at 2.39% and 2.57%, respectively. Bicol and Eastern Visayas regions also have among the lowest coverage rates at 23.58% and 28.95%. Most of the provinces with coverage rates below 20% are lone-standing islands. This might be an indication of

an access-issue. Leakages were observed in the Davao region (Region XI) with a regional coverage of 124.8% while Socksargen nears full coverage at 94.8%.

Table 4. Regional Coverage for Individually Paying Program (Using Liberal Estimates of Informal Population)

Region	Coverage Rate	Remarks
I - Ilocos Region	58.60%	Moderate undercoverage
II - Cagayan Valley	44.18%	Severe undercoverage
III - Central Luzon	82.90%	Mild undercoverage
IVA - Calabarzon	82.70%	Mild undercoverage
IVB - Mimaropa	47%	Severe undercoverage
V - Bicol Region	69.10%	Moderate undercoverage
VI - Western Visayas	41.30%	Severe undercoverage
VII - Central Visayas	43.78%	Severe undercoverage
VIII - Eastern Visayas	30.40%	Severe undercoverage
IX - Zamboanga Peninsula	43.30%	Severe undercoverage
X - Northern Mindanao	66.73%	Moderate undercoverage
XI - Davao	131.90%	Moderate leakage
XII - Socksargen	100%	Full coverage
NCR	76.10%	Mild undercoverage
CAR	71.88%	Moderate undercoverage
ARMM	5.79%	Severe undercoverage
Caraga	68.60%	Moderate undercoverage

Table 5. Provincial Coverage for Individually Paying Program (Using Liberal Estimates of Informal Population)

Province	No Jackknife		Jackknife	
	Coverage Rate	Remarks	Coverage Rate	Remarks
REGION I				
Ilocos Norte	49.96%	Severe undercoverage	48.50%	Severe undercoverage
Ilocos Sur	51.17%	Moderate undercoverage	50.50%	Moderate undercoverage
La Union	71.85%	Moderate undercoverage	69.80%	Moderate undercoverage
Pangasinan	59.52%	Moderate undercoverage	57.50%	Moderate undercoverage
REGION II				
Batanes	21.05%	Severe undercoverage	17.33%	Severe undercoverage
Cagayan	29.96%	Severe undercoverage	28.96%	Severe undercoverage
Isabela	57.70%	Moderate undercoverage	56%	Moderate undercoverage
Nueva Vizcaya	59.55%	Moderate undercoverage	56.85%	Moderate undercoverage
Quirino	17.80%	Severe undercoverage	18%	Severe undercoverage
REGION III				
Aurora	40.59%	Severe undercoverage	38.36%	Severe undercoverage
Bataan	71.33%	Moderate undercoverage	70.22%	Moderate undercoverage
Bulacan	74.04%	Moderate undercoverage	70.11%	Moderate undercoverage
Nueva Ecija	79.08%	Mild undercoverage	75.30%	Mild undercoverage
Pampanga	106.30%	Full coverage	102%	Full coverage
Tarlac	72.10%	Moderate undercoverage	70.70%	Moderate undercoverage
Zambales	93.62%	Full coverage	90.95%	Full coverage
REGION IVA				

Batangas	103.35%	Full coverage	100.40%	Full coverage
Cavite	63.38%	Moderate undercoverage	58.70%	Moderate undercoverage
Laguna	79.86%	Mild undercoverage	75.90%	Mild undercoverage
Quezon	172.28%	Severe leakage	164.40%	Severe leakage
Rizal	53.67%	Moderate undercoverage	51.15%	Moderate undercoverage
REGION IVB				
Marinduque	38%	Severe undercoverage	36.74%	Severe undercoverage
Occidental Mindoro	41.26%	Severe undercoverage	38.16%	Severe undercoverage
Oriental Mindoro	49.55%	Severe undercoverage	49%	Severe undercoverage
Palawan	49.57%	Severe undercoverage	47.50%	Severe undercoverage
Romblon	42.46%	Severe undercoverage	41.48%	Severe undercoverage
REGION V				
Albay	28%	Severe undercoverage	26.90%	Severe undercoverage
Camarines Norte	47.50%	Severe undercoverage	47.38%	Severe undercoverage
Camarines Sur	25.07%	Severe undercoverage	24.00%	Severe undercoverage
Catanduanes	16%	Severe undercoverage	15%	Severe undercoverage
Masbate	9.65%	Severe undercoverage	9.30%	Severe undercoverage
Sorsogon	23.06%	Severe undercoverage	22.70%	Severe undercoverage
REGION VI				
Aklan	41.89%	Severe undercoverage	39.10%	Severe undercoverage
Antique	29.82%	Severe undercoverage	29.50%	Severe undercoverage
Capiz	57.33%	Moderate undercoverage	55.50%	Moderate undercoverage
Guimaras	18.99%	Severe undercoverage	18.50%	Severe undercoverage
Iloilo	23%	Severe undercoverage	22.20%	Severe undercoverage
Negros Occidental	41.17%	Severe	39.85%	Severe

		undercoverage		undercoverage
REGION VII				
Bohol	52.32%	Moderate undercoverage	51.78%	Moderate undercoverage
Cebu	38.58%	Severe undercoverage	36.13%	Severe undercoverage
Negros Oriental	55.87%	Moderate undercoverage	53.52%	Severe undercoverage
Siquijor	53.23%	Moderate undercoverage	50.50%	Severe undercoverage
REGION VIII				
Biliran	25.62%	Severe undercoverage	24.12%	Severe undercoverage
Eastern Samar	27.21%	Severe undercoverage	24.80%	Severe undercoverage
Leyte	40.11%	Severe undercoverage	39.30%	Severe undercoverage
Northern Samar	10.85%	Severe undercoverage	10.20%	Severe undercoverage
Samar (Western)	21.80%	Severe undercoverage	20.80%	Severe undercoverage
Southern Leyte	33.69%	Severe undercoverage	33.36%	Severe undercoverage
REGION IX				
Isabela City	54.55%	Moderate undercoverage	49.90%	Severe undercoverage
Zamboanga del Norte	25.84%	Severe undercoverage	24.90%	Severe undercoverage
Zamboanga del Sur	61.64%	Moderate undercoverage	58.57%	Moderate undercoverage
ZamboangaSibugay	15.60%	Severe undercoverage	15.52%	Severe undercoverage
REGION X				
Bukidnon	56.45%	Moderate undercoverage	53.90%	Moderate undercoverage
Camiguin	32.45%	Severe undercoverage	31.96%	Severe undercoverage
Lanao del Norte	69.60%	Moderate undercoverage	62.46%	Moderate undercoverage
Misamis Occidental	119.60%	Mild leakage	116%	Mild leakage
Misamis Oriental	63.40%	Moderate undercoverage	59.50%	Moderate undercoverage
REGION XI				
Compostela Valley	70.70%	Moderate	69%	Moderate

		undercoverage		undercoverage
Davao del Norte	134.30%	Moderate leakage	124.50%	Moderate leakage
Davao del Sur	159.70%	Severe leakage	147.90%	Moderate leakage
Davao Oriental	100%	Full coverage	96.10%	Full coverage
REGION XII				
Cotabato City	114.20%	Mild leakage	89.24%	Mild undercoverage
North Cotabato	81.38%	Mild undercoverage	79.90%	Mild undercoverage
Sarangani	72.77%	Moderate undercoverage	69.90%	Moderate undercoverage
South Cotabato	150%	Moderate leakage	134.30%	Moderate leakage
Sultan Kudarat	68.32%	Moderate undercoverage	66%	Moderate undercoverage
ARMM				
Basilan	18.49%	Severe undercoverage	17.80%	Severe undercoverage
Lanao del Sur	13%	Severe undercoverage	11.12%	Severe undercoverage
Maguindanao	17.62%	Severe undercoverage	17.10%	Severe undercoverage
Sulu	2.42%	Severe undercoverage	2.43%	Severe undercoverage
Tawi-Tawi	2.60%	Severe undercoverage	2.60%	Severe undercoverage
CARAGA				
Agusan del Norte	122.30%	Mild Leakage	114.60%	Mild leakage
Agusan del Sur	53.90%	Moderate undercoverage	52.30%	Moderate undercoverage
Surigao del Norte	54.60%	Moderate undercoverage	54.10%	Moderate undercoverage
Surigao del Sur	56.30%	Moderate undercoverage	52.70%	Moderate undercoverage
CAR				
Abra	55.89%	Moderate undercoverage	54.40%	Moderate undercoverage
Apayao	40%	Severe undercoverage	20.19%	Severe undercoverage
Benguet	98.40%	Full coverage	95.50%	Full coverage
Ifugao	34.36%	Severe undercoverage	33.50%	Severe undercoverage
Kalinga	39.80%	Severe undercoverage	38.50%	Severe undercoverage
Mountain Province	46.70%	Severe undercoverage	45%	Severe undercoverage

NCR				
First District NCR	76.99%	Mild undercoverage	71%	Moderate undercoverage
Second District NCR	85.10%	Mild undercoverage	81.80%	Mild undercoverage
Third District NCR	100.70%	Full coverage	95%	Full coverage
Fourth District NCR	53.87%	Moderate undercoverage	50.70%	Moderate undercoverage

Regression Results

Table 6. Ordered Logit Regression Using Conservative Estimates on Coverage Rates

Independent Variables	No Jackknife		Jackknife	
	Coeff.	Std. Error	Coeff.	Std. Error
Education Index	-9.436	7.677	-7.493	8.781
Health Index	0.004	0.006	-0.005	0.006
Male-Female Ratio	0.938	13.340	12.098	14.372
No. of Government Hospitals	-0.308***	0.091	-0.323***	0.102
No. of Private Hospitals	0.057*	0.035	0.080**	0.035
Population aged 0-14	-13.669	12.708	-19.728	14.249
Population aged 15-64	-13.388	12.716	-19.385	14.238
Population aged 65 and over	-13.411	12.731	-19.762	14.274
Bed-population Ratio (per 10,000)	0.244***	0.095	0.276***	0.103
Health Professional-Population Ratio (per 10,000)	0.403	0.258	0.762**	0.324
Real GDP per capita	-0.317***	0.121	-0.518***	0.182
Health Expenditures per capita	-0.001	0.003	0.001	0.004
Sectoral Employment				
Agriculture	-0.236	0.249	0.192	0.143
Sales	-0.142	0.251	0.322*	0.190
Services	-0.128	0.273	0.347**	0.167
Manual	-0.387	0.306	-0.032	0.187
Processing/Manufacturing	-0.178	0.273	0.215	0.181
Mining	0.036	0.234	0.401**	0.201
Skilled	0.296	0.487	0.916*	0.484
Education	-0.059	0.321	0.219	0.263
Nature of Employment				
Permanent	-0.155	0.151	-0.062	0.151

Short-Term	-0.091	0.164	-0.029	0.172
Average Household Income	0.000	0.000	0.000	0.000

Significant at ***1% level, **5% level, *10% level.

Table 7. Ordered Logit Regression Using Liberal Estimates on Coverage Rates

Independent Variables	No Jackknife		Jackknife	
	Coeff.	Std. Error	Coeff.	Std. Error
Education Index	-9.436	7.677	1.475	8.390
Health Index	0.004	0.006	0.000	0.006
Male-Female Ratio	0.938	13.340	13.771	14.032
No. of Government Hospitals	-0.308***	0.091	-0.275***	0.095
No. of Private Hospitals	0.057*	0.035	0.086**	0.034
Population aged 0-14	-13.669	12.708	-15.393	12.970
Population aged 15-64	-13.388	12.716	-15.073	12.974
Population aged 65 and over	-13.411	12.731	-15.450	13.019
Bed-population Ratio (per 10,000)	0.244***	0.095	0.242**	0.097
Health Professional-Population Ratio (per 10,000)	0.403	0.258	0.573**	0.294
Real GDP per capita	-0.317***	0.121	-0.347**	0.152
Health Expenditures per capita	-0.001	0.003	-0.002	0.003
Sectoral Employment				
Agriculture	-0.236	0.249	0.192	0.138
Sales	-0.142	0.251	0.318*	0.185
Services	-0.128	0.273	0.321**	0.160
Manual	-0.387	0.306	-0.048	0.174
Processing/Manufacturing	-0.178	0.273	0.215	0.172
Mining	0.036	0.234	0.298	0.189
Skilled	0.296	0.487	0.638	0.439
Education	-0.059	0.321	0.156	0.257
Nature of Employment				
Permanent	-0.155	0.151	-0.008	0.136
Short-Term	-0.091	0.164	0.057	0.154
Average Household Income	0.000	0.000	0.000	0.000

Significant at ***1% level, **5% level, *10% level.

Table 8. Ordinary Lease Squares Regression Using Conservative Estimates of Coverage Rates

Independent Variables	No Jackknife		Jackknife	
	Coeff.	Std. Error	Coeff.	Std. Error
Education Index	-0.032	0.451	0.092	0.448
Health Index	0.000	0.000	0.000	0.000
Male-Female Ratio	0.729	0.698	0.758	0.690
No. of Government Hospitals	-0.016***	0.005	-0.014***	0.005
No. of Private Hospitals	0.004*	0.002	0.004*	0.002
Population aged 0-14	2.546***	0.843	2.500***	0.838
Population aged 15-64	2.579***	0.845	2.532***	0.840
Population aged 65 and over	2.550***	0.844	2.506***	0.840
Bed-population Ratio (per 10,000)	0.027***	0.006	0.028***	0.006
Health Professional-Population Ratio (per 10,000)	0.030*	0.016	0.024	0.015
Real GDP per capita	-0.019***	0.004	-0.019***	0.004
Health Expenditures per capita	0.000	0.000	0.000	0.000
Sectoral Employment				
Agriculture	0.003	0.015	0.004	0.009
Sales	0.008	0.016	0.009	0.011
Services	0.009	0.016	0.007	0.010
Manual	0.001	0.019	0.003	0.011
Processing/Manufacturing	0.009	0.016	0.011	0.011
Mining	0.023	0.015	0.031	0.014
Skilled	0.005	0.030	0.005	0.024
Education	0.017	0.018	0.017	0.012
Nature of Employment				
Permanent	-0.004	0.009	-0.008	0.007
Short-Term	-0.002	0.009	-0.006	0.008
Average Household Income	0.000	0.000	0.000	0.000
Constant	-257.022***	84.685	-252.200***	83.841

Significant at ***1% level, **5% level, *10% level.

Table 9. Ordinary Least Squares Regression Using Liberal Estimates of Coverage Rates

Independent Variables	No Jackknife		Jackknife	
	Coeff.	Std. Error	Coeff.	Std. Error
Education Index	-1.275	0.785	-1.004	0.731
Health Index	0.001	0.001	0.000	0.001
Male-Female Ratio	0.071	1.313	0.876	1.241
No. of Government Hospitals	-0.025***	0.009	-0.023***	0.008
No. of Private Hospitals	0.008**	0.004	0.009***	0.003
Population aged 0-14	-1.377	1.202	-1.062	1.109
Population aged 15-64	-1.363	1.203	-1.034	1.110
Population aged 65 and over	-1.397	1.202	-1.078	1.109
Bed-population Ratio (per 10,000)	0.031***	0.010	0.027***	0.009
Health Professional-Population Ratio (per 10,000)	0.039	0.028	0.037	0.026
Real GDP per capita	-0.021***	0.007	-0.018***	0.007
Health Expenditures per capita	0.000	0.000	0.000	0.000
Sectoral Employment				
Agriculture	-0.020	0.027	0.017	0.014
Sales	-0.006	0.028	0.035*	0.018
Services	-0.012	0.029	0.025	0.015
Manual	-0.022	0.033	0.021	0.017
Processing/Manufacturing	-0.024	0.029	0.017	0.017
Mining	0.011	0.027	0.043**	0.021
Skilled	0.033	0.054	0.053	0.042
Education	-0.015	0.033	0.032	0.021
Nature of Employment				
Permanent	-0.014	0.016	-0.009	0.013
Short-Term	-0.009	0.017	-0.004	0.014
Average Household Income	0.000	0.000	0.000	0.000
Constant	140.805	120.438	103.228	111.266

Significant at ***1% level, **5% level, *10% level.

From the regression results, four points are worth highlighting. First, availability of health care resources appears to be an issue. Bed-population and health professional-population ratios come out significantly positive in most of the regressions. This means that the higher the ratios (i.e., the more beds and health professionals for the population), the more likely it is for the province to have higher coverage rates. Bed-population and health professional-population ratios are proxies for availability of health care services. This result is an indication of the importance of having the resources at reasonable proximity. Availability is especially important in health care utilization as greater availability means less waiting time which in turn leads to less opportunity costs for individuals seeking care.

Second, the greater the number of private hospitals, the more likely it is for the province to have higher coverage rates. It is interesting to note that the higher the number of government hospitals, the more likely the province belongs to lower coverage categories. This result is consistent with the substitution effect observed for voluntary health insurance noted in other studies. In developing countries, the private sector is often considered to offer better quality of services than the public sector due to the lack of subsidies or government funding for the latter. Ha, et al. (2006:62) also points out that private facilities are "considered to have more flexible opening hours, more ready access, greater drug supplies and more respectful treatment of clients." Since PhilHealth can be used for both public and private facilities, private medical services become more affordable to the general populace with the help of insurance coverage. The existence of private hospitals seemingly encourages individuals to enroll into the health insurance scheme, presumably with the notion that if care is sought, they can avail of private medical services with the use of PhilHealth.

Third, income levels are not a factor for insurance coverage. Two results from the regressions illustrate this point. First, the magnitude and significance of the average household income of the non-poor population in the province is not relevant. Second, real GDP per capita of the province, albeit significant, has a negative coefficient. This indicates that provinces with a higher real GDP per capita tend to belong to lower coverage categories.

Fourth, the size of certain sectors in the province has a statistically significant effect on the level of coverage observed in the province. However, this is only true for the regressions using the jackknife estimates. The sectors that were more likely to lead to higher coverage rates for the voluntary program are sales, skilled work, services and mining. The first three sectors are not surprising results as these sectors tend to employ people with higher socio-economic profiles which according to literature, are the more likely individuals to enroll into health insurance programs. The significance of the mining sector was somewhat unexpected but can be explained by its perilous occupation. Hence, the high propensity of those within this sector to have health insurance.

LIMITATIONS

1. This paper studies the variation of coverage levels between provinces using provincial-level characteristics. It should therefore only serve as an indicator given that enrolment which in turn determines coverage is an individual-level decision. These results, thus, needs to be corroborated by an analysis done on the individual level.
2. Coverage levels are computed based on estimates. A margin of error is expected based on two data shortcomings: (1) estimates from FIES are taken from a sample population and cannot be expected to correspond completely to the true population count; and (2) the "cleanliness" of PhilHealth data registry cannot be guaranteed. PhilHealth uses headcount data, which does not update in real time in terms of which members are actually able to claim and which ones have lapsed memberships.

RECOMMENDATIONS

Based on the results presented, the following recommendations should be taken into consideration.

Policy Recommendations

1. **Channeling public funds into the health insurance system instead of to public providers.**
   The results indicate that there is a tendency to avail of services in the private sector. In countries where public health services are not established, there is a culture of mistrust towards public health facilities. In the achievement of universal coverage in South Korea, Kwon (2009) noted that by channeling budget allocation to health insurance "in the form of premium contribution increases the leverage that the health insurance scheme can use on health care providers." This recommendation is not to undermine government health services providers. By supporting the health insurance system and in effect promoting enrolment, the consumers are able to decide which services to avail. This fosters market competition, which could encourage unsustainable public health services providers to innovate in order to compete with the rest of the market.

2. **Examining the depth of coverage of IPP.**
   The benefits of the IPP scheme are one-sided with a great emphasis on inpatient care. One of the lessons learned from South Korea is that introduction of outpatient care coverage led to an increased benefit of health insurance that was tangible to the population. Also, it minimized the dropout rates (Kwon, 2009). Since income does not appear to be a barrier in

obtaining health insurance for the non-poor segment of the population, it denotes that something else is. Obermann, et al. (2007) notes that one of the problems in health care delivery in the Philippines is high prices of medicines. This type of expenditure is often incurred through outpatient services. Indeed, if there is an impression that the coverage offered by the health insurance will not account for majority of their health expenditures, the individual will see no need in availing of the health insurance. A study should be conducted on out-of-pocket expenditures incurred by outpatient services. If high OOPs are established, this would be a basis for expanding the current outpatient benefit package of PhilHealth to include those who are part of the voluntary program as well.

3. **Service availability and accessibility in targeted provinces.**
   In order for individuals to take the decision to enroll into the health insurance scheme, they must first see the value of it. Availability and accessibility to health care services is a crucial determinant in the decision of whether or not to avail of health insurance, as this follows from the decision to avail of services. As previously noted, provinces with the lowest coverage rates tend to be lone-standing islands. The issue of availability of accessibility might then be particularly true for certain provinces that are more geographically constrained. Government providers can address this problem by provision of mobile clinics or augmentation of district hospitals especially in geographically isolated areas. Both can be done through public-private partnerships. PhilHealth can help address this issue by assisting in the accreditation process of the closest health care facilities. Furthermore, they can participate in information campaigns in selected areas to let them know where there closest PhilHealth-accredited facilities are located and what services they can avail of from these providers using their health insurance.

4. **Targeting certain employment sectors.**
   Albeit insignificant, the agricultural sector and those employed in manual labor were more likely to lead to under-coverage. Identifying sectors that employ individuals who are less likely to avail of health insurance will allow for a targeted-approach for achieving universal coverage. Creation of programs similar to the Kalusugang Sigurado at Abot-Kaya sa PhilHealth Insurance (KaSAPI), which partners with local NGOs and rural banks, is a way of expanding into certain employment sectors which tend to have low coverage levels.

Methodological Recommendations

1. **Conduct individual-level analysis.**
   The National Demographic and Health Survey (NDHS) will be conducted in 2013. When the dataset becomes available, a similar study using the individual as a unit of analysis should be conducted to corroborate the findings in this study.

2. **Improve Model.**
   a. The model can be improved by adding a proxy for quality of care. If an appropriate proxy is found, this might verify whether or not the choice of facilities is driven by quality of services. Possible proxies could include patient satisfaction, readmission rates or even malpractice claims.
   b. Another improvement to the model would be to look into the level of awareness regarding the entitlements and benefits of PhilHealth. This can be proxied by an index created from the number of information campaigns and randomized interviews or focus group discussions.

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APPENDIX A: INFORMAL SECTOR POPULATION ESTIMATES

Table 1. Population Estimates for the Philippines

	Total Population	Population 15 and Over	Population 15 and over that is employed	Non-Poor Population	Informal Sector Population
Philippines	92337852	62060270	36354906	22267380	**10565872**

Table 2. Population Estimates per Region

Region	Total Population	Population 15 and Over	Population 15 and over that is employed	Non-Poor Population	Informal Sector Population
I - Ilocos Region	4748372	3312939	1764140	1165391	**634089**
II - Cagayan Valley	3229163	2221341	1378120	898534	**535526**
III - Central Luzon	10137737	7108581	3805934	2511536	**1070668**
IVA - Calabarzon	12609803	8766335	4840770	3140692	**1260674**
IVB - Mimaropa	2744671	1708283	1113801	723971	**408971**
V - Bicol Region	5420411	3374206	2041057	1374652	**804034**
VI - Western Visayas	7102438	4855227	2932557	1973904	**1022285**
VII - Central Visayas	6800180	4613242	2718584	1763817	**787192**
VIII - Eastern Visayas	4101322	2621155	1589731	1055422	**631670**
IX - Zamboanga Peninsula	3407353	2190587	1419062	890603	**499806**
X - Northern Mindanao	4297323	2852563	1860156	1193104	**609199**
XI - Davao	4468563	2981872	1813276	1176635	**515248**
XII - Socksargen	4109571	2691769	1685586	1086866	**541368**
NCR	11855975	8471094	4495610	3182892	**1082502**
CAR	1616867	1093811	685273	414042	**218200**
ARMM	3256140	2029878	1788598	1199076	**1028088**
Caraga	2429224	1584826	942338	623639	**349924**

Table 3. Population Estimates per Province (No Jackknife)

Province	Total Population	Population 15 and Over	Population 15 and over that is employed	Non-Poor Population	Informal Sector Population
REGION I					
Ilocos Norte	568017	409370	223148	157833	**92916**
Ilocos Sur	658587	465094	273847	181643	**96761**
La Union	741906	518147	297105	183254	**112096**
Pangasinan	2779862	1919495	970497	642081	**331571**
REGION II					
Batanes	16604	8941	7153	7153	**3832**
Cagayan	1124773	789703	488115	314639	**202974**
Isabela	1489645	1016981	622392	364659	**198958**
Nueva Vizcaya	421355	287743	172157	136848	**82670**
Quirino	176786	118853	85931	72105	**44777**
Aurora	201233	131103	81310	45737	**29473**
Bataan	687482	471956	239518	192884	**85486**
Bulacan	2924433	2072253	1117773	874769	**348770**
Nueva Ecija	1955373	1357616	820407	372875	**179465**
Pampanga	2340355	1671482	774565	612991	**238086**
Tarlac	1273240	892159	476056	265020	**125434**
Zambales	755621	506719	279404	157221	**67385**
Batangas	2377395	1654429	935414	569667	**248147**
Cavite	3090691	2164720	1128685	946515	**355038**
Laguna	2669847	1880373	1036274	734407	**285244**
Quezon	1987030	1347604	866779	232904	**122251**
Rizal	2484840	1722740	867744	678836	**254496**
Marinduque	227828	140889	88168	54840	**32114**
Occidental Mindoro	452971	281386	182788	136908	**66469**
Oriental Mindoro	785602	506478	322272	226686	**131433**
Palawan	994340	611320	411052	258881	**154423**
Romblon	283930	168541	111288	51382	**27304**

Albay	1233432	805431	468600	333175	**171985**
Camarines Norte	542915	329658	204718	141542	**78839**
Camarines Sur	1822371	1150827	660229	447437	**244301**
Catanduanes	246300	154676	107887	76362	**51239**
Masbate	834650	460560	324925	190698	**139038**
Sorsogon	740743	472890	275033	186500	**115388**
Aklan	535725	378811	224408	107514	**60004**
Antique	546031	373267	217167	116467	**78895**
Capiz	719685	491833	321019	226350	**134701**
Guimaras	162943	105538	56009	50918	**30551**
Iloilo	4035771	2760871	1615662	1221602	**632423**
Negros Occidental	2907859	1981997	1234190	787783	**363641**
Bohol	1255128	837672	486604	267438	**147385**
Cebu	4167320	2824193	1638032	1219187	**507182**
Negros Oriental	1286666	883554	549129	251885	**122164**
Siquijor	91066	68063	46494	19174	**8628**
Biliran	161760	97460	57599	45670	**28507**
Eastern Samar	428877	263802	177380	104459	**67595**
Leyte	1789158	1191937	708726	499794	**290480**
Northern Samar	589013	348519	203884	132912	**89968**
Samar (Western)	733377	452494	295841	177090	**99595**
Southern Leyte	399137	269018	145431	91069	**52966**
Isabela City	97857	65134	33687	29197	**13796**
Zamboanga del Norte	957997	598461	446213	218734	**152283**
Zamboanga del Sur	1766814	1157617	698506	495730	**242462**
Zamboanga Sibugay	584685	370106	235572	149541	**90532**
Bukidnon	1299192	830833	620715	406630	**208561**
Camiguin	83807	57014	41124	30218	**21494**
Lanao del Norte	932738	606280	388322	225071	**115101**
Misamis Occidental	567642	378050	225469	110660	**56647**
Misamis Oriental	1415944	975869	602697	445152	**206506**
Compostela Valley	687195	460008	281617	177954	**91130**
Davao del Norte	945764	636499	382154	240107	**89512**

Davao del Sur	2317986	1558382	915549	662857	**273031**
Davao Oriental	517618	327704	233161	95806	**59773**
Cotabato City	271786	180901	88913	68472	**25547**
North Cotabato	1226508	793919	519302	340402	**197365**
Sarangani	498904	309370	190819	99016	**53548**
South Cotabato	1365286	909007	543586	388990	**165593**
Sultan Kudarat	747087	498830	339105	185084	**101389**
Basilan	293322	188078	97274	63851	**35916**
Lanao del Sur	933260	501347	231823	150221	**97343**
Maguindanao	1216504	789024	548845	312787	**272344**
Sulu	718290	491526	241044	184953	**176057**
Tawi-Tawi	366550	222496	140417	104400	**95286**
Agusan del Norte	632196	415542	237316	170915	**81920**
Agusan del Sur	656418	414856	272602	171685	**106977**
Surigao del Norte	442588	299057	161281	99849	**56195**
Surigao del Sur	561219	363389	221340	147280	**87735**
Abra	234733	158163	98282	41947	**25042**
Apayao	112636	75680	50153	19991	**10353**
Benguet	516580	364809	198201	168233	**73518**
Ifugao	349923	229235	161198	84242	**55077**
Kalinga	201613	129436	87473	45302	**26669**
Mountain Province	154187	96398	82873	30099	**24865**
First District NCR	1652171	1194520	627004	458215	**167065**
Second District NCR	4305772	3126852	1656919	1200106	**402276**
Third District NCR	3231168	2255355	1144818	676130	**224340**
Fourth District NCR	2666864	1890540	1037528	777835	**263297**

Table 4. Population Estimates per Province (Jackknife)

Province	Population 15 and Over	Population 15 and over that is employed	Non-Poor Population	Informal Sector Population
Ilocos Norte	409313	223280	157636	**92895**
Ilocos Sur	465160	273979	181538	**96669**
La Union	518296	295118	182855	**110810**
Pangasinan	1918383	968208	642116	**330754**
Batanes	8941	7153	7153	**3832**
Cagayan	790715	487080	314897	**202983**
Isabela	1016683	620583	364717	**198625**
Nueva Vizcaya	287743	171869	136653	**82429**
Quirino	118376	85763	71158	**44317**
Aurora	131345	81434	46377	**29742**
Bataan	474500	240334	192916	**83340**
Bulacan	2066989	1102325	867420	**349050**
Nueva Ecija	1356247	819038	373727	**180846**
Pampanga	1674992	780044	618341	**240658**
Tarlac	890504	474282	264412	**123322**
Zambales	506417	280707	156017	**67649**
Batangas	1655380	934793	567700	**246495**
Cavite	2167193	1130841	948663	**356602**
Laguna	1885713	1029222	737232	**284793**
Quezon	1349392	863476	237197	**124505**
Rizal	1724479	870862	687981	**254140**
Marinduque	140889	88070	55202	**32580**
Occidental Mindoro	280933	181707	135299	**65241**
Oriental Mindoro	502550	321330	223838	**130833**
Palawan	614403	409561	259744	**153561**
Romblon	168427	111010	51298	**27280**
Albay	807035	469210	333796	**172739**
Camarines Norte	329115	204578	141118	**78278**
Camarines Sur	1152832	658959	446642	**242303**
Catanduanes	154085	107690	76805	**50991**
Masbate	460810	324456	188866	**137608**
Sorsogon	472520	274959	186642	**114803**
Aklan	378811	224521	106760	**59551**
Antique	371956	198662	106364	**72062**
Capiz	490969	320799	226003	**133997**
Guimaras	105978	55681	50831	**30738**
Iloilo	2764100	1614511	1224929	**629858**
Negros Occidental	1988394	1239366	786130	**361463**
Bohol	834409	484208	264329	**145619**

Cebu	2835445	1640021	1230672	**505437**
Negros Oriental	884969	548858	252914	**123194**
Siquijor	68163	46992	19661	**9148**
Biliran	97363	57600	45660	**28410**
Eastern Samar	264060	177580	105980	**68580**
Leyte	1180665	702968	491937	**285225**
Northern Samar	347400	203576	134503	**90776**
Samar (Western)	452787	295534	177261	**99514**
Southern Leyte	268859	145023	91321	**52774**
Isabela City	64654	33180	28873	**14379**
Zamboanga del Norte	599227	446184	217158	**151099**
Zamboanga del Sur	1159383	700499	497634	**242447**
Zamboanga Sibugay	369462	232872	144567	**87420**
Bukidnon	829014	619771	404525	**206995**
Camiguin	56980	41197	30366	**21633**
Lanao del Norte	604787	386822	223931	**123229**
Misamis Occidental	378333	224995	111755	**57006**
Misamis Oriental	976577	603427	446536	**205451**
Compostela Valley	460283	281923	177950	**90932**
Davao del Norte	638580	381168	243871	**90696**
Davao del Sur	1566959	914164	673647	**276263**
Davao Oriental	327911	232063	94612	**58896**
Cotabato City	178808	83950	64902	**25669**
North Cotabato	795758	518914	343417	**191867**
Sarangani	309221	192305	99095	**54136**
South Cotabato	917199	545642	400610	**171101**
Sultan Kudarat	499353	339510	185339	**102270**
Basilan	188577	99003	65352	**36434**
Lanao del Sur	505267	232120	153292	**111397**
Maguindanao	793526	543327	309588	**266400**
Sulu	492675	239588	182638	**172757**
Tawi-Tawi	223046	141723	105853	**96167**
Agusan del Norte	415353	236170	172522	**81793**
Agusan del Sur	414134	271051	170085	**105164**
Surigao del Norte	299809	160548	99877	**55182**
Surigao del Sur	364736	220775	147124	**88436**
Abra	158093	98033	41899	**25064**
Apayao	75714	50130	19962	**10276**
Benguet	364964	198212	170046	**73562**
Ifugao	228675	160438	83412	**54601**
Kalinga	129315	87339	45836	**26846**
Mountain Province	96351	82563	30045	**24808**
First District NCR	1192207	627339	458961	**169632**
Second District NCR	3109629	1663341	1197107	**405819**

Third District NCR	2248247	1142334	677061	**226138**
Fourth District NCR	1893473	1041410	781995	**265956**

Graph 1. Difference in Provincial Population Estimates for Informal Sector (No Jackknife vs. Jackknife)

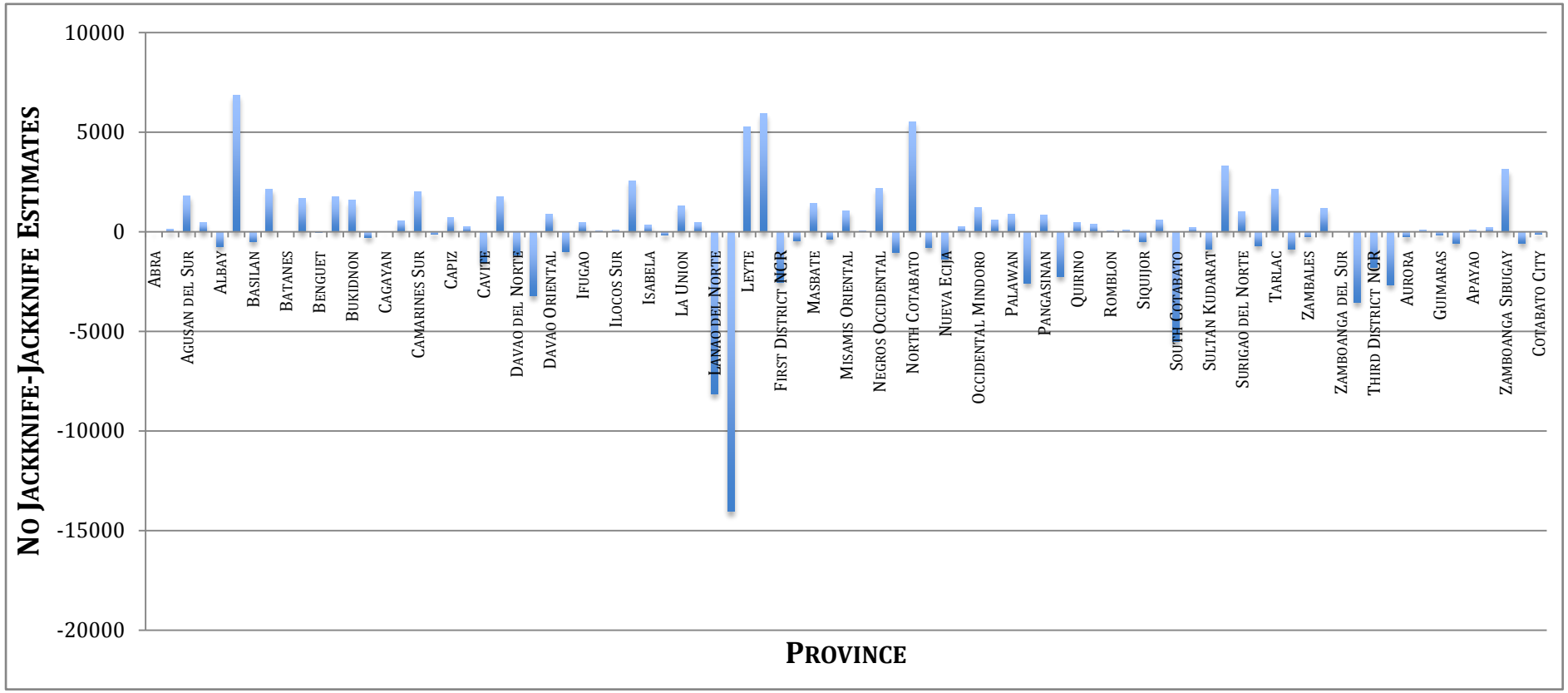

Table 5. National Estimates for Informal Sector Without Dependents

	Potential Dependents in Informal Sector (%)	Informal Sector Population	Number of potential dependents in informal sector	Informal sector population without potential dependents
Philippines	35.27	10565872	3726583	**6839289**

Table 6. Regional Estimates for Informal Sector Without Dependents

Region	Potential Dependents in Informal Sector (%)	Informal Sector Population	Number of potential dependents in informal sector	Informal sector population without potential dependents
I - Ilocos Region	30.76	634089	195046	**439043**
II - Cagayan Valley	38.29	535526	205053	**330473**
III - Central Luzon	31.58	1070668	338117	**732551**
IVA - Calabarzon	33.63	1260674	423965	**836709**
IVB - Mimaropa	41.66	408971	170377	**238594**
V - Bicol Region	39.93	804034	321051	**482983**
VI - Western Visayas	37.56	1022285	383970	**638315**
VII - Central Visayas	36.8	787192	289687	**497505**
VIII - Eastern Visayas	35.96	631670	227149	**404521**
IX - Zamboanga Peninsula	38.16	499806	190726	**309080**
X - Northern Mindanao	43.76	609199	266585	**342614**
XI - Davao	39.32	515248	202596	**312652**
XII - Socksargen	41.52	541368	224776	**316592**
NCR	24.28	1082502	262831	**819671**

CAR	37.85	218200	82589	**135611**
ARMM	31.49	1028088	323745	**704343**
Caraga	38.37	349924	134266	**215658**

Table 7. Provincial Estimates for Informal Sector Without Dependents, No Jackknife

Province	Potential Dependents in Informal Sector (%)	Number of potential dependents in informal sector	Informal sector population without potential dependents
REGION I			
Ilocos Norte	29.26	27187	**65729**
Ilocos Sur	29.72	28757	**68004**
La Union	36.9	41363	**70733**
Pangasinan	29.46	97681	**233890**
REGION II			
Batanes	60	2299	**1533**
Cagayan	38.35	77841	**125133**
Isabela	33.46	66571	**132387**
Nueva Vizcaya	42.72	35317	**47353**
Quirino	47.79	21399	**23378**
REGION III			
Aurora	34.48	10162	**19311**
Bataan	33.88	28963	**56523**
Bulacan	33.07	115338	**233432**
Nueva Ecija	35.14	63064	**116401**
Pampanga	24.46	58236	**179850**
Tarlac	27.96	35071	**90363**
Zambales	42.67	28753	**38632**
REGION IVA			
Batangas	34.03	84444	**163703**
Cavite	32.38	114961	**240077**

Laguna	34.25	97696	**187548**
Quezon	37.43	45759	**76492**
Rizal	32.41	82482	**172014**
REGION IVB			
Marinduque	44.34	14239	**17875**
Occidental Mindoro	41.85	27817	**38652**
Oriental Mindoro	39.9	52442	**78991**
Palawan	41.79	64533	**89890**
Romblon	45.16	12330	**14974**
REGION V			
Albay	42.22	72612	**99373**
Camarines Norte	38.55	30392	**48447**
Camarines Sur	39.09	95497	**148804**
Catanduanes	29.81	15274	**35965**
Masbate	46.18	64208	**74830**
Sorsogon	37.05	42751	**72637**
REGION VI			
Aklan	31.25	18751	**41253**
Antique	36.19	28552	**50343**
Capiz	46.1	62097	**72604**
Guimaras	30.3	9257	**21294**
Iloilo	35.45	224194	**408229**
Negros Occidental	37.96	138038	**225603**
REGION VII			
Bohol	36.73	54135	**93250**
Cebu	36.18	183498	**323684**
Negros Oriental	39.05	47705	**74459**
Siquijor	44.44	3834	**4794**
REGION VIII			
Biliran	34.69	9889	**18618**
Eastern Samar	41.82	28268	**39327**
Leyte	35.39	102801	**187679**
Northern Samar	33.17	29842	**60126**
Samar (Western)	37.24	37089	**62506**
Southern Leyte	34.21	18120	**34846**
REGION IX			

Isabela City	32.56	4492	**9304**
Zamboanga del Norte	43.39	66076	**86207**
Zamboanga del Sur	33.81	81976	**160486**
Zamboanga Sibugay	41.44	37516	**53016**
REGION X			
Bukidnon	50.3	104906	**103655**
Camiguin	47.83	10281	**11213**
Lanao del Norte	47.15	54270	**60831**
Misamis Occidental	34	19260	**37387**
Misamis Oriental	39.01	80558	**125948**
REGION XI			
Compostela Valley	38.86	35413	**55717**
Davao del Norte	32.8	29360	**60152**
Davao del Sur	41.02	111997	**161034**
Davao Oriental	41.13	24585	**35188**
REGION XII			
Cotabato City	44	11241	**14306**
North Cotabato	43.18	85222	**112143**
Sarangani	35.71	19122	**34426**
South Cotabato	39.78	65873	**99720**
Sultan Kudarat	45.28	45909	**55480**
ARMM			
Basilan	40.28	14467	**21449**
Lanao del Sur	25.09	24423	**72920**
Maguindanao	38.43	104662	**167682**
Sulu	26.49	46637	**129420**
Tawi-Tawi	37.8	36018	**59268**
CARAGA			
Agusan del Norte	35.55	29123	**52797**
Agusan del Sur	43.71	46760	**60217**
Surigao del Norte	35.35	19865	**36330**
Surigao del Sur	37.42	32830	**54905**
CAR			
Abra	33.33	8346	**16696**
Apayao	46.55	4819	**5534**
Benguet	32.32	23761	**49757**

Ifugao	47.79	26321	**28756**
Kalinga	42.65	11374	**15295**
Mountain Province	42.98	10687	**14178**
NCR			
First District NCR	22.71	37940	**129125**
Second District NCR	26.75	107609	**294667**
Third District NCR	28.33	63556	**160784**
Fourth District NCR	20.74	54608	**208689**

Table 8. Provincial Estimates for Informal Sector Without Dependents, Jackknife

Province	Potential Dependents in Informal Sector (%)	Number of potential dependents in informal sector	Informal sector population without potential dependents
REGION I			
Ilocos Norte	29.42	27330	**65565**
Ilocos Sur	29.49	28508	**68161**
La Union	36.73	40701	**70109**
Pangasinan	29.38	97176	**233578**
REGION II			
Batanes	60	2299	**1533**
Cagayan	38.15	77438	**125545**
Isabela	33.55	66639	**131986**
Nueva Vizcaya	42.61	35123	**47306**
Quirino	47.93	21241	**23076**
REGION III			
Aurora	34.5	10261	**19481**
Bataan	33.98	28319	**55021**
Bulacan	32.48	113371	**235679**

Nueva Ecija	34.99	63278	**117568**
Pampanga	23.85	57397	**183261**
Tarlac	27.72	34185	**89137**
Zambales	41.22	27885	**39764**
REGION IVA			
Batangas	33.88	83513	**162982**
Cavite	32.31	115218	**241384**
Laguna	33.45	95263	**189530**
Quezon	37.64	46864	**77641**
Rizal	32.35	82214	**171926**
REGION IVB			
Marinduque	44.29	14430	**18150**
Occidental Mindoro	41.81	27277	**37964**
Oriental Mindoro	40.23	52634	**78199**
Palawan	41.97	64450	**89111**
Romblon	44.75	12208	**15072**
REGION V			
Albay	42.06	72654	**100085**
Camarines Norte	38.59	30207	**48071**
Camarines Sur	38.83	94086	**148217**
Catanduanes	29.81	15200	**35791**
Masbate	46.08	63410	**74198**
Sorsogon	37.21	42718	**72085**
REGION VI			
Aklan	31.44	18723	**40828**
Antique	36.18	26072	**45990**
Capiz	46.09	61759	**72238**

Guimaras	30.34	9326	**21412**
Iloilo	35.33	222529	**407329**
Negros Occidental	38.2	138079	**223384**
REGION VII			
Bohol	36.7	53442	**92177**
Cebu	35.44	179127	**326310**
Negros Oriental	38.77	47762	**75432**
Siquijor	44.79	4097	**5051**
REGION VIII			
Biliran	34.41	9776	**18634**
Eastern Samar	41.72	28612	**39968**
Leyte	35.87	102310	**182915**
Northern Samar	33.06	30011	**60765**
Samar (Western)	37.05	36870	**62644**
Southern Leyte	34.1	17996	**34778**
REGION IX			
Isabela City	30.45	4378	**10001**
Zamboanga del Norte	43.11	65139	**85960**
Zamboanga del Sur	33.75	81826	**160621**
Zamboanga Sibugay	41.43	36218	**51202**
REGION X			
Bukidnon	50.08	103663	**103332**
Camiguin	48.34	10457	**11176**
Lanao del Norte	47.29	58275	**64954**
Misamis Occidental	34.12	19450	**37556**
Misamis Oriental	39.04	80208	**125243**
REGION XI			

Compostela Valley	38.8	35282	**55650**
Davao del Norte	32.78	29730	**60966**
Davao del Sur	40.46	111776	**164487**
Davao Oriental	41.14	24230	**34666**
REGION XII			
Cotabato City	41.89	10753	**14916**
North Cotabato	43.74	83923	**107944**
Sarangani	36.4	19706	**34430**
South Cotabato	38.89	66541	**104560**
Sultan Kudarat	45.62	46656	**55614**
ARMM			
Basilan	39.97	14563	**21871**
Lanao del Sur	25.07	27927	**83470**
Maguindanao	37.48	99847	**166553**
Sulu	26.42	45642	**127115**
Tawi-Tawi	39.27	37765	**58402**
CARAGA			
Agusan del Norte	35.26	28840	**52953**
Agusan del Sur	43.51	45757	**59407**
Surigao del Norte	33.56	18519	**36663**
Surigao del Sur	37.51	33172	**55264**
CAR			
Abra	33.06	8286	**16778**
Apayao	46.37	4765	**5511**
Benguet	32.65	24018	**49544**
Ifugao	47.97	26192	**28409**
Kalinga	42.88	11512	**15334**

Mountain Province	42.73	10600	**14208**
NCR			
First District NCR	22.96	38948	**130684**
Second District NCR	28	113629	**292190**
Third District NCR	29.18	65987	**160151**
Fourth District NCR	20.81	55345	**210611**

Graph 2. Difference in Provincial Population Estimates for Informal Sector without Potential Dependents (No Jackknife vs. Jackknife)