



Study to Support Improvement
of the PNHA Components: Expenditures
on Employer-provided Health Care
and Private Schools Health Services

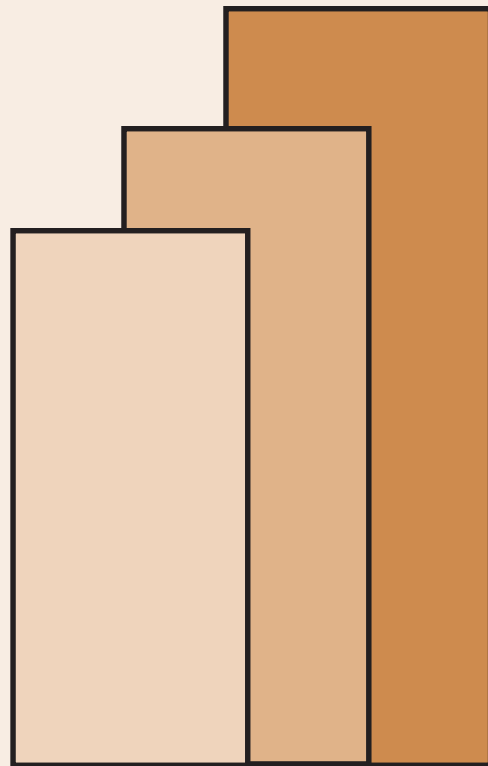
Rachel H. Racelis

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Philippine Institute for Development Studies

Project Title: Study to Support Improvement of the Philippine National Health Accounts (PNHA): Update on Expenditures for Employer-Provided Health Care and Private Schools Health Services

STUDY TO SUPPORT IMPROVEMENT OF THE PHILIPPINE NATIONAL HEALTH ACCOUNTS (PNHA) COMPONENTS: EXPENDITURES ON EMPLOYER-PROVIDED HEALTH CARE AND PRIVATE SCHOOLS HEALTH SERVICES

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April 2014

ABSTRACT:

The expenditures for employer-provided health care in private establishments and for student health services in private schools are two components estimated in the PNHA. The basic methodology for producing the annual estimates of the two components have remained the same since the first PNHA was produced in 1994 and estimation procedures had continued to use through the years the parameters (average costs) generated from the 1993-1994 establishments and private schools surveys. The surveys on health expenditures of private establishments and of private schools were conducted again in 2013-2014 as part of this study. Results from the new surveys are used to generate the updated parameters for PNHA estimation. Additionally, results from the survey provide detail on curative care provision and preventive health care activities of establishments and private schools.

KEYWORDS: health, Philippine National Health Accounts, employer-provided health care, private schools health services, health accounts approach

CONTENTS:

1. Background
2. Related Literature
 - 2.1 Legal Framework
 - 2.2 Philippine National Health Accounts and Trends in Health Care Financing
3. The Sample Establishments and Private Schools
4. Employee Health Benefits and Health Care Provisions in Private Establishments
5. Student Health Care Provision in Private Schools
6. Analysis of Establishment and Private Schools Health Expenditures Using the Health Accounts Approach
 - 6.1 The Health Accounts Approach
 - 6.2 Establishment Health Expenditures
 - 6.3 Private Schools Health Expenditures
7. The 2012 Updated PNHA Estimation Parameters
8. Conclusion

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1. Background

The Philippine National Health Accounts (PNHA) is a framework for the comprehensive compilation of data on the country's health expenditures. It covers spending from all sources including the government sector, the private sector and from international sources. The PNHA is compiled by the Philippine Statistics Authority (PSA) specifically by the former National Statistical Coordination Board (NSCB). Annual estimates of the PNHA are available from 1991 to 2011 at the following link: <http://www.nscb.gov.ph/stats/pnha/default.asp>

The PNHA was developed from 1992-1994 under the Health Finance Development Project (HFDP) of the Department of Health (DOH) (Solon et. al. 1999). During this project several special surveys were conducted, results from which were then used as inputs or estimation parameters in the production of the first PNHA. These included the NHA Rider Survey to the 1994 Family Income and Expenditure Survey (FIES) and Labor Force Survey (LFS), Rider Survey to the Annual Survey of Establishments, 1993-1994 Survey of Health Expenditures of Establishments and 1993-1994 Survey of Health Expenditures of Private Schools. These surveys that were commissioned by the HFDP have not been repeated since then.

The expenditures for employer-provided health care in private establishments and for student health services in private schools are two components estimated in the PNHA. The expenditure estimates are reported in two columns of the PNHA (see sample PNHA table for 2011 in Figure 1).

Figure 1. PHILIPPINE NATIONAL HEALTH ACCOUNTS BY USE AND SOURCE OF FUNDS, 2011 (in thousand pesos)

USE OF FUNDS	SOURCE OF FUNDS													TOTAL BY USE	
	GOVERNMENT					SOCIAL INSURANCE			PRIVATE SECTOR						REST OF THE WORLD
	National Government				Local Government	National Health Insurance Program	Employees' Compensation	Private Out-of-Pocket	Private Insurance		HMOs	Private Establishments	Private Schools		
	DOH ^{1/}	Other National Government Agencies ^{2/}	Foreign-Assisted Projects						Life & Non-life Insurance Companies	Other Private Insurance					
		Loans	GOP counterpart funding												
PERSONAL HEALTH CARE	14,164,219	9,908,527	132,968	-	17,487,345	34,884,817	51,690	227,214,628	3,231,435	295	18,324,967	9,296,907	3,705,637	517,964	338,921,399
Government Hospital	14,164,219	8,628,029	132,968	-	16,035,460	10,814,293								517,964	
Private Hospital	-	902,319	-	-	-	24,070,524								-	
Non-Hospital MD Facilities	-	131,558	-	-	1,451,885	-								-	
Other Professional Facilities	-	246,621	-	-	-	-								-	
Dental Facilities	-	-	-	-	-	-	51,690	227,214,628	3,231,435	295	18,324,967	9,296,907	3,705,637	-	
Traditional Health Care	-	-	-	-	-	-								-	
Retail Outlets: Drugs and Other Non-Durable Purchases (self care)	-	-	-	-	-	-								-	
Retail Outlets: Vision Products and Other Medical Durables (self care)	-	-	-	-	-	-								-	
PUBLIC HEALTH CARE	11,883,089	8,895,325	628,019	132,629	28,586,212	-	-	-	-	-	-	-	-	2,935,307	
OTHERS	3,768,566	3,555,953	-	-	17,290,073	4,137,523	52,428	-	3,989,916	33	6,245,151	-	-	24,948	39,064,591
General Administration and Operating Costs	3,475,047	3,380,907	-	-	17,290,073	4,137,523	52,428	-	3,989,916	33	6,245,151	-	-	-	38,571,079
Bio-Medical Research	293,428	82,847	-	-	-	-	-	-	-	-	-	-	-	-	376,275
Operations/Policy Research	-	30,952	-	-	-	-	-	-	-	-	-	-	-	-	30,952
Survey and Monitoring	-	61,246	-	-	-	-	-	-	-	-	-	-	-	-	61,246
Manpower Training Activities	90	-	-	-	-	-	-	-	-	-	-	-	-	24,948	25,039
TOTAL BY SOURCE	29,815,873	22,359,805	769,987	132,629	63,363,630	39,022,341	104,118	227,214,628	7,221,351	328	24,570,118	9,296,907	3,705,637	3,478,219	431,046,571

1/ - DOH includes the following agencies: DOH, PHC, NKT, LCP, PCMC, NNC, PopCom, and PITAHC.

2/ - Others include DDB, PVAO-VMMC, FNRI, NMIS, AFP-Medical Center, PCHRD, NCDA, AFP-PN, AFP-PA, AFP-PAF, BFP, BCOR, DepEd, PAGCOR, PCSO, OSHC, UP System, DOLE, PNP, DSWD, and N4POLCOM.

Source: National Statistical Coordination Board as of 06 June 2013

While revisions in the other PNHA components were implemented by the PSA/NSCB in 2009-2010 (to improve coverage, refine estimation methods and to take into account recent developments and changes in the reporting systems of the data sources), the basic methodology for producing the estimates of the two components that are the focus of this study have remained the same since the first PNHA was produced in 1994 – mainly because of the lack of more current alternative data. The estimation procedures had continued to use through the years the parameters (average costs) generated from the 1993-1994 establishments and private schools surveys, and these were simply updated to the current year using the medical price index (PSA/NSCB 1998). The estimation parameters are nearly 20 years old by 2014. There have been many developments in the health sector since then, such as in the financing of healthcare, and some of these may have influenced health care provision and the corresponding expenditures of establishments and private schools.

The updating of the two sets of parameters is among the improvements related to the PNHA identified by the PSA/NSCB. More specifically, it is described in Chapter 17 – Health and Nutrition Statistics of the Philippine Statistical Development Program, 2011-2017. It is a major activity titled "Conduct of Special Surveys to Update Estimation Parameters" under the major program "Improvement and Compilation of the PNHA". The inclusion of this PNHA updating study in 2013-2014 in the Health Research Management Program (HRMP) of the Department of Health (DOH), and managed by the Philippine Institute for Development Studies (PIDS), provided the opportunity to finally fulfill these particular improvements in the PNHA. Results from the study address the issue of using parameters in PNHA estimation that are dated and that may no longer be appropriate.

As part of this study, the two surveys on health expenditures of private establishments and of private schools were conducted again in 2013-2014 by the study team. The survey of business establishments primarily collected data on establishment expenditures for the health care of its employees or employer-provided health care, as well as data on its economic activities and number of employees. The survey of private schools collected data on expenditures of the school for student health services and on its health facilities and size of student enrollment. Results from the new surveys are used to generate the updated parameters for PNHA estimation. Additionally, results from the survey provide detail on curative care provision and preventive health care activities of establishments and private schools.

This paper consists of several sections. A review of related literature in Section 2 describes provisions in Philippine laws and other legal instruments that guide the provision of health care and health benefits in establishments and in private schools, and then describes the PNHA as a statistical framework and trends in PNHA estimates particularly for specific sources of health funds or financing. Section 3 describes the sample areas and the samples of the two surveys. Section 4 reports on employee health benefits and health care provision in private establishments. Section 5 reports on student health care provision in private schools. Section 6 analyses establishment and private schools health expenditures using the health accounting approach. Section 7 presents the 2012 updated PNHA estimation parameters, compares the updated to the original PNHA parameters, and recommends how updating of estimation parameters may be handled in future PNHA estimation work. Section 8 concludes the paper.

2. Related Literature

2.1 Legal Framework

Employer-provided health care/benefits and provision of student health services in schools have legal basis and it is these requirements that eventually translate to health expenditures in private establishments and private schools.

Establishments

The specifics of ensuring the health and safety of workers in the workplace is governed mainly by laws and regulations under the Department of Labor and Employment (DOLE) jurisdiction. The DOLE is the lead agency implementing and enforcing such laws and standards. The Philippine Labor Code devotes an entire book, Book IV, to prevention and compensation of work-related injuries and illnesses, and to specifying provision of emergency health care (DOLE 2006). Additionally, the provision of health insurance coverage for workers is governed by the National Health Insurance Act. Thus, it is deemed the duty of establishments or employers to provide its workers with medical and dental health care, preventive/safety measures and protective gear, and health insurance and employment compensation program coverage. All these translate to expenditures for health by establishments.

The specific provisions for medical and dental services for workers that are in the Labor Code (Book IV, Title 1, Chapter 1) include: (1) first aid medicines and equipment in the work place; and (2) the following manpower and facilities by employment size of establishment and type of workplace (i.e., hazardous versus non-hazardous):

<u>Employment Size</u>	<u>Required Health Manpower/Facilities at Workplace</u>
less than 51	depends on workplace or industry
51-200	1 full time nurse (hazardous) or 1 graduate first aider (non-hazardous)
201-300	1 full time nurse 1 part-time physician 1 part-time dentist (part time manpower have to be present at the workplace for a minimum of 2 hours for hazardous; and on retainer basis for non-hazardous workplaces) emergency clinic
301 or more	1 full-time nurse 1 full-time physician 1 full-time dentist dental clinic

emergency hospital (1 bed per 100 employees)

For the emergency clinic, dental clinic and emergency hospital, establishments may use nearby facilities kept on retainer basis. Other provisions for medical and dental services include that employer shall (1) train sufficient number of employees in first aid, (2) through a physician engaged by the employer, develop and implement a comprehensive occupational health program; and (3) provide all necessary assistance to ensure adequate and immediate medical and dental treatment to an injured or sick employee in case of emergency.

The provisions for occupational safety and health of workers are articulated in the Labor Code under Article 162 The Occupational Health Standards and DOLE Administrative Code on Enforcement of Safety and Health Standards (DOLE, 2006).

Private Schools

The basis for the provision of student health services in private schools goes as far back as the 1947 Republic Act or RA 124 Act to Provide for the Medical Inspections of Students Enrolled in Private Schools in the Philippines which required that schools with 300 or more enrollment must provide for the yearly inspection of its pupils by a physician. The DOH (then the Bureau of Health) was tasked to formulate a school health inspection program. RA 124 was amended by RA 951 in the same year and this law stipulated that private schools with 1,300 or more students provide a part-time or full-time physician and dentist, and that the DOH is to regulate such medical and dental service provision.

In 1975 Presidential Decree or PD 856 Code on Sanitation of the Philippines specified the health facilities required in schools in Chapter VI School Sanitation and Health Services, Section 43. It was stated that trained health personnel and adequate facilities should be available so that students may be afforded the following health services:

- (a) periodic physical and medical examination
- (b) periodic immunization
- (c) medical and dental treatment
- (d) treatment for common emergencies; and
- (e) counseling and guidance

The DOH is the agency in-charge of implementing and enforcing the Sanitation Code.

A DECS Memorandum (No. 87 Series 1984) dated April 30, 1984 and titled "Organization of School Health Units in Private Schools" provided more specific guidelines on the establishment and organization of school health units and comprehensive school health programs "for the promotion, protection and maintenance of the health of the schooling population". Basic provisions required by the memorandum include: (1) school health unit housed in a space not less than 65 sq. meters (i.e., for schools with 3000 or more students); the space to be divided into separate rooms to ensure privacy: waiting room, examining room, dental evaluation area, office rooms, toilet with lavatory facilities; and (2) the following manpower by enrollment size of school:

<u>Enrollment Size</u>	<u>Required Manpower</u>
1-299	1 full-time nurse
300-4999	1 part-time medical officer 1 part-time dental officer 1 full-time nurse
5000 or more	1 full-time medical officer 1 full-time dental officer 1 full-time nurse -- one set of these officers for every 5,000 students

A later document, the 1997 Department of Education (DepEd) School Health Manual, provided detail on school health services including the School Health Nursing Program (specifying activities of the school nurse including preventive health activities), and the location and equipment and supplies of a standard school clinic. Most recently, the 2010 Educational Facilities Manual of the DepEd provided specifications (location, size, space allocation and basic equipment and furniture) for the school health clinic in Chapter IV Section R Facilities for Ancillary Services. It was also stipulated in the DepEd manual that duly trained first aider and teacher will be in charge of the school clinic if no health professional is employed by the school.

2.2 Philippine National Health Accounts and Trends in Health Care Financing

PNHA, Data and Methods

As mentioned previously, the Philippine National Health Accounts (PNHA) is a compilation of information on the country's health expenditures. It systematically presents data on national health spending for a given year as follows: (1) how much is being spent for health; (2) who pays for health care (sources of funds); (3) what health care services are being paid for (uses of funds). The PNHA is in a tabular format with the sources of funds shown along the columns and the uses of funds shown along the rows.

Two of the entities that pay for or are sources of funds for health in the Philippines are private establishments and private schools. Their expenditures are reported in two columns of the PNHA. Other sources of funds shown in the columns of the PNHA are the government (national and local), the National Health Insurance Program (PhilHealth), Private Out-of-Pocket, Private Insurance, Health Maintenance Organizations or HMOs, and the rest of the world (ROW). Data sources for these latter sources of funds are generally administrative reports or documents that are generated on a regular basis including: budget and financial reports for national and local government from the Department of Budget and Management (DBM) and the Commission on Audit (COA), the annual report of the Insurance Commission, financial statements of HMOs submitted to the Securities and Exchange Commission copies of which are also available from the Association of Health Maintenance Organizations of the Philippines, Inc. (AHMOPI) and the Bureau of Health Facilities and Services, DOH, and report on foreign-assisted health projects

from the DBM, the National Economic and Development Authority (NEDA) and the DOH. Data on household out-of-pocket spending for health is obtained from the Family Income and Expenditure Survey (FIES) and Annual Poverty Indicator Survey (APIS), both regularly conducted by the PSA/NSO, and the National Income Accounts from the PSA/NSCB.

The data for estimating the establishments and private schools components include tabulations of number of establishments by industry and by employment size which are regularly produced by the PSA/NSO and reports on private schools that include data on enrollment size of schools (as well as other school characteristics) which are regularly prepared by the CHED (for higher education institutions) and by the DepEd (for elementary and secondary level schools). Also needed are data on average health care expenditures per establishment and per school, and so far these have come from the two special surveys done in 1993-1994. The method for estimating the health expenditures for a given year (t) for these two components of the PNHA are as follows:

Establishments

$$Health\ Expenditures_t = \sum_{i=1}^5 \sum_{j=1}^9 N_{ijt} C_{ijt}$$

where

N_{ijt} = number of establishment in industry “i” of employment size “j” in year “t”

C_{ijt} = average health cost per establishment in industry group “i” and of employment size “j” in year “t”, as updated from 1994 to the current year “t” using the medical price index = $(C_{ij94} * P_t^{med})$ with C_{ij94} being average cost for establishment in industry “i” of employment size “j” in 1994 and P_t^{med} being the medical price index for updating the 1994 average cost to the current year “t”

i = industry group (1-5 following the grouping in the PNHA as follows: 1 agriculture/ forestry/fishery and mining/quarrying group; 2 manufacturing and gas/water/electricity group; 3 construction, wholesale/retail trade and transportation/communication group; 4 financial services and real estate group; and 5 community/ personal and other services group)

j = employment size (1-9 following the grouping in the PNHA: 1-4, 5-9, 10-19, 20-49, 50-99, 100-199, 200-499, 500-999, 1000 or more)

t = current year

Private Schools

$$Health\ Expenditures_t = \sum_{i=1}^6 N_{it} C_{it}$$

where

- N_{it} = number of private schools of enrollment size “i” in year “t”
- C_{it} = average health cost per private school of enrollment size “i” in year “t”, as updated from 1994 to the current year “t” using the medical price index
 $= (C_{j94} * P_t^{med})$ with C_{j94} being average cost for private school of enrollment size “i” in 1994 and P_t^{med} being the medical price index for updating the 1994 average cost to the current year “t”
 = consists of two components: average medical supplies cost and average health personnel salaries
- i = enrollment size (1-6 following the grouping in the PNHA; 1-199; 200-199; 1000-2999; 3000-7999; 5000-7999; 8000 or more)
- t = current year

The procedures used to estimate establishments and private schools health expenditures assume that the health spending patterns in 1994 is still the same in the current year and that increases in cost simply follows the medical price index. The assumptions may be appropriate to use for the years close to 1994. But an examination of average cost based on actual data needs to be done the farther away the current year is from 1994 to check whether the health spending pattern in 1994 has remained the same and whether cost increases can be based simply on the movement of the medical price index.

Trends in Health Financing and Implications

School health service provision costs, given the estimation method, would increase over the years due to a combination of the effects of cost adjustments (from applying the medical price index) and increases in the number of private schools. The medical price index in 2012 was roughly three times the index in 1994 (PSA/NSCB PNHA reports, various years). The number of private schools had increased modestly for secondary and tertiary level (PSA/NSCB Philippine Statistical Yearbook, various years): for secondary level from 2,379 in 1994 to 3,173 in 2000 (about 5.5 percent per year increase) and on to 5,570 in 2012 (about 6.3 percent per year increase); and for tertiary level from 950 in 1994 to 1,214 in 2000 (about 6.3 percent per year increase) and to 1,587 in 2012 (about 2.6 percent per year increase). The number of private elementary schools increased by much more from 2,245 in 1994 to 4,271 in 2000 (about 15 percent increase per year) and on to 10,138 in 2012 (about 11.4 percent increase per year). The number of private schools in total had increased by about 9.8 percent per year in 1994-2000 and by about 7.9 percent per year in 2000-2012.

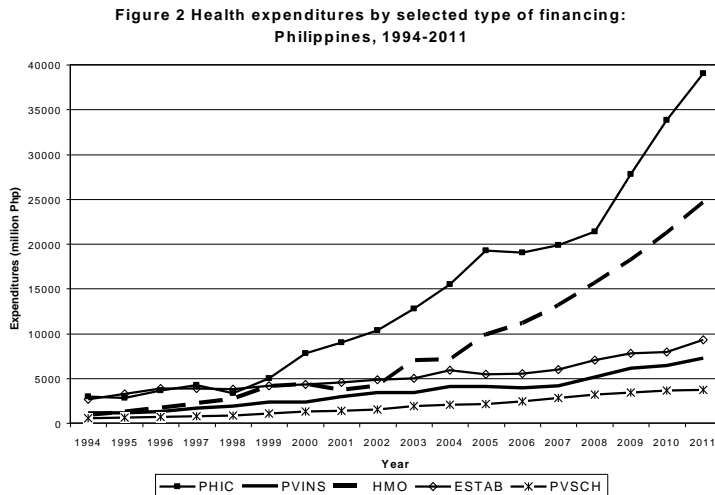
Based on health accounts data, private schools health expenditures increased from Php 530 million in 1994 to Php 1,292 million in 2000 (about 24.0 percent increase per year) and on to Php 3,706 million in 2011 (about 17.0 percent increase per year). These expenditures reflect the assumption that no significant change in the pattern of spending for health has taken place in private schools since 1994. Since there have been no major policy changes made about student

health service provision in private schools, the estimation approach may possibly still be applicable. Analysis in Section 7 determines whether this is the case.

Private establishment health expenditures as estimated in the PNHA would similarly change over time due to a combination of the effects of cost adjustments (from applying the medical price index) and increases in the number of establishments. The number of establishments increased from 821,000 in 2000 to 945,000 in 2012, or 1.5 percent per year increase.

Based on health accounts data, establishments health expenditures increased from Php 2,670 million in 1994 to Php 4,271 million in 2000 (about 10 percent increase per year) and on to Php 9,297 million in 2011 (about 11 percent increase per year). Again, these expenditures reflect the assumption that no significant change in the pattern of spending for health has occurred in private establishments since 1994.

However, trends in the level of health expenditures financed particularly by PhilHealth and HMOs since 1994 show very rapid increases (see Figure 2). Average annual increase in nominal terms in PhilHealth and HMO expenditures were 28 percent and 65 percent per year, respectively, in the period 1994-2000, and 36 percent and 42 percent per year, respectively, in the period 2000-2011. These are trends that may have implication on the spending of establishments for direct service provision because establishments in fact provide health insurance coverage to employees as part of their health benefits. More specifically, employers can substitute health insurance coverage for direct health service provision. Findings from an interview with a large HMO indicated that roughly 60 percent of its members are enrolled through arrangements made by corporations. The analysis of the data from the 2012 survey of establishments in Sections 7 determine whether average spending of establishments had changed or had remained the same as in 1994.



3. The Sample Establishments and Private Schools

The two surveys included sample units from three areas: the National Capital Region (NCR); Davao City; and the province of Rizal (Angono, Antipolo, Binangonan, Cainta and Taytay). The total sample sizes for both surveys were set to be similar to the original surveys.

Establishments

The survey of establishments covered a total sample of 439 of which 29, 150 and 260 were located in the NCR, Davao City and Rizal, respectively. The distribution of the sample according to the 5-industry grouping (used in PNHA as described in Section 2) is similar to the distribution of all establishments in the country in 2012 (Table 1).

Table 1. Distribution of sample establishments by industry group

Industry group (1)	Percent distributions	
	Sample (n)	NSO 2012 tabulation
1 AFFMN	1.1	1.1
2 MEGW	9.3	12.8
3 CWRTTC	48.5	51.6
4 FIRE	5.5	4.5
5 AFS & other	35.5	30.1
Total percent	100.0	100.0
Total number	439	944,897

(1) AFFMN-agriculture, forestry & fishing and mining & quarrying;

(2) MEGW-manufacturing, electricity & gas and water

(3) CWRTTC-construction, wholesale/retail trade and transportation & communication; (4) FIRE-financial & insurance and real estate;

(5) AFS & other-accommodation & food service, entertainment, health, education, professional and other service activities

Table 2. Distribution of sample establishments by employment size

Employment Size	Percent distributions	
	Sample	NSO 2012 tabulation
1-4	13.9	75.6
5-9	32.6	13.8
10-19	26.0	5.8
20-49	11.8	3.0
50-99	4.8	0.9
100-199	4.1	0.4
200-499	3.0	0.3
500-999	1.4	0.1
1000 and over	2.5	0.1
Total percent	100.0	100.0
Total number	439	944,897

The distribution of the sample according to the 9 employment size categories (categories used in PNHA and by NSO) shows a more even representation across the employment size categories compared to the distribution in the NSO tabulation (Table 2). The sample was purposively done in this manner in order to have data points for computing average health expenditures for all the employment size groups, particularly the larger employment sizes. Based on NSO tabulations, establishments with employment size of over 50 only constituted about 1.8 percent in the country in 2012 while these establishments constitute about 15.7 percent of the sample.

Private Schools

The survey of private schools covered a total sample of 163 of which 63, 50 and 50 were located in the NCR, Davao City and Rizal, respectively. The distribution of the sample according to the 6 enrollment size categories (categories used in the PNHA as described in Section 2) was purposively set to over represent large schools with enrollment of over 3,000 students to be able to compute average health expenditures for all enrollment size groups.

Table 3. Distribution of sample private schools by enrollment size

Enrollment size group	Percent distributions	
	Sample	CHED, DepEd(1)
1-199	21.5	61.6
200-999	49.7	26.0
1000-2999	16.0	11.2
3000-4999	6.1	0.5
5000-7999	2.5	0.5
8000 and over	4.3	0.2
Total percent	100.0	100.0
Total number	163	18,926

(1) Based on tabulations of CHED HEIs and DepEd elementary and secondary private schools for 2012

No sample weights are used to analyze the data from the two surveys because the computations (mostly percentages and averages) are generally done within employment size and enrollment size categories.

4. Employee Health Benefits and Health Care Provisions in Private Establishments

Health benefits of employees refer broadly to various arrangements made by their employer to directly provide or to facilitate availability of funds and access of employees to health care goods and services. There is a wide range of arrangements and these include:

- (1) direct provision of health care to employees through health facilities or health

Professionals (doctor, nurse or medical officer) that can either be based within or outside (on retainer) of the workplace plus provision of medicines and medical supplies particularly at the workplace;

(2) direct provision of preventive health care through company programs;

(3) paying for health care cost of employees through direct reimbursement by the employer or through health insurance coverage provided by the employer (e.g. PhilHealth, private health insurance); and

(4) making funds available to employees through cash advances, medical loan, medical allowance and sick leave with pay.

It is expected that the types of health benefits provided in establishments will vary with employment size and, possibly by type of industry.

Direct Health Care Provision

Tables 4 and 5 list the different ways health care goods and services are provided directly by employers to employees. It may be noted from Table 4 that overall about 52 percent provide medicines and medical supplies at the workplace, 10 percent have clinics or health manpower at the workplace, 6 percent have health facilities or health professionals on retainer and 36 percent have company-sponsored health programs. Except for the very small establishment (size 1-4) the percentage providing medicines in the workplace is generally similar across establishments of different employment sizes. The provision of the other three health benefits, on the other hand, is observed to increase with the size of establishments.

Table 4. Health benefits in establishments: direct provision of health care by type

Employment size	Sample (n)	Percent of establishments providing the benefit			
		Medicines & medical Supplies at workplace	Company clinic &/or health professional	Health facility &/or professional on retainer	Company health programs
1-4	61	23	2	5	13
5-9	142	50	1	2	27
10-19	114	53	4	6	49
20-49	52	50	4	6	37
50-99	22	67	38	10	24
100-199	17	89	39	33	39
200-499	13	92	62	8	69
500-999	7	50	50	17	67
1000 and over	11	100	73	18	82
Total	439	52	10	6	36

Direct provision of health care is observed to be generally higher for industry groups 1 and 2 (Table 5). The difference is most notable for provision of company clinic/health professional (company-based or on retainer) and provision of company health programs. The difference may be due in turn to the difference between industries in the location and the nature

of work. Agricultural plantations and mining operations are generally located more distant from urban centers compared to other businesses; thus, emergency cases can only be attended to more quickly with on-site health facilities. The nature of work in agricultural, mining and manufacturing industries also generally involve more potential hazards than other industries. Thus, these establishments expectedly provide more preventive activities as part of company health programs.

Table 5 Health benefits in establishments by industry group: direct provision of health care by type

Industry group	Sample (n)	Percent of establishments providing the benefit			
		Medicines & medical supplies at workplace	Company clinic &/or health professional	Health facility &/or professional on retainer	Company health programs
1 AFFMQ	5	60	40	20	60
2 MEGW	41	76	34	10	49
3 CWR TTC	213	46	6	6	30
4/5 FIRE and AFS&other	180	53	8	6	39
Total	439	52	10	6	36

The top 10 health conditions that are commonly encountered in the workplace based on the survey are listed in Table 6. The conditions that are generally described by respondents to be job-related are cuts and wounds from accidents in use of equipment (rank 4), and muscle pain from lifting heavy load and repetitive tasks (rank 7). The top 10 health conditions encountered that are considered serious are also listed in Table 6. Those that are generally reported to be directly job-related include deep lacerations (rank 1), severe muscle pain (rank 2), bone fracture (rank 4) e.g. from accidental fall and burn (rank 9) e.g. from chemicals or from cooking accidents.

Table 6 Top ten common and serious health conditions seen in the workplace requiring curative health care

Rank	Description of health condition	
	Common conditions	Serious conditions
1	headache	deep laceration/bleeding
2	colds	severe muscle pain
3	fever	high blood pressure
4	cuts and wounds	bone fracture
5	stomach ache	loss of consciousness
6	flu	prolonged headache
7	muscle pain	difficulty breathing
8	toothache	dizziness/vertigo
9	dizziness	burn
10	diarrhea	high grade fever

The top 12 types of preventive health activities reported in the survey are listed in Table 7. These activities may generally be classified as (1) personal preventive (e.g. annual physical

examination - rank 4 and fitness program - rank 2), (2) occupational health and safety (e.g. providing protective gear - rank 7, regular safety inspection - rank 10, and training on safe handling of equipment - rank 12), (3) health information dissemination (rank 6), (4) healthful workplace environment (e.g., keep workplace clean - rank 1, no smoking policy - rank 3, proper disposal of garbage - rank 8, and proper ventilation or workplace - rank 11) and (5) other activities that the respondents view as promoting good health of employees (e.g. serving nutritious food in workplace - rank 6, and hiring of non-smokers - rank 9). Examples of other programs, activities and policies identified by establishments but have not ranked high include the following: random drug testing; health counseling; putting up of safety signages/posters; various seminars on prevention/managing injuries, smoking, personal hygiene; health bulletin; and observing proper work and rest hours.

Table 7 Top 12 preventive health care programs/
activities/policies in establishments

Rank	Description
1	keeping workplace clean
2	physical fitness program
3	no smoking in workplace
4	annual physical examination
5	serving nutritious food to employees
6	health information dissemination
7	providing protective gear
8	proper disposal of garbage
9	hiring of non-smokers
10	regular safety inspection
11	ensuring proper ventilation of workplace
12	training on safety and proper handling of equipment

Reimbursement and Insurance

In addition to direct provision of health care goods and services, which may generally be sufficient for emergency care, establishments may also cover the cost of health care of employees that are obtained from health providers such as hospitals. The means by which employees pay for such costs are listed in Tables 8 and 9.

About 74 percent of all sample establishments provide PhilHealth coverage, 14 percent provide additional private health insurance or HMO coverage and 28 percent reported reimbursing some amount of payments made by employees for hospitalization, doctor consultation and medicine purchases. The proportion of establishments that do reimbursement for health expenditures seem to be about the same across all employment sizes (except for those with over 500 employees) and across industry groups. The pattern of provision of private health insurance is similar across industry groups but significantly vary across employment size. The percentage providing this benefit increases significantly with employment size, with very low percentage for sizes of less than 20 employees and up to about 73 percent for establishments with sizes of 1000 employees or more.

Table 8. Health benefits in establishments: reimbursement and health insurance

Employment size	Sample (n)	Percent of establishments providing the benefit		
		Reimbursement of employee health cost by the company	Private health insurance or HMO coverage	PhilHealth coverage
1-4	61	21	3	70
5-9	142	39	1	50
10-19	114	28	5	80
20-49	52	21	37	94
50-99	22	14	43	100
100-199	17	17	39	94
200-499	13	23	46	100
500-999	7	-	67	100
1000 and over	11	-	73	100
Total	439	28	14	74

Table 9. Health benefits in establishments by industry group: reimbursement and health insurance

Industry group	Sample (n)	Percent of establishments providing the benefit		
		Reimbursement of employee health cost by the company	Private health insurance or HMO coverage	PhilHealth coverage
1 AFFMQ	5		20	100
2 MEGW	41	22	20	80
3 CWRTTC	213	27	13	73
4/5 FIRE and AFS&other	180	31	14	72
Total	439	28	14	74

The percentage of establishments providing PhilHealth coverage is similar across industry groups but a little lower than the overall percentage for the small establishments (under 20 employees) and 100 percent for almost all the employment size groups with sizes of 20 employees or more.

Cash Transfers

Other arrangements made involve cash transfers from employers to employees when the employee has immediate need for funds to be able to seek health care. These arrangements are listed in Tables 10 and 11. Providing cash advance and medical loans are common arrangements found in establishments, about 51 percent and 44 percent respectively.

Close to one-third of establishments reported having sick leave with pay and less than 10 percent have medical allowance as employee benefits. The provision of the four types of benefits does not show any systematic variation across industry groups. Similarly, the percentage of establishments giving cash advances and medical loans do not appear to vary systematically

across employment sizes. Medical allowance as a benefit however seems to be present at higher percentages among establishments with 100 to 999 employees and sick leave with pay is a benefit given increasingly as employment size becomes larger.

Table 10. Health benefits in establishments: cash advance and similar benefits

Employment size	Sample (n)	Percent of establishments providing the benefit			
		Cash advance for medical purpose	Medical loan	Medical allowance	Sick leave with pay
1-4	61	41	38	7	8
5-9	142	61	62	8	8
10-19	114	51	39	10	26
20-49	52	40	29	4	42
50-99	22	57	19	14	62
100-199	17	50	22	28	72
200-499	13	38	46	15	77
500-999	7	50	33	33	83
1000 and over	11	45	55	9	73
Total	439	51	44	9	27

Table 11. Health benefits in establishments by industry group: cash advance and similar benefits

Industry group	Sample (n)	Percent of establishments providing the benefit			
		Cash advance for medical purpose	Medical loan	Medical allowance	Sick leave with pay
1 AFFMQ	5	40	20	40	40
2 MEGW	41	61	54	15	37
3 CWR TTC	213	55	43	5	26
4/5 FIRE and AFS&other	180	45	43	13	25
Total	439	51	44	9	27

5. Student Health Care Provision in Private Schools

The provision of student health services in schools basically involve employing the services of health professionals (mainly doctors, nurses, dentists and, occasionally, trained medical officers), having a clinic, and having medicines and medical supplies for emergency care. A few schools interviewed particularly those with low enrollment size reported zero health personnel employed for pay but describe alternative arrangements for providing health services to students. One arrangement these schools described was providing health care through a health facility such as a hospital that is located nearby. Another arrangement is the use of volunteers to provide student health services – referring to school alumni and parents of students who are health professionals and providing health services to students at no cost to the school. Some schools have personnel who are employed primarily as administrators or teachers but who are also qualified health professionals, e.g. a school principal who is a licensed physician or a

teacher who is a registered nurse. In such cases these personnel function in a medical capacity as needed.

The survey questionnaire was not designed to capture these alternative arrangements. Interpretation of survey results specifically about schools showing zero health personnel employed should take into consideration these alternative arrangements that the survey questionnaire was not able to capture.

The tables in this section describe the health personnel found in private schools and availability of clinics and medical supplies. Additionally, more detail on student health services is presented in terms of the types of health conditions seen in schools that require curative care and the types of preventive health care activities carried out by the schools.

Health Personnel

Private schools may employ health personnel on full-time basis, part-time basis or a combination of both. Of course, there are schools that have none. Table 12 shows that nearly half, about 43 percent of schools with less than 200 students reported having no health personnel. Overall, only 16 percent of schools, mainly in the two smallest categories, have no health personnel. About 28 percent employed only part-time health workers and these are mostly schools with less than 1000 students. About 44 percent of schools employ a combination of part-time and full-time health personnel and these are mostly schools with over 1000 student enrollment.

Table 12. Percent of private schools with available health personnel by type of employment arrangement

Enrollment size	Sample (n)	Type of employment arrangement (percent)			
		None	Part-time only	Full-time only	Full-time and part-time
1-199	35	43	37	9	11
200-999	81	14	38	16	32
1000-2999	26		8	4	88
3000-4999	10				100
5000-7999	4				100
8000 and over	7			43	57
Total	163	16	28	12	44

Table 13 shows the types and combination of health professionals employed by private schools. Nearly half, about 47 percent, of schools employ the complete set of health personnel consisting of a doctor, nurse and dentist, and this combination is more likely to be seen the larger the enrollment size at nearly 100 percent for very large schools. Other likely combinations include having only a nurse, about 15 percent (seen in schools with less than 1000 students) and having a doctor and nurse, about 12 percent (seen in all sizes of schools).

Nurses are most likely to be employed on a full-time basis in schools with 1000 or more students, nearly 100 percent have at least one full-time nurse (Table 14). The mean number of full-time nurse increases from about 1.5 per school for schools of size 100 -299 up to 5 per

school of size 8000 or more. Doctors, dentists and other health personnel are less likely to be employed on a full-time basis except in schools with 8000 or more students. Schools in the largest category have on average nearly 2 full-time doctors, 5 full-time nurses and 1 full-time dentist.

Table 13. Percent of private schools with combinations of health personnel by type of health professionals

Enrollment size	Combination of health personnel (percent)					
	Total	None	Nurse only	Doctor and nurse	Doctor, nurse, dentist and more	Other (e.g. medical officer)
1-199	100	39	21	9	12	18
200-999	100	18	19	13	40	10
1000-2999	100		4	12	77	8
3000-4999	100			14	86	
5000-7999	100			0	100	
8000 and over	100			14	86	

Table 14. Percent of private schools with full-time health personnel and average number by type of health professional

Enrollment size	Type of full-time health professional			
	Doctor	Nurse	Dentist	Other
Percent with the full-time personnel				
1-199		17		3
200-999	4	48	2	
1000-2999	12	92	15	8
3000-4999	30	100	20	10
5000-7999	25	100	50	
8000 and over	57	100	57	14
All schools	9	55	9	3
Average number of personnel per school				
1-199		0.2		0.03
200-999	0.05	0.6	0.04	
1000-2999	0.1	1.5	0.2	0.1
3000-4999	0.4	2.4	0.3	0.2
5000-7999	0.3	2.0	0.5	
8000 and over	1.6	5.0	1.3	0.6

In contrast to nurses, doctors and dentists are more likely to be employed on a part-time basis (Table 15). The mean number of part-time doctors increases from about 1.1 per school of size 1000-2999 to about 2.6 per school of size 8000 or more. The mean number of dentists similarly increases from about 0.8 per school of size 1000-2999 to about 1.6 per school of size 8000 or more.

Table 15. Percent of private schools with part-time health personnel and average number by type of health professional

Enrollment size	Type of part-time health professional			
	Doctor	Nurse	Dentist	Other
Percent with the part-time personnel				
1-199	29	26	29	
200-999	62	37	46	
1000-2999	92	12	81	8
3000-4999	100	10	50	
5000-7999	100	25	100	
8000 and over	57	14	43	
All schools	63	28	49	1
Average number of personnel per school				
1-199	0.3	0.3	0.3	
200-999	0.7	0.4	0.5	
1000-2999	1.1	0.2	0.8	0.1
3000-4999	1.8	0.2	0.8	
5000-7999	1.8	0.3	1.3	
8000 and over	2.6	0.1	1.0	

Clinic and Medical Supplies

About 79 percent of private schools reported having clinics and about 87 percent have medicines and medical supplies (Table 16). The percentages are 100 percent for schools with 3000 or more students. It may be observed that while 21 percent of schools had no clinic, only 16 percent reported having no health personnel. This means that schools may not have allocated space specifically for a clinic, but health services are still rendered to students by health personnel who are reporting to the school as needed or on an on-call basis. Similarly, the percentage of schools that reported having no medical supplies, about 13 percent, is much lower than the percentage reporting having no clinic, about 21 percent. This means that even without a clinic emergency care such as treatment of cuts and wounds can still be rendered because of the availability of medical supplies.

Table 16. Percent of private schools with clinic and medical supplies

Enrollment size	Sample (n)	Percent with clinic	Percent with medical supplies
1-199	33	63	83
200-999	84	74	90
1000-2999	26	100	73
3000-4999	7	100	100
5000-7999	6	100	100
8000 and over	7	100	100
All schools	163	79	87

Curative and Preventive Health Services

The top 10 health conditions that are reported as commonly encountered in private school clinics based on the survey are listed in Table 17. Reflected in the list are the usual illnesses, injuries or health complaints experienced by the young. The top 10 health conditions encountered that are considered serious are also listed in Table 17. The serious conditions reported for school children are generally similar to those identified for workers, except for some conditions that are age-related. (e.g. high blood pressure for workers and asthma attack for students).

Table 17. Top ten common and serious health conditions seen in private schools requiring curative health care

Rank	Description of health condition	
	Common conditions	Serious conditions
1	headache	deep laceration/bleeding
2	fever	bone fracture
3	stomach ache	high grade fever
4	colds/ cough	loss of consciousness
5	wound/cut/bruises	asthma attack
6	flu	difficulty breathing
7	toothache	prolonged abdominal pain
8	diarrhea	severe allergy
9	dizziness	Vomiting
10	allergy	Diarrhea

The top 12 types of preventive health activities of private schools reported in the survey are listed in Table 18. These activities may be classified into (1) personal preventive (e.g. annual physical examination – rank 1, dental check-up – rank 3, immunization – rank 8, health assessment, health screening and record keeping – rank 11, and fitness activities – rank 12), (2) health orientation and seminars (e.g. general health information dissemination – rank 3, seminar/dissemination on personal hygiene – rank 6, seminar/dissemination on nutrition – rank 7, health posters and health fair – rank 9), and (3) school facilities related activities (e.g. keeping school premises clean and safe – rank 5, food safety – canteen related measures – rank 10). There are other activities that some schools have identified but have not ranked high and examples of these include: training on first aid; seminar on drugs and smoking; proper disposal of garbage; home visitation; keeping school staff healthy; and integrating more health topics into the regular school curriculum.

Table 18. Top 12 preventive health care programs/ activities/policies in private schools

Rank	Description
1	annual physical examination
2	general health information dissemination
3	dental check-up
4	keeping school premises clean/safe
5	seminars/dissemination- disease prevention
6	seminars/dissemination- hygiene
7	seminars/dissemination- nutrition
8	immunization
9	health posters; health fair
10	food safety - canteen-related activities
11	assessment and record keeping
12	fitness activities

6. Analysis of Establishment and Private Schools Health Expenditures Using the Health Accounts Approach

6.1 The Health Accounts Approach

In health accounting the estimation of total health expenditures is done using flow-of-funds to avoid double counting. The health expenditures included in the health accounts are only those paid for “final provision and consumption” of health care goods and services. The flow-of-funds is basically a tracking of health funds as these move from entity to entity. In the flow-of-funds the flows end or terminate with the provision of health care and its final consumption.

Health expenditures covered by the health accounts come from many entities, referred to as financing agents or payors. As discussed previously, these include government, households, and private insurance companies along with establishments and private schools. Based on the flow of funds, only expenditures of a financing agent that paid for final consumption are counted and assigned as expenditures under that financing agent. Flows between financing agents such as cash transfer from establishment to employees (households) even for health purposes should not be counted as establishment expenditures. The general objective of health accounting is to count each health expenditure transaction in the country only once and to account for it under only one financing agent. Using the flow-of-funds ensures that the accounting of every health expenditure will be done in the same manner and consistently.

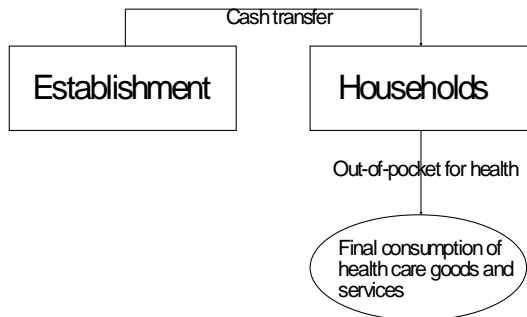
The flow-of-funds can be drawn for different entities or financing agents. The flow of funds for private schools and establishments in particular are examined to identify which health related “outflows” of these entities are direct payments for final consumption of health care goods and services.

Establishments

As discussed in Section 4, establishments provide various types of health-related benefits to employees. The flow-of-funds for each of these benefits are formulated and examined to determine which expenditures are directly paying for final consumption and which ones are not. The flow-of-funds specifically focus on movements of funds between different financing agents. Only those expenditures shown to be paying directly for final consumption are accounted for as health expenditures of establishments and, later on, included in the computation of average health cost per establishment.

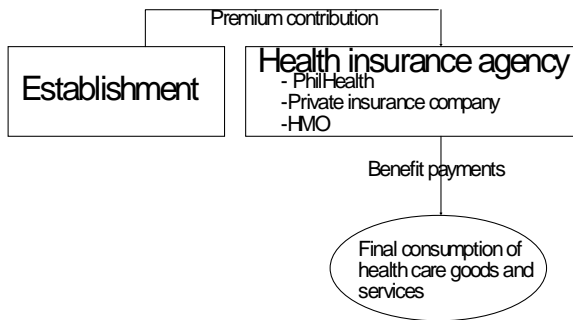
The arrangements that involve cash transfers are represented in the flow-of-funds as movement of funds from establishments to households (employees are part of households), another financing agent, who then expends the transferred funds as out-of-pocket spending for health (Figure 3). In this case, it is the household that has actually directly paid for the final consumption of health care and not the establishment. In health accounting, the cash transfers to households including cash advances, medical loan and medical allowance when eventually spent for health care will be reported as part of household spending for health. To avoid double counting, the health expenditure resulting from the cash transfer is to be reported only as household expenditures and not as establishment expenditures.

Figure 3. Flow-of-funds for cash transfers



For health insurance coverage provided by establishments to its employees, the movement of funds from the establishment is towards PhilHealth and private insurance companies in the form of premium contribution paid by the employer (Figure 4). The insurance agencies then expends the contributions (from the pool of funds collected from enrolled persons) as benefit payments for hospitalization, doctor consultation and medicines. In this case, it is the insurance agencies that actually directly paid for the final consumption of health care and not the establishment. In health accounting, the premium payments to insurance agencies when eventually utilized as benefit payments will be reported as part of the insurance agencies' expenditures for health and not as expenditures of the entities that paid the premium.

Figure 4. Flow-of-funds for employer-provided health insurance



The other arrangements that involve direct provision of health care by the establishments are those for which expenditures are considered as paying directly for final consumption (Figure 5). It is these expenditures that are counted as establishment health care expenditures. In the computation of average health care cost per establishment, all payments for medicines in the workplace, for operating own company health facilities, for fees of retained health providers and for preventive health activities are included.

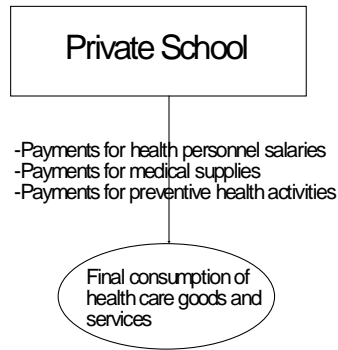
Figure 5. Flow-of-funds for direct health care expenditures



Private Schools

Expenditures of private schools for the provision of health care services in school clinics, which are ultimately consumed by the students of the school, are considered as direct payment for final consumption. Thus, expenditures for health manpower, and medical supplies for the provision of health services in the school clinic are considered in health accounting as expenditures for final consumption of health care (Figure 6). In the computation of average health care cost per school, both health personnel salaries and cost of medical supplies are included.

Figure 6. Flow-of-funds for direct health care expenditures of private schools



6.2 Establishment Health Expenditures

The analysis of health expenditures focus on averages by industry group and by employment size for use in PNHA estimation (the primary purpose of this study) and on composition of these expenditures by type. The composition of health expenditures is discussed in this section while the averages are presented and discussed in Section 7.

Overall, most of the direct health expenditures of establishments is for paying for the cost of operating its own health facilities, about 44 percent (Table 19). The other major expenditures are for medicines and medical supplies, about 21 percent. Preventive health care activities account for the smallest share, about 7 percent. Only expenditures for operating own health facilities and preventive health activities show systematic variation by employment size: the former increasing in share with employment size; and, in contrast, the latter decreasing in share with employment size.

Table 19. Composition of direct health care expenditures of establishments by type of health benefit and by employments size (in percent)

Employment size	Type of health benefit - direct health care					
	Total	Reimbursement	Medical supplies in workplace	Health provider on retainer	Own health facility	Preventive health activities
1-4	100	4	27	9	26	35
5-9	100	11	35	9	0	45
10-19	100	1	12	5	49	33
20-49	100	6	22	33	13	26
50-99	100	0	23	4	61	12
100-199	100	19	9	32	35	5
200-499	100	19	27	0	50	5
500-999	100	28	18	15	37	2
1000 and over	100	1	24	14	54	7
All sizes	100	14	21	13	44	7

No systematic variation in expenditure composition can be discerned across industry groups (Table 20). An expected result is the very high share of own health facility expenditures

for industry group 1 (agriculture/forestry/fishery and mining/quarrying). It may be recalled that this is the industry group for which location of worksite and nature of work would require that on-site health facilities be provided by the establishment; and this fact seems to have been translated to higher share of expenditures for operating own health facility.

Table 20. Composition of direct health care expenditures of establishments by type of health benefit and by industry group (in percent)

Industry group	Type of health benefit - direct health care					
	Total	Reimbursement	Medical supplies in workplace	Health provider on retainer	Own health facility	Preventive health activities
1 AFFMQ	100	0	3	13	83	2
2 MEGW	100	27	20	15	36	3
3 CWR TTC	100	17	21	3	47	12
4/5 FIRE and AFS&other	100	5	23	16	47	8
All sizes	100	14	21	13	44	7

6.3 Private Schools Health Expenditures

The analysis of health expenditures of private schools similarly focus on averages by enrollment size for use in PNHA estimation and on the composition of manpower expenditures by type of employment arrangements and type of health professional. The health expenditure composition is discussed in this section while the averages are presented and discussed in Section 7.

About 81 percent of private school expenditure for health is for health personnel salaries and about 70 percent of this is payment for full-time employees (Table 21). The percentage accounted for by full-time employees is highest at 84 percent for schools with 8000 or more students. The non-salary costs, about 19 percent, is for medical supplies. Nurses account for the largest share of the health manpower cost, about 45 percent, followed by doctors, about 33 percent, and dentist, about 18 percent. The percentages accounted for by doctors and dentists increase with the size of the school while the percentage share for nurses decreases with school size.

Table 21. Composition of private schools health expenditures: percent for salaries, percent of salaries for full-time employees and distribution of salaries by type of health professional

Enrollment size	Percent paid for salaries	Percent of salaries paid to full-time employees	Distribution of salaries by type of health professional				
			Total	Doctor	Nurse	Dentist	Other
1-199	85	61	100	18	66	10	6
200-999	86	65	100	36	49	15	
1000-2999	81	60	100	28	46	24	2
3000-4999	84	64	100	35	48	18	
5000-7999	73	42	100	40	31	28	
8000 and over	78	84	100	33	43	16	9
All schools	81	70	100	33	45	18	4

7. The 2012 Updated PNHA Estimation Parameters

The average health expenditures per establishments by industry group and employment size and the average health expenditures per private school by enrollment size for 2012 are presented and compared to the corresponding averages for 1994 that were computed from the original surveys done in 1993-1994. The comparison would show any changes in the levels and patterns of spending across size categories. Some recommendations are made for improving the estimation of the two components for the PNHA.

Establishment Health Expenditures

The updating of average health expenditures for establishments by industry group (5 groups) and employment size (9 categories) means computing for a total of 45 averages. The total sample size for establishments is 439. Given the relatively small sample size, there are in fact industry group/employment size combinations or referred to as “cells” for which there are no data points or zero sample establishment, i.e. empty cells. The white cells in Figure 7 indicate the empty cells. Only industry group3 has no empty cell.

Figure 7. Empty cells: industry/size cells with no sample establishments

Employment size	Industry group				
	1	2	3	4	5
1-4					
5-9					
10-19					
20-49					
50-99					
100-199					
200-499					
500-999					
1000 and over					

To fill these gaps in the survey data, the regression method was applied. Regression equations were estimated for each industry group that had empty cells (industry groups 1, 2, 4 and 5) using a very simple specification with health expenditures as the dependent variable, employment size and the square of employment size as the explanatory variables, and with zero intercept. The regression equations were then used to compute for the predicted values of health expenditures for the available data points or sample establishments and for the employment sizes for which data are not available. The means of the predicted values were computed by employment size group and used in turn to compute for the ratios of mean health expenditures predicted values of one employment size category relative to the mean predicted values of another size category – basically to determine the relationships between the level of health expenditure mean of one employment size category compared to the level of the mean of another category.

The average health expenditures for the empty cells are finally computed using the relationships between categories (as derived from the predicted values generated based on

regression) and the averages for the cells that have actual data. The procedure described above is documented in Appendix 1 along with the results of the computations. By applying the method described, the average health expenditure per establishment for the empty cells were completed and entered into Table 22 along with the averages that were computed directly from actual survey data (actual averages are in bold). The average expenditures assessed as a whole are observed to increase with employment size but at varying rates for the different industries.

Table 22. Average health expenditures per establishment by industry group and by employment size, 2012

Employment size	Industry group				
	1	2	3	4	5
1-4	822	650	439	700	534
5-9	2,302	1,691	1,046	1,401	1,325
10-19	4,768	3,610	5,159	8,400	3,538
20-49	11,346	14,083	8,112	19,500	12,909
50-99	24,500	38,333	11,286	30,000	24,750
100-199	31,500	59,480	30,500	80,270	100,065
200-499	86,239	340,850	264,486	184,340	125,682
500-999	184,938	870,000	681,000	829,108	726,695
1000 and over	370,000	1,360,000	1,040,000	830,698	1,495,256

The 1994 average expenditures per establishment by industry group and by employment size, the original PNHA estimation parameters, are shown in Table 23. These averages are unadjusted values in 1994 prices. The ratios of the 2012 averages (from Table 22) relative to the 1994 averages are also shown in the bottom panel of Table 23. If the average expenditures per establishment had increased only according to inflation across all industry groups and employment sizes, then the ratios should have been around 3.2 which is how much the medical price index had changed between 1994 to 2012. As may be observed from Table 23, however, the ratios average to 1.5, 1.3, 0.9, 1.5 and 1.1 for each of the five industry groups; and, comparing these mean ratios to 3.2, that in fact the average health expenditures had declined in real terms to only about 1/3 (0.9/3.2) to 1/2 (1.5/3.2) of the value in 1994, with the largest decline for industry groups 3 (construction, wholesale/retail trade, and transportation/communication) and 5 (accommodation/food services and other services).

The pattern of spending across employment sizes within each industry group also seems to have changed from 1994 to 2012 based on the non-uniformity of ratios across employment sizes. The ratios should have been similar within each industry group if the pattern of spending across different employment sizes in 1994 had remained the same to 2012.

Further examination of the data provide some explanation for the significant general decline in direct health expenditure costs of establishments in real terms from 1994 to 2012. As discussed previously, establishments provide not only direct health care provision to employees (which is the content of the average cost) but also health insurance and HMO coverage. The substitution of health insurance for direct provision is manifesting in terms of significant decline in establishment direct health expenditures and significant increase in benefit payments accruing to employees from the various insurance schemes in which they were enrolled by their employers. In Section 2.2 it was pointed out that on the aggregate, health expenditures of HMOs

in nominal terms had grown tremendously from 1994 to 2011, more than 25 times, and that about 60 to 70 percent of HMO enrollments are corporate in nature.

Table 23. Average health expenditures per establishment by industry group and by employment size for 1994 and ratios of the 2012 to the 1994 averages

Employment size	Industry group				
	1	2	3	4	5
Average health expenditures per establishment, 1994					
1-4	0	0	0	0	0
5-9	680	875	1,515	1,952	1,579
10-19	3,505	2,186	3,580	1,327	5,417
20-49	11,733	7,688	9,839	17,080	13,895
50-99	20,325	43,667	29,959	44,428	29,775
100-199	32,285	96,543	53,070	138,770	59,550
200-499	60,200	207,082	282,888	414,145	151,877
500-999	129,000	806,571	388,988	542,251	284,087
1000 and over	229,036	3,016,223	1,098,496	1,981,394	1,915,579
Ratio of the 2012 average to the 1994 average					
1-4	-	-	-	-	-
5-9	3.4	1.9	0.7	0.7	0.8
10-19	1.4	1.7	1.4	6.3	0.7
20-49	1.0	1.8	0.8	1.1	0.9
50-99	1.2	0.9	0.4	0.7	0.8
100-199	1.0	0.6	0.6	0.6	1.7
200-499	1.4	1.6	0.9	0.4	0.8
500-999	1.4	1.1	1.8	1.5	2.6
1000 and over	1.6	0.5	0.9	0.4	0.8

At the micro level, data from the survey show some establishments spending about 100 to 200 thousand pesos for direct health care provision for one year and at the same time also reporting health benefit claims of employees from health insurance and/or HMO coverage amounting to 7 to 10 million pesos for one year. Some others have direct health spending of 500 to 700 thousand pesos for one year and report benefit payments from health insurance and HMO for employees amounting to over 20 million pesos also for one year.

Establishments continue to provide some direct health care particularly for emergency care and preventive health care but seem to have increasingly relied on health insurance to cover the cost of more complicate health care of employees. Based on the survey about 75 percent of establishments provided health insurance coverage and of this 60 percent had purely PhilHealth coverage and 15 percent had both PhilHealth and private health insurance coverage. The dual coverage increases with employment size about 40 percent for sizes 20-499 employees, 66 percent for size 500-999 employees and 73 percent for establishments with 1000 or more employees.

The 1994 and 2012 averages for establishment are both used to estimate the 2012 total health expenditures of establishments based on PNHA methodology described in Section 2.2 and the two sets of estimates compared. The comparison will show the full implication of the changes in the averages. The average expenditures per establishment (Table 23 for 1994 and

Table 22 for 2012) are multiplied by the number of establishments in 2012 (PSA/NSO no date) shown in Table 24 and the resulting cross-products summed up.

Table 24. Number of establishments by industry group and by employment size, 2012

Employment size	Industry group				
	1	2	3	4	5
1 - 4	4,344	84,439	392,887	24,778	208,275
5 - 9	2,338	19,556	58,672	9,473	40,002
10 - 19	1,459	7,592	21,039	5,334	19,419
20 - 49	1,042	4,840	9,894	1,844	11,025
50 - 99	337	2,144	2,614	432	3,012
100 - 199	221	1,224	1,196	208	1,246
200 - 499	157	817	662	124	896
500 - 999	41	251	165	53	325
1000 and over	40	164	69	34	213

The estimates are as follows:

1994-based estimate of establishment health expenditure = 10,596 million

2012-based estimate of establishment health expenditure = 3,643 million

As expected from the findings of the analysis of averages, the 2012-based estimate is about one-third of the 1994-based estimate.

The implication of this finding for PNHA estimation particularly for using estimation parameters from a specific base year is that there is need to periodically review the applicability of the assumption used in the estimation method. The review becomes more urgent the farther away the current year is from the base year for which the estimation parameter were generated. The hints about possible changes in the pattern of health spending of establishment can be discerned from examining trends in the NHA (as was done in this paper) and from reports about labor benefits and personnel management in industries.

Private Schools Health Expenditures

The estimation of the average health expenditures per school for private schools by enrollment size was relatively more straightforward because there were no empty cells. The computed averages are shown in Table 25 – these are the PNHA estimation parameters for health personnel and medical supplies expenditures. As expected, these average expenditure increase with the size of the school.

Table 25. Average health expenditures per private school by enrollment size, 2012

Enrollment size	Health personnel salaries	Medical supplies
1-199	34,385	5,844
200-999	141,639	23,179
1000-2999	318,601	72,452
3000-4999	774,210	143,495
5000-7999	958,409	269,971
8000 and over	3,028,153	874,754

The 1994 health expenditure average (unadjusted and in 1994 prices) per private school by enrollment size are shown in Table 26. The ratios of the 2012 averages relative to the 1994 averages are also shown in Table 26. If there had been no change in the pattern of spending across the different sizes of schools and if the increase in the average expenditures in nominal terms over time had purely been due to inflation, then the ratios of the 2012 to the 1994 averages should roughly only reflect the increase in the price index, about 3.2, from 1994 to 2012 in all the size categories.

Table 26. Average health expenditures per private school by enrollment size for 1994 and ratios of the 2012 to the 1994 averages

Enrollment size	1994 Average expenditures		Ratio of 2012 to 1994 average	
	Health personnel salaries	Medical supplies	Health personnel salaries	Medical supplies
1-199	30,000	8,000	1.1	0.7
200-999	50,000	12,500	2.8	1.9
1000-2999	89,500	26,500	3.6	2.7
3000-4999	147,500	41,500	5.2	3.5
5000-7999	249,000	88,000	3.8	3.1
8000 and over	419,640	124,000	7.2	7.1

The average of the ratios, about 3.2 for medical supplies and 4.0, for health personnel salaries, are comparable to the increase in the price index. However, the pattern of spending across schools of different sizes seems to have changed from 1994 to 2012 as can be surmised from the increasing ratio with increase in school size. That is, the average health expenditures of schools in nominal terms changed very little for the small schools with a ratio of about 1 but had increased to about 7 times for schools in the largest category.

The full implication of the changes in the average expenditures from 1994 to 2012 is examined by using the 1994 and 2012 averages to estimate the 2012 total health expenditures of private schools based on the PNHA methodology described in Section 2.2. The average expenditures per school (Table 26 for 1994 and Table 25 for 2012) are multiplied by the number of schools in 2012 shown in Table 27 and the cross-products summed up.

Table 27. Number of private schools by enrollment size, 2012

Enrollment size	Total	Department of Education		CHED
		Elementary	Secondary	Tertiary
1-199	11,652	3,312	7,814	526
200-999	4,917	2,056	2,197	664
1000-2999	2,126	1,772	111	243
3000-4999	101	24	16	61
5000-7999	88			88
8000 and over	42			42

The expenditures estimate based on the 1994 averages are adjusted for inflation (3.2 from 1994 to 2012) as the PNHA method prescribes. The estimates are as follows:

1994-based estimate of private schools health expenditure = 3,419 million

2012-based estimate of private schools health expenditure = 2,475 million

A comparison of the two sets of estimates indicates that the adjustment made for inflation (i.e. based on the medical price index) may be too high. The cost adjustment for inflation from 1994 to 2012 based on the medical price index is 3.2 while the comparison of the two sets of estimates indicate cost adjustment should only be about 2.4.

Using the medical price index for cost adjustment assumes that the composition of private schools health expenditures is similar to the composition of private household consumption of health care. The assumption is not appropriate: household health expenditures is composed of roughly half for medicines and half for health services; in contrast, private schools health expenditures is composed of only about 20 percent for medicines and 80 percent for health personnel services.

The faster increase in the prices of medicines drives the relatively high inflation rate indicated by the medical price index. The smaller share accounted for by medical supplier in private schools health expenditures may explain why overall increase in private schools health expenditure is lower than what the medical price index indicated.

The implication of these finding for PNHA estimation is to find and use a price index whose basket would more closely represent the composition of private schools health expenditures.

8. Conclusion

The estimation of two components of the PNHA, establishment and private school health expenditures, have been done for the last 20 years using average expenditures or costs per establishment and per school computed from two special surveys done in 1993-1994. This HRMP study has undertaken (1) the repeat conduct of the two surveys in 2013-2014 (collecting

data for CY 2012) and (2) the estimation of updated averages for 2012 using results from the surveys. A comparison of the 1994 and 2012 averages for establishment showed generally no change when comparing nominal values but actually a general decline to about one-third to one-half of the 1994 averages in real terms, and for private schools showed increases in average expenditures from 1994 to 2012, by a factor of about 2.4, but not as much as the increase in the medical price index during the period, about 3.2.

The implications of the findings from the comparisons for PNHA estimation are (1) to review estimation parameters for establishments periodically especially within the context of significant changes in the means that establishments finance employee health care cost, and (2) to find and use a price index for adjusting private schools average expenditures year to year that closely represent the composition of private school health expenditures.

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Appendix 1

Using the Regression Method to Address Limitations in the Establishment Sample

The average expenditures for the “empty cell” shown in Figure 7 are derived using a series of steps.

1. Regression equations were estimated for each industry group that have empty cells. These are industry groups 1, 2, 4 and 5. The dependent variable is total direct cost, the explanatory variables are employment size and the square of employment size, and the constant is set to zero. Estimates of the regression equations are shown in Table A.1 below.

Table A.1 Regression equation estimates by industry group

Industry group	Dependent variable	Coefficient	Std. Err.	t - value	P>t
1	emp	251.35	143.41	1.75	0.18
	emp-sq2	0.05	0.12	0.40	0.71
2	emp	1131.49	318.03	3.56	0.00
	emp-sq2	0.37	0.40	0.92	0.37
4	emp	935.14	224.78	4.16	0.00
	emp-sq2	-0.15	0.12	-1.25	0.23
5	emp	297.24	177.05	1.68	0.10
	emp-sq2	0.99	0.27	3.63	0.00

2. For each industry, generate the predicted values of total direct cost using the regression equation for the available data points and for the employment sizes for which no data are available.

3. Using the predicted values compute for the mean for each employment size group. The means of the predicted values for total direct expenditures are shown in Table A.2.

Table A.2 Mean predicted values by employment size and by industry group

Employment size	Industry group			
	1	2	4	5
1-4	770	3,490	2,347	3,109
5-9	2,156	9,074	4,697	5,817
10-19	4,466	19,370	10,624	11,534
20-49	10,626	38,157	21,304	31,991
50-99	22,946	93,183	49,654	58,500
100-199	46,046	199,070	132,858	117,900
200-499	107,646	501,397	305,107	216,300
500-999	230,846	837,600	557,266	656,100
1000 and over	461,846	1,474,176	1,054,141	1,350,000

4. For each empty cell, determine which actual average (shown in Table A.4) to use as the base for estimation and then compute for the necessary ratio using the predicted means in Table A.2. . For example, for industry group1/employment size 4 the actual average available in the cell

industry group 1/ employment size 5 (showing a value of 24,500) is used as the base for the estimation. Thus, the ratio is computed as the mean predicted value for industry 1/size 4 which is 10,626 divided by the mean predicted value for industry 1/size 5 which is 22,946 (the ratio is indicated in the table below as 4/5 in the column labeled “ r_i/r_j ”) and the resulting ratio is 0.46. For industry1, the computation for the other empty cells are done in a chained manner, i.e. the average for industry 1/size 3 is computed based on the estimated value for industry1/size 4 and so on. All ratios needed for estimation of averages in empty cells are shown in Table A.3.

Table A.3 Ratios derived from the mean predicted values

Employment size	Industry group							
	1		2		4		5	
	r_i/r_j	Ratio	r_i/r_j	Ratio	r_i/r_j	Ratio	r_i/r_j	Ratio
1-4	1/2	0.36	1/2	0.38	1/2	2.00		
5-9	2/3	0.48	2/3	0.47				
10-19	3/4	0.42						
20-49	4/5	0.46						
50-99								
100-199					6/5	2.68		
200-499	7/8	0.47			7/6	2.30		
500-999	8/9	0.50						
1000 and over							9/8	2.06

NOTE: r_i/r_j indicates the rows of the values used to compute the ratio

5. Compute for the average health expenditures for the empty cells using the ratios computed in step 4 and the actual averages computed directly from survey data shown in Table A.4.

Table A.4 Average direct health expenditures per establishment by employment size and by industry group - from actual data

Employment size	Industry group			
	1	2	4	5
1-4			700	534
5-9				1,325
10-19		3,610	8,400	3,538
20-49		14,083	19,500	12,909
50-99	24,500	38,333	30,000	24,750
100-199	31,500	59,480		100,065
200-499		340,850		125,682
500-999		1,570,000	829,108	726,695
1000 and over	370,000	1,360,000	830,698	

For example, the average for the empty cell industry 1/size 4 is computed by multiplying the ratio = 0.46 and the actual average for industry 1/size 5 = 24500 which results to 11,346, the value entered in Table 22. The averages for the other empty cells are computed similarly.