DISCUSSION OF RESULTS

This chapter presents the interpretation of the different results obtained in the analyses starting with the NHIP coverage to the different factors that were found to affect variation in utilization. It attempts to explain and compare the results obtained from the existing literature on geographic variation.

1. Coverage and accredited health care providers

This study, although primarily aims to determine variation in hospital utilization and explain the observed variation also included some information (and analysis) on NHIP's coverage and its accredited health care providers. These are considered relevant and essential since, basically it is the utilization under the NHIP that is being examined which therefore warrants a complete or at least a comprehensive understanding of its system, i.e. how much of the population is actually covered by the insurance, how accessible/ available are the providers to the beneficiaries of the insurance.

Universal coverage is the goal of the country's social health insurance system and as of December 2003, about 8 years since the NHIP was enacted as a law, it has already covered more than 55% of the Philippine population (Table 4.1). Considering that PhilHealth, the NHIP's implementing agency, was given 15 years to cover the whole

population, it seems that PhilHealth is faring well enough. However, as previously discussed this coverage even grew to a high 77% during the first quarter of the year 2004. In the data on coverage as of December 2003, there exists a wide discrepancy in the membership between the formal sector and the IPP which would be quite expected since NHIP is compulsory for the former—contributions of which are already deducted from the salary, while voluntary for the latter. PhilHealth has not been insensitive to this issue. It acknowledges the fact that the IPP is both a rich resource that would significantly contribute to the sustainability of the program and crucial for the achievement of universal coverage, since the informal sector comprises a sizeable % of the Philippine population. Thus, there have been studies and efforts conducted to expand and maintain membership in this sector. A concrete example of this, is the development of a social marketing approach designed to target the two major market segments of the IPP—the upper market (Class AB, Upper C) and the lower market (Broad C, Class D) segments in terms of socioeconomic classes. For the upper segment, marketing strategy is focused on the promotion of IPP as a social good while for the lower segment it is focused on the promotion of IPP as the most convenient and most affordable health insurance (JAYROC Consulting, 2002). Nevertheless, even as NHIP coverage expanded, membership among the informal sector remained low (Figure 4.2).

It is perhaps worth taking into account to examine the premium rates for the IPP as PhilHealth aspires to expand its coverage among the informal sector. The premium contributions are set at a fixed rate of PhP100, which when compared to the premium contribution of the employed sector (Table 2.9) falls under bracket 11 where the monthly

salary range is about PhP8,000- 8,499.99. Indirectly speaking therefore, the assumption for this fixed rate is that the person earns at least PhP8,000 a month. However as explained earlier, the IPP has two major market segments—the upper and the lower market segments. Thus while PhP100 may be too small amount for those belonging to the upper socioeconomic classes, this maybe too huge a financial burden for those belonging to the lower socioeconomic classes who are not necessarily earning PhP8,000 a month and as such the IPP may not be as appealing as it sounds. If PhilHealth wishes to market the IPP to the people in the lower socioeconomic classes who are not otherwise qualified for the Sponsored Program, the premium rates may have to be re-structured in such a way that it will not be too burdensome and will truly be reflective of its marketing campaign as being the most convenient and most affordable health insurance.

NHIP coverage of the population as a whole and among the indigents varied across the regions. Although 8 of the 16 regions have already covered 50% or more of their population, covering the more marginalized sector of the society has been nominal. In fact of the 12 regions which had high poverty incidence rates (Table 4.1 and Figure 4.1), 10 regions had covered less than 50% of their indigents. Region X, which is situated in Mindanao stood out among the rest as it covered approximately 83% of its poor population. This may well suggest the efficiency and cooperation of the LGUs in this region with Phil Health in the implementation of the sponsored program, since they are responsible for the identification and enrolment of the poor.

In Chapter IV and earlier in this chapter it was reported that coverage increased to about 77% brought about primarily by the enrolment of the indigents. This ballooning of the membership in the sponsored program during the first quarter is not quite surprising because of the national elections held in May 11 of 2004. As the critics of the incumbent President (Gloria Arroyo), who was then running for presidency, cited there were indications that the hasty expansion of the program was meant to court the votes of the "masa" (poor), the sector where her support base is weak (Go, 2004). But whether the enrolment is politically motivated or not it should be mentioned that while expansion of the membership among the marginalized sector of the society is good, the sustainability of membership among these new members is an enormous challenge and should therefore be well-planned. The year's premium was initially paid by the national government while the LGU's share was shouldered by the PCSO. But in order to maintain the membership, the national government has to keep paying half of each member's premium and mobilize the LGUs to pay the other half. Earlier it was clearly discussed that some regions have relatively low coverage in their indigents, the reason of which though cannot be properly ascertained. But, if this low coverage among the indigents is a result of insufficient funds on the part of the LGU, then paying for the new indigent members will likewise present a likely constraint. With a projected 5 million indigent family members, the government has to shell out PhP6 billion pesos a year, which is far bigger than the PhP500 million of the Office of the President as premium subsidy for the indigents under the NHIP. This is based on the national budget for the years 2002 and 2003 and the proposed budget for 2004. Moreover, according to a 2002 World Bank study on how to make PhilHealth services more pro-poor, this financial sharing between the national and local government

does not appear to be feasible (Go, 2004). Where then lies the future of the membership of the poor? It would probably be better for PhilHealth to move away from the political aspect attached to the enrolment of the indigents and devise other means for a prolonged or sustainable membership among them. As the 2002 World Bank study suggested the solicitation of funds from private donors and sponsors and the increase in the premium among the formal sector (SSS and GSIS) are some mechanisms. It also added that before seeking funds for this pro-poor program, PhilHealth must reform its package or benefits for the indigents (Go, 2004). It should be acknowledged though that at present PhilHealth has already existing partnerships with private donors such as Glaxo-Smith Kline however the upsurge of membership among the poor during the presidential elections is indicative that a majority is still basically funded by the government with no clear description where the funds will come for the succeeding premium payments other than the PCSO and the DBM. The indexation of sin taxes was targeted as a major source of funding for the health insurance of the poor families but as yet to be approved.

The bulk of the coverage base is made up of the dependents. It is estimated that for the whole country (as of December 2003), every PhilHealth member has about 3 dependents (Table 4.1). For some regions it can go as high as 5 dependents or a low of almost 2 (1.87) dependents. This dependency ratio is an important aspect to look at because of its serious repercussions on the sustainability of the program. Obviously, low dependency ratios would be desirable—there would be more resources that can be expended not only to sustain the program but provide better services to its members (i.e. increased reimbursable rates). Such is PhilHealth's goal as the country moves to a

demographic transition in the future as it was emphasized by its President and Chief Executive Officer, Dr. Francisco Duque. This demographic transition is characterized by a peak ratio of workers to dependent population. Dependency ratios would fall, that is every person of working age would have fewer mouths to feed thus providing for a higher standard of living and greater potential for savings and investment. PhilHealth, as Duque suggests, should be able to take advantage of this period especially so that following this is an increase in old age dependency which may lead to social and economic problems because of the increased risk of disability/ morbidity and the need for medical services among the elderly (Duque, The NHIP in the face of the demographic crisis).

An examination of accredited health care providers also revealed marked differences across regions (Figure 4.3 and Table 4.2). These results are actually quite similar to the evaluation of Medicare (the country's previous health insurance scheme) conducted by Gonzalez (1993). In terms of absolute numbers, NCR had the highest number of hospitals especially tertiary hospitals, majority of which are privately owned. This is followed by Regions III and IV-A. NCR is the country's largest urban center (~98%), with the highest average annual income and the least poverty incidence (Appendix F). The two other regions share similar characteristics with NCR in being relatively urban, higher average annual incomes and lower poverty incidence rates. Primary hospitals abound in the more depressed or rural areas while secondary hospitals are numerous in areas that are relatively economically well-off (Figure 4.3).

A more appropriate measure of access at the regional level is the hospital beds. NCR again had the highest number, which is 3.4 times higher than Region III, the second highest and 18.2 times higher than the lowest. As previously mentioned, NCR had the greatest number of tertiary hospitals and this could explain the disproportionately high number of hospital beds. CAR and CARAGA have the lowest number of beds which also have the lowest number of hospitals with 50 each (Table 4.2).

Bed-population ratios were estimated per region in order to get an even better picture of access for the beneficiaries. NCR led the other regions with 2.1 beds per 1000 closely followed by CAR with 2 beds per 1000. It must be noted that CAR is one of two regions with the least number of hospitals and hospital beds but consequently, it also has the lowest number of beneficiaries. Incidentally, Region IV-B has the lowest bed ratio of 0.9 beds per 1000. Despite the relatively large number of hospitals and beds, it also has a large number of beneficiaries (Table 4.2).

With regard to accredited health care professionals, again NCR had the highest number which should also be expected because these professionals work in the accredited health care facilities. NCR also had the highest ratio of 8 per 10,000 again followed by CAR with 6 per 10,000. Region IV-B, likewise had the least ratio of ~3 per 10,000 (Table 4.2). It should be emphasized though that health care professionals here referred to both the accredited doctors and dentists. Hence, no further comment may be given as to whether these figures met the recommended number of doctors for the population.

The concentration curves and concentration indices for these three health care resources showed that there is inequitable distribution of these resources across the country (Figure 4.4). Hospital beds and health care professionals tend to concentrate in the regions with lower poverty incidence rates which are also the more urban areas. In fact, the results clearly implied a regional concentration of medical services in the NCR. Health professionals, in particular are more unequally distributed as suggested by the higher concentration index. However, the presence of a fairly large number of non-tertiary hospital facilities outside NCR, higher bed-population and doctor-population ratios in the more rural areas indicated that beneficiaries have potential access to health care regardless of their geographic location.

Such inequitable distribution of health care resources across the country is not an unusual phenomenon. Literature suggests that there are indeed wide disparities in the distribution of health care resources around the world. In both industrialized and developing counties, urban areas invariably have a substantially higher concentration of health care resources primarily for economic reasons. Health care professionals, in particular prefer to settle in urban areas which offer opportunities for professional development, education and other amenities for their families and attractive employment possibilities (Ricketts *et al.*, 1994; Gupta *et al.*, 2003; Zurn *et al.* 2002).

2. Utilization

There were three measures of utilization employed in this study—admission rate, reimbursement and length of stay. Admission rate gives a good overall view of hospital utilization (Fried, 2000). It describes the proportion of the covered population that is in fact using the services. Length of stay and reimbursement, on the other hand provides a description of the actual utilization of these services. Length of stay can reveal significant information on the effectiveness in the management of a particular disease while reimbursements may be associated with efficient resource spending.

Pneumonia was chosen in analyzing variation controlling for the pattern of disease since this was the most common reason of hospitalization for the study period. According to Phil Health records, it had been consistently on top since 1999. Moreover in the DOH list, it is also among the top ten causes of morbidity for the whole country (Phil Health and DOH). It should also be mentioned that it is one of the diseases with existing clinical guidelines.

Pneumonia is an infectious disease along with bronchopneumonia, diarrheal diseases, bronchitis and UTI which are all among the medical cases with the most number of claims for the study period (Table 4.3). As a developing country, these diseases are prevalent due to problems in sanitation and nutrition in contrast with developed countries such as the US where lifestyle diseases are more widespread due to dietary and sedentary lifestyle concerns. But even while PhilHealth seems to address the

country's health needs, since the aforementioned diseases were also the top leading causes of morbidity, a particularly intriguing observation was that majority of these cases were ordinary and perhaps does not even need hospitalization. UTI, diarrheal diseases and acute bronchitis for example can be easily managed with drugs without needing to be hospitalized except for the more severe cases. With PhilHealth's present reimbursement system however that only inpatient cases are reimbursed, patients may prefer to be hospitalized to avail of their benefits instead of going home where they purchase their own medicine. This then leads to more expenditure on the part of PhilHealth since hospitalization entails more costs. Delivery by elective cesarean is another medical case to be especially monitored because of the high costs associated with it. The greater proportion of deliveries by cesarean compared to normal vaginal deliveries does not appear to be rational and may be supplier-induced. This could warrant further investigation in order to come up with a more accurate conclusion. Why are there more cesarean cases? Are they necessary? Or are they merely a result of preference among the patients or the doctors?

3.1. Admission rate

Over all the two regions, Regions XI and XII, were observed to have the highest admission rates suggesting higher utilization in these areas (Table 4.4 and Figure 4.5). Admission rates varied across regions. When all medical cases are considered, extremal quotient is 3.1—that is Region XII, the region with the highest rate, used hospital services three times more than Region II, which had the lowest rate. Of course, some arguments may be raised in interpreting these figures. Firstly, there is reason to believe

that the computed admission rates may have been over or under estimated for reasons previously stated under the Methodology section. Secondly, variation in admission rates is known to be affected by the pattern of disease and lastly it may also be argued that the computed admission rates are neither sex nor age adjusted.

In geographic variation literature, emphasis is made on aggregating admissions or discharges according to where patients reside instead of where the medical care was sought because of the significant in and out migration (or "border crossing") for health care (MedPAC, 2003). Thus an area with a large number of health care or specialty providers may have a large number of admissions because of the in-migration for health care from neighboring areas. In this study however, the two regions with disproportionately high admission rates are both situated in Mindanao, relatively rural in which majority of the hospitals are primary and privately owned. It is therefore unlikely that the beneficiaries from the neighboring regions will move here to seek for medical assistance. Moreover, most admissions were ordinary that can be readily handled in the primary level of health care (Table 4.4).

When only the pneumonia cases were considered, Regions XI and XII were similarly demonstrated to have the highest admission rates (Table 4.7 and Figure 4.6). Extremal ratio rose to 7.7 suggesting even greater variation. In order to discount the possibility of in-migration, admissions were aggregated according to the patients' regional residence but there weren't much differences in the rates obtained (Table 4.7). Regions XI and XII were still highest among the regions. With the exception of Region

IV-A, all the other regions were over or underestimated by not more than 5% when aggregated according to the provider. Region IV-A admission rate was underestimated by 11%. The observed discrepancies (though relatively small) in the rates suggest in and out migration for health care among the patients. Majority of the regions experienced influx (importing). Most cases were ordinary and as such may be handled in any level of care. Consequently, it appears that there is relative ease among the beneficiaries to move from one region to another to seek health care perhaps depending on the relative accessibility of the hospital or a matter of preference. In order to further illustrate this concept of movement, there were two other medical cases examined—delivery by cesarean section and end stage renal disease, both of which also belong to the top ten most reimbursed cases, which will be discussed later.

Majority of the literature reports sex or age-adjusted rates. In fact, extremal ratios (measure used to quantify variation) are recommended to be applied only for adjusted rates. Rate adjustments for age or sex can only be accentuated since it removes confounding caused by these two factors and as such allows for direct comparison of communities with different age or sex structures. In this study, adjustments cannot be made due to the unavailability of the said data. However, certain assumptions or approximations can be made based on the available information. The demographic structure of the country, per se, shows a relatively young population which is the same structure across the regions. The population is almost evenly distributed between sexes (50.4% males). Children under 5 ranges from 11.66% (Region I) to 14.01% (Region V) across regions suggesting a relatively uniform distribution for this particular age range.

Pneumonia is prevalent in this age range both in the national level (based on 2000 and 2002 morbidity rates) and Phil Health. It can therefore be assumed that while age and sex are factors to be considered they probably will not greatly alter the crude rates so determined.

Chi-square tests revealed that the admission rates (aggregated according to the regional residence of patients) significantly differ from each other (Table 4.8). What could probably explain for the observed variation in admission rates other than age and sex? The limited sample size restricts any statistical analysis that can be applied to the data hence the admission rates were just compared with the different socio-economic and morbidity rates available. It was previously reported in the Data and Results section that majority of the regions, four out of five (regions of Mindanao) to be exact, with relatively high incidence rates are located in Mindanao (Appendix F). Two of these regions had extremely high rates. Region XI, the region with the highest rate, is predominantly rural while the other second highest, Region XII, ranks second among the poorest regions. All of the regions with rates more than 100/100,000 have poverty incidence rates greater than the national incidence rate of 34%. The concentration curve and index for pneumonia also clearly illustrated that the burden of the disease is on the more disadvantaged regions (Figure 4.7). Furthermore, these regions are also predominantly rural. These results are likely to suggest that poverty incidence and % urban are factors that could explain for variation. A probable implication of these observations is that these areas may have less access to preventive services, or poorer sanitation and nutrition. On one hand, this may also imply greater accessibility to the hospital and less financial barrier to health care.

Majority of the hospitals in Mindanao are primary. In the cost of treatment analysis, primary hospitals were demonstrated to charge lower (Table 4.16) and with higher support values therefore lower co-payments. Given the situation, the people will more likely seek help from these hospitals and get admitted.

The observation of higher admission rates among regions in Mindanao actually corroborated with the results of PhilHealth's monitoring in 2001 of its different providers in that majority of the hospitals that had extremely disproportionate utilization of services were the primary hospitals coming from Mindanao (PhilHealth, 2001).

The morbidity rates do not seem to be correlated with the admission rate. Region XI, for instance which had the highest admission rate had the second least and the least incidence rate of pneumonia as recorded in the annual reports of the DOH's Field Health Service Information System (FHSIS) for the years 2000 and 2002, respectively (see Appendix F for the figures). Of course, it may be argued that these incidence reports are not the same year as that of the admission rate but even so for this particular case (Region XI) there is reason to believe that the regional sequence of the 2003 morbidity rates will not be too different.

The variables examined in this study are widely documented in geographic variation literature as factors accounting for variation. It must be mentioned that while these variables are different from each other they may actually be interrelated as well. Poverty incidence is usually high among the low income areas and the rural areas which

was indeed illustrated in the results obtained. On the other hand, health care providers are usually more numerous in the urban areas. High poverty incidence and low income are usually associated with low health status and home conditions that may lessen providers' confidence in these patients' ability to adhere to ambulatory routines, making providers more likely to admit them (Fried, 2000). In a study by Rosenberg and Hanlon (1996), results suggested that as populations become more dispersed and rural, physician services become more limited in quantity and where they are located, the use of emergency services and admissions to hospitals are more likely to increase. Most studies have shown a strong positive association between the supply of health care providers and use of services. It was in the 1970s that Roemer and Shain first observed that the rate of hospitalization depends on the supply of hospital beds, leading to the conclusion that a bed built is a bed filled, commonly referred to as Roemer's law (Gold, 2004; Fuchs *et al.*, 2001). Although in this study, admission rates do not seem to depend on this supply side variable. Literature also states that in most instances there are inconsistent correlations between illness rates and use of care but usually the high utilization rates is not fully explained by morbidity which was likewise demonstrated in this study (Wennberg, 1999).

Other possible factors that could account for the variation in admission rates, which are also popularly cited in the literature (as well as by PhilHealth in its monitoring activity) are patient preferences and physician practice patterns. It is not unusual for patients to prefer admission and management on an in patient basis rather than come back for a schedule follow up for reasons that the patient may live far from the hospital and

difficult to follow up consultation (PhilHealth, 2001). This is perhaps even partially motivated by the present payment mechanism of PhilHealth which only allows for reimbursement on an inpatient basis. Physicians differ in their practice styles. They differ in their beliefs about the effectiveness of health care interventions (Detsky, 1995). Proponents of the "uncertainty hypothesis" maintain that the great lack of data on effectiveness permits reasonable physicians to come to different conclusions regarding when to use various health services (Chassin, 1993). Thus, physicians practicing in a remote town may be more aggressive in disease management opting to admit patients rather than treating them outpatient (Phil Health, 2001).

Among the different member types (or sector or worker types), although admission rates cannot be accurately determined for the non-paying and the IPP, of particular interest is that of the sponsored program. The indigents had the least admission rate of 18.72 per 1000, when all medical cases are considered and 88.18 per 100,000 when only pneumonia cases are included (Tables 4.5 and 4.8). In a study conducted by Schneider and Racelis (2004) on the impact of Phil Health indigent insurance on utilization, cost and finances in health facilities, results also showed that the outpatient utilization of health care services in RHUs, where these benefits may be availed, was generally on an extremely low level. The low utilization of health care services in both the outpatient and inpatient settings may lead one to incorrectly conclude that the poor have better health status hence they seek medical services less.

This low utilization of benefits among the poor has actually been raised as a problem because LGUs want the members for whom they are paying premiums to use the benefits so that they get a return for the premium (Bautista and Babin, 2001). Although there have been no formal studies conducted to answer the low utilization among the indigents, the following have been identified as probable reasons to account for this:

- Inadequate member's orientation to their benefits. Members might not use the benefit either because they do not know about it or do not know how to access it.

- Lack of basic operations' support, i.e. the process flow of patients and documentation of each step. Members may be using their benefits but they are not identified or categorized as members.

- Fear on the part of the members of further expenses (real or perceived) if not fully covered by insurance caps or ceilings.

The third premise has quite a sound basis especially for inpatient utilization. As this study showed, support values are not 100% which decreases as the level of care increases and are also lower for the private hospitals (Table 4.16). Thus in a country dominated by private hospitals, the poor will likely be more skeptical in seeking medical care from hospitals.

A household survey on health seeking patterns across income groups conducted in 1993 shows that the poorest consult a doctor least and consult traditional healer the most. Self-care was also revealed high among the poor (Tan, 2002). Traditional healers abound in the country, especially in the rural areas, and oftentimes are more accessible and

convenient to visit than the health facilities thus even when insurance breaks the financial barrier attached to consulting a doctor, the poor prefer to visit these healers. Furthermore, the perceived effectiveness, perceived safety, the non-invasive nature of traditional medicine and the affective behavior of medical staff may have also been contributing factors to their preference.

These results indicate that while there is relatively high utilization among the regions with high poverty incidence, it is not necessarily the poor who are using the medical services.

Admission rates for the other two medical cases—delivery by cesarean section and end stage renal disease, aggregated according to hospital and patient regional address revealed interesting results from which health seeking patterns of the people may be approximated. Unlike pneumonia where the disease burden is on the poorer regions, for these two medical cases, the burden is on the more advantaged regions as illustrated by the concentration curves and concentration indices (Figure 4.7).

For all three diseases, movement among the beneficiaries was clearly demonstrated. The people tend to move around or cross borders to seek medical help which especially increases when the medical case is perceived (or real) to be severe, which is also further influenced by the greater availability of tertiary hospitals or other medical resources in other regions. In pneumonia, limited movement was observed as exemplified by the lower differences between the rates when admissions were aggregated

according to hospital and patient residence. Most of the pneumonia cases were ordinary and even while there is higher proportion of admissions in tertiary hospitals, admissions in the primary hospitals were still apparent. In the case of cesarean delivery, differences between the rates aggregated by way of the provider and patient residence increased while primary hospital admissions was very minimal. Cesarean is a surgical case that requires a higher level of care that primary hospitals may not be able to give thus people flock to secondary or tertiary hospitals to seek care, regardless of whether the hospital is within their region of residence or not. Moving across the different regions to seek care in Luzon is particularly high and this is probably because of the relative ease (geographically speaking) in moving from one region to another. Despite the availability of secondary or tertiary hospitals in their area, the people may opt to go to hospitals in another region which they thought would deliver better services. In the Visayas and Mindanao, people sought care in secondary and tertiary hospitals readily accessible in their region of residence. For end stage renal disease, the discrepancies of the admission rates (Table 4.9) between the patient address and hospital aggregation were particularly large, mostly catastrophic cases and the disproportionately high admissions in the tertiary hospitals is understandable and acceptable. Catastrophic cases need the most sophisticated or the highest level of care and so regardless of the location, people are more likely to move places to seek the best possible care. In both cases, majority of the regions had effluence or out-migration of patients which is especially prominent in end stage renal failure. This could signify concerns in accessibility particularly for hemodialysis centers and might imply re-allocation of such resources to other regions with little or no access at all. This is critical since moving around implicates additional

costs for transportation, thus for the afflicted patients with less money chances are they no longer seek medical help and may just die unattended by a medical practitioner.

Geographical literature suggests that consumers tend to use services that are located nearest to them. The geographical distance is strengthened by two related factors of transport cost and travel time. A long distance would involve a long travel time, depending upon the nature of road and transport. It could also involve greater cost which has the potential of discouraging utilization in a poverty-endemic region. With regard to this cost of movement, Garner (1967) contested that the notion of accessibility is closely related to the concept of movement minimization, especially when this is measured by costs in overcoming the distance (Morgan *et al.*, 1999; Buor, 2002).

Patients have also been shown to travel to different distances for varying level of service. This is called "friction of distance" referring to the resistance or "friction" of movement over space. Patients are more likely to travel further distances for specialized care like cardiology etc. This factor of specialist services brings in disparity between men and women in their relationship with distance. The fact has been noted that women need health services more than men. Because of their childbearing role and the complications associated with it, women require specialist services thereby compelling them to travel long distances to seek specialist services. The quality of care or the perception of quality and dissatisfaction with primary health care are also important factors that could affect health seeking care of the people. Private and tertiary level of care, are believed to deliver better quality hence people flock to these institutions to seek care even for benign health

problems. In addition, the cost of care is another important determinant of health seeking behavior. In the context of economic theory and demand, the extent of health care and its use largely depends upon relative prices, income and consumer tastes. Thus even if there may be available health facilities in their area but they are unable to pay for these services then they seek care somewhere else (Morgan *et al.*, 1999; Buor, 2002; Yanagisawa *et al.*, 2004; Tursz *et al.*, 1999).

3.2. Reimbursement and length of stay

A more appropriate measure of inpatient health expenditure would have been the actual hospital charge since reimbursements are limited by caps. However, in prior communication with Phil Health it was noted that the actual charges inscribed in the database do not necessarily reflect what the care actually cost the hospital. In some instances, hospitals simply write the amount that they suppose can be reimbursed. This was demonstrated by the more than 100% support values computed for some entries in the database. In order to further illustrate this point, bivariate correlations (of 400 randomly selected entries) between reimbursement and actual amount (the supposedly hospital charge as found in the database); reimbursement and estimated reimbursable amount (computed based on the length of stay and allowable reimbursements); and actual amount and estimated reimbursable amount were performed. Results indicated very high correlation of 0.836 between total (total amount reimbursed) reimbursements and actual hospital charges suggesting that these two variables are almost similar to each other. Correlations between the (total) actual amount and estimated reimbursable amount were lower although still very significant. Correlation between (total) reimbursement and

estimated reimbursable amount was a high 0.782. Across bivariate correlations of the different variables, room and board was consistently high while professional fees were low. These results may indicate two things—one is that it strengthens the prior belief that hospitals simply indicate the charges that can be reimbursed and two is that these actual charges (as found in the database) are the real charges and if they are, hospitals tend to maximize the amount by trying to reach the maximum allowable rates. Thus, the average reimbursement was eventually used as one measure of utilization as it reflects a more real cost incurred (See Appendix H for the correlation table). Moreover, the perspective of the study is that of PhilHealth and reimbursements present a more appropriate measure of expenditure on their part.

Length of stay would have been employed as one of the dependent variables for reimbursement and vice-versa. Literature documents that hospital charge is strongly associated with length of stay (Surles, 2001). Moreover, in Gonzalez' (1993) evaluation of Medicare, average reimbursement was one of the dependent variables found to significantly explain length of stay. The Pearson correlation, though, between length of stay and reimbursement was quite high (0.563 when all cases were considered and 0.758 when a representative 400 cases were selected) possibly denoting that they are similar variables. Thus, in order to avoid measuring the same thing, it was decided not to be used as an independent variable.

Average reimbursements and confinement periods varied across regions. In terms of reimbursement, for all medical cases NCR had twice as much as Region IX (Table

4.10 and Figure 4.9). When only pneumonia cases were analyzed, NCR was again observed to have almost twice as high as Region V (Table 4.11 and Figure 4.12). The concentration curve and index for the reimbursements for pneumonia suggested that there is an almost "equitable" reimbursement rate across regions (Figure 4.15). This only suggests that while variation in reimbursements across regions exists, this cannot be accounted to the areal factor or the socioeconomic status of the region, which is true to the fact that PhilHealth offers a unified benefit mechanism across the different member groups and regions. In terms of length of stay, NCR was likewise observed with highest value although its difference with the region of the least value was only about one-third (Tables 4.10 and 4.11). On the other hand, when only the pneumonia cases were considered CAR had the highest value but similarly was only about one-third different with the region of the least length of stay. ANOVA tests proved the differences in both dependent variables to be statistically significant.

Patients are treated differently hence the variable reimbursements and lengths of stay. This individual utilization is predominantly explained by the health care system variables, category and type of hospital (or simply the health care settings); and the need variable, medical case, which reflects the severity of case (Tables 4.19 and 4.20). The magnitude however, in the ability of these variables to explain the variance in the reimbursement and length of stay is far greater for the former than the latter. There is an obvious preference for the tertiary hospitals among the patients as exemplified by the higher proportion of admissions in these hospitals even when majority of these cases are ordinary (Table 4.6) which is actually consistent with available literature on utilization.

Flavier (2002) notes that according to literature, demand is lower than supply for secondary and tertiary hospitals probably as a result of patient's distrust towards primary hospitals or the disincentive that the differential pricing offers in using primary hospitals.

At the membership number level, even when this is considered as an aggregate utilization of individuals sharing the same benefits, a majority actually simply described individual utilization as demonstrated by the differences in the sample size—individual records had 52,478 vs. 48,385 for membership number. There was one variable generated, number of admissions classified as an enabling factor but another variable, age, was also deleted from the analysis (Tables 4.23 and 4.25). This could probably account for the lower coefficient of determination at this level when compared to the individual utilization—in that variables were treated as aggregate even as majority of the data is at the individual level. In general however, the major explanatory variables for both reimbursement and length of stay remained similar as that of the individual utilization—the health care system variables, category and type of hospital and the need variable, medical case. Perhaps, the more important information at this level of analysis is the fact that reimbursement rates do decrease when the hospital use increases among the beneficiaries of one membership number because of the sharing in the maximum allowable number of days that may be reimbursed set by PhilHealth.

Hospitals treat their patients differently as implied by the variable length of stay and reimbursements which also primarily depend on the category of hospital, type of hospital and the severity of case (Tables 4.28 and 4.30). Tertiary hospitals keep their

patients longer when compared with primary hospitals which then translate to higher reimbursement. Government hospitals keep their patients longer as well but reimbursements are lower. Hospitals with greater number of beds also have longer confinement periods. Since there are more available beds, more patients can be accommodated hence longer periods of stay is not an issue.

At the provincial aggregation, utilization in terms of reimbursement is also dependent on the health care system variables, category and type of hospital and need variable. The effect of the health care system variable, use of specialist service also became particularly apparent (Table 4.33). The ability of these variables to explain the variance in reimbursement is particularly high. In terms of length of stay, this is particularly explained by the type and category of hospital, medical case and poverty incidence instead of use of specialist services (Table 4.35). These suggest that the variability in the length of stay do not seem to result from the more specialist-oriented management of disease for particular areas. This only translates to a higher expenditure. The enabling ecological factor, poverty incidence, also considered as an areal factor has a distinctively pronounced effect on length of stay which cannot seem to be explained. The regions with moderate poverty incidence (group 3) in particular exhibited very high coefficient indicating higher length of stay when compared to regions with highest poverty incidence. Except for the similar characteristics they share in terms of poverty incidence rates they do not seem to have other characteristics in common (Appendix G).

The cost of treatment analysis performed complemented the results of the regression analyses. Across the country, costs vary. Government hospitals charge lower compared to private hospitals but involve longer length of stay (Table 4.16). These results were actually also consistent with Liu's study on the costs of treatment of pneumonia in tertiary hospitals in the NCR. This study however indicated that the pattern observed by Liu *et al.* is not only true to NCR but across the different regions as well (Appendix E). Another interesting point is the higher standard deviations observed for government hospitals across the different categories than private hospitals. This suggests greater variation within them possibly implying that government hospitals have a more variable way of treating the disease. Tertiary hospitals have longer confinement periods and higher costs while primary or secondary hospitals have shorter confinement periods and lower costs. The costs in the lower level of care and government hospitals are cheaper hence they are reimbursed more. This strengthens the results obtained in the regression whereby the type and category of hospitals are among the predominant explanatory variables. It also reinforces the observed higher and lower support values for the indigents and the private sector (Figure 4.15), respectively since the former usually visited the primary and secondary hospitals while the latter visited the tertiary hospitals more.

If length of stay then is a good measure of efficiency, it can be concluded that private hospitals seem to be more efficient in managing pneumonia compared with government hospitals which is likewise concluded by Liu *et al.* (2003) in his study. Efficiency is also cited as a probable reason by McCormick *et al.* (1999), in his study on

variation in length of stay in patients with community-acquired pneumonia. Following this course of explanation on efficiency, it may also be suggested that the lower level of care, primary and secondary hospitals, seem to be more efficient in handling pneumonia at least for the ordinary cases. Thus the higher costs in tertiary hospitals may perhaps only mean higher prices and more medical services but do not necessarily translate to better or more efficient outcomes. The existing literature on variation stresses that there is enough evidence to support that greater spending does not purchase the infrastructure needed to ensure compliance with the standards of practice dictated by evidence-based medicine (Liebermann *et al.*, 2003; Skinner and Wennberg, 1998; Wennberg 2002; Fischer and Welch, 1999; Wennberg *et al.*, 2002)

Across the different regions, similar observations are evident in the cost of treatment analysis performed (Appendix E). Comparing the different regions with regard to the costs involved and the length of stay, a shorter length of stay coupled with low cost should be desirable as it suggests efficiency not only in the cost but the management of the disease as well. A lower variation especially in the confinement period across the different types and categories of hospital should also be preferred as it suggests a rather uniform way of handling the disease within the region. Across these comparisons, two regions, Regions I and NCR, presented very interesting cases (Appendix E). For Region I, regardless of the type and category of hospital, it has a fairly consistent length of stay. ANOVA tests showed them to be not significant although the costs vary significantly. The costs however are relatively lower compared to the other regions. For NCR both the length of stay and costs vary with the type and category of hospital. It also has almost the

highest cost of care (and relatively longer length of stay) across the different types and categories of hospital among the other regions. Support values follow accordingly, the high cost regions are reimbursed less compared to the low cost regions. It may well be stated that beneficiaries in the low cost regions seem to get more value for their money than the high cost regions. These results insinuate that while differences in cost or reimbursements are predominantly due to the settings of care, there are differences that arise because of the regional differences where the providers are located like perhaps price differences in labor etc. Thus, unlike reimbursements where the areal factor does not account for variation, in terms of costs of treatment, there are regions which have sufficiently high charges than others. This is supported by Figure 4.15, where the concentration curve and index indicated that costs are higher for regions with lower poverty incidence rates.

In terms of support values, in general only about 53% is reimbursed and a substantial 47% is shouldered by the patients, which may vary depending on the type of hospital, category of hospital and region where provider is located. Among the different items of hospitalization expenditure, even when the support values of government hospitals are higher in terms of the actual amount, private hospitals are reimbursed more for drugs and laboratory examinations. In the Philippines, the prices of these items are determined by the individual hospitals and as such the same drugs or examinations may be reimbursed differently. Drugs are particularly interesting because they comprise the most expensive component of hospitalization. Even when reimbursement is checked against the essential drugs list, drugs come in different brand names thereby different

prices. Moreover, drug prices in the Philippines are known to be sufficiently high when compared to other neighboring countries. Philippines do not have any price control policies hence the pharmaceutical industry is able to set their prices freely. The costs of doctor fees are higher in private hospitals but reimbursed lower than private hospitals. Doctor fees for specialists are higher than General practitioners and also dependent on the category of the hospital, and as the results of this study demonstrated, also dependent on the type of hospital. Specialist treatments are more numerous and more expensive in private than government hospitals thus plausibly explaining the higher reimbursements in the latter. This high co-payment may discourage members particularly of the sponsored program to seek medical care.

The variable costs or charges, the reimbursement rates and the low support values have a particularly important implication in PhilHealth's present payment mechanism. The present payment mechanism is fee for service. Caps are set, depending on the category of hospital and the severity of case, in order to prevent moral hazard among the beneficiaries and for cost control. But while expenditure is controlled on the part of PhilHealth, this may not be the case for the beneficiaries who pay whatever exceeds the caps (Table 4.16). Following the supply and demand analysis—the reimbursement caps may be regarded as a control for P (price) on the part of the providers. In the law of supply and demand, a control in P would lead to an increase in Q (quantity) in order to maximize profit (since Q is not controlled) which is implicitly illustrated in Table 4.16 and Appendix E. There are hospitals that charge sufficiently high, most especially the private tertiary hospitals though it cannot be explicitly determined why. PhilHealth pays

only according to its rates set at the expense of the patients who suffer the burden of shouldering all the expenses. Earlier, it was explained that the high costs do not necessarily translate to better health outcomes as illustrated by the longer length of stay for the tertiary hospitals when compared to primary or secondary hospitals. This of course may only be considered as speculations and only provides a partial understanding of the P-Q relationship and hence would warrant further investigation.

Across all these analyses performed, it is explicitly demonstrated that variations exist in reimbursements and length of stay largely as a result of the variable costs, settings of care and severity of case regardless of whether it refers to an individual or aggregate utilization and these are quite consistent with literature (Gold, 2004; Fuchs *et al.*, 2001; Skinner and Wennberg, 1998; Moon and Boccuti, 2002; Welch *et al.*, 1993; MedPAC, 2003). The setting of care encompasses other factors such as the intensity of care. For instance, tertiary hospitals may include more diagnostic tests which otherwise may not be available in primary or secondary hospitals or may be more specialist-oriented in their management of the disease. In the same manner, government hospitals and private hospitals also differ in handling their patients. These differences in the intensity of care would in turn lead to differences in the costs of care, reimbursements and length of stay. The severity of case, while significant in explaining the variation in the utilization had a minimal contribution especially to explaining the length of stay at the individual utilization (approximately only 5%). The fact that most cases are ordinary (therefore there isn't too much variation) must have been the reason for this. But while the same significant factors were obtained for both dependent variables, these variables in

particular the health system variables (settings of care), were found to explain reimbursement more than length of stay and this is probably because reimbursement is more of the hospital or health system aspect as well. Length of stay would pertain more to the individual and hence the severity of case came out as the major explanatory variable.

Patient preferences and accessibility of the provider, while not directly investigated in the study, are two factors that cannot be ignored. As earlier discussed the proportion of admissions in secondary and tertiary hospitals are way higher when compared with primary hospitals even while most cases are ordinary (Table 4.6). It may also be that secondary or tertiary hospitals are the providers more readily available to them as indicated by the admission rates—small differences between the rates aggregated according to provider and patient residence. Population characteristics or the predisposing factors, also contributed to explaining utilization but to a much lesser degree. On top of all these factors, physician practice pattern is a likely factor for variation as implied by the variable costs, reimbursements and length of stay and may thus suggest poor compliance (or poor implementation) of the existing CPGs for pneumonia.