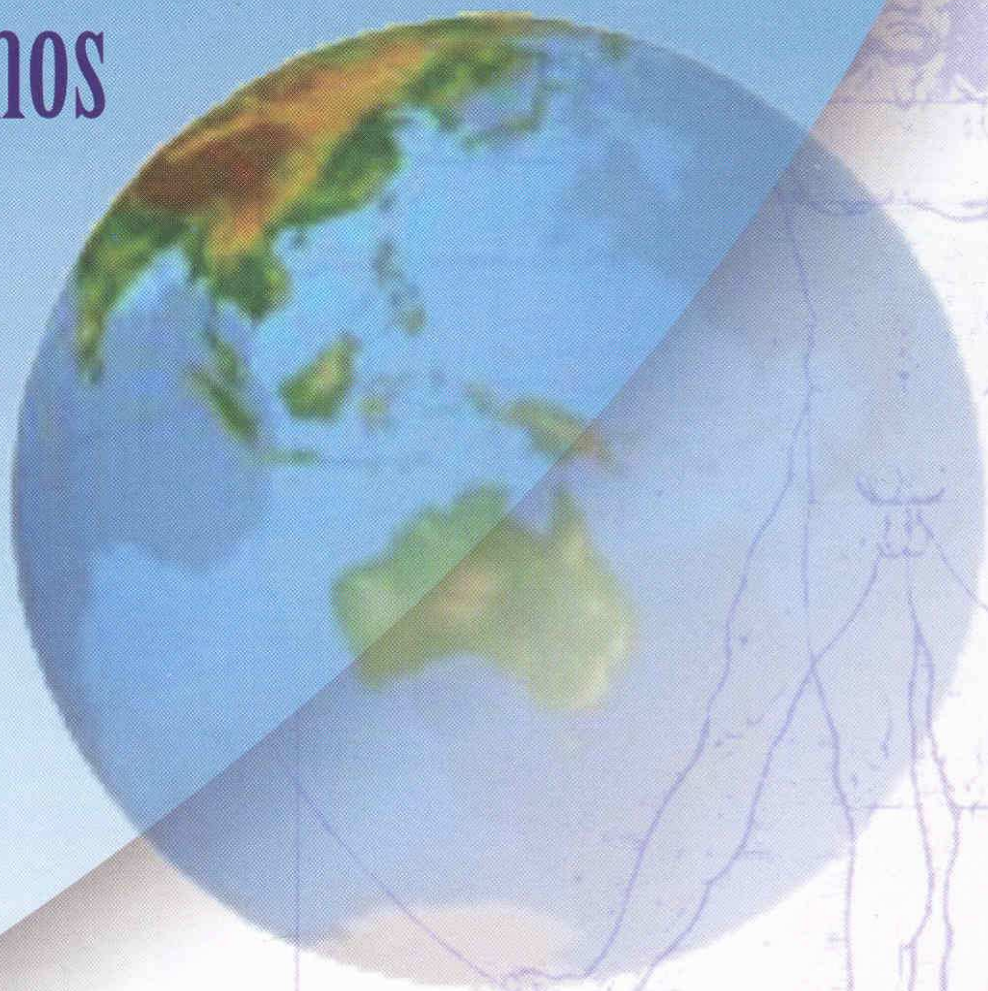


Emigration of Science and Technology- Educated Filipinos

1998-2006



Department of Science and Technology
SCIENCE EDUCATION INSTITUTE

Emigration of Science and Technology-Educated Filipinos
(1998-2006)

SCIENCE EDUCATION INSTITUTE
Department of Science and Technology

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FOREWORD

Based on the United Nations (UN) estimate in 2005, there are 185-192 million migrants in the entire world. At the country level, the International Organization for Migration (IOM) reported that the Philippines was the third country in the top-three migrant sending countries with about 7 million overseas Filipinos.

The figures above and the global trends clearly indicate a considerable loss of highly skilled Filipino workers because of migration or what is commonly known as “brain drain”.

At present, even though we can roughly estimate the extent of permanent and temporary labor migration at its totality given the estimated stocks and statistics processed from databases of the Commission on Filipino Overseas (CFO) and the Philippine Overseas Employment Administration (POEA), it is worthy to take a closer look both on the database of CFO and POEA to capture the real extent of permanent and temporary migration of Human Resources in Science and Technology (HRST) in the Philippines.

The report has two parts. The first part attempts to measure the migration of S&T workforce by looking at the educational background of those who have chosen to migrate permanently in other countries, while the second will focus on the temporary S&T skills migration .

The publication of the first part of this study entitled “Emigration of Science and Technology-Educated Filipinos (1998-2006)” will explore and identify the general profile of permanent Filipino emigrants in terms of age, gender, country of destination, major occupational group, and educational attainment. Likewise, to find out if there is a significant permanent S&T skill migration that occurred from 1998 to 2006, the educational profile of the registered emigrants was examined.

The study was conducted by the Science Education Institute (SEI), in cooperation with the CFO and POEA.

It is hoped that the findings and recommendations in this report will be used by policymakers, researchers, private industries, and educators in the country in crafting appropriate intervention programs and legislations to lessen the negative impact of S&T skills migration and to take advantage of the positive contribution of returning contract workers who may be tapped to impart their improved skills and apply these to various industries’ needs.

ESTER B. OGENA
Director

Human capital is increasingly the most important form of wealth for many countries and regions, with those richest in intellectual resources tending to achieve the highest rates of economic growth and most rapid development of their science and technology sector.
- Dr. Iredale, *World Migration Report 2005 (WMR)*

Introduction

The quality and quantity of human capital, being the source of skilled and unskilled labor, is truly a major determinant of the present and future economic growths of the countries around the world. Specifically, having a sufficient stock of highly skilled human capital has increased the rate of development of the science and technology (S&T) sectors that in turn bring wealth to the developed countries.

International migrants who are persons living in a country other than in which they were born as defined in the WMR, contribute a major part of this richness in intellectual resources of countries with high economic growth, as 63 percent of 175 million international migrants live in developed countries based on estimates of International Organization for Migration (IOM) in 2000. The United Nations estimated in 2005 that there are 185-192 million migrants in the entire world. Also, at the country level, IOM reported that the Philippines was the third country in the top-three migrant sending countries, with about 7 million overseas Filipinos. It also ranked third in terms of countries with top remittances received in 2002, which was estimated at US\$ 7.363 billion or 9.45 percent of its gross domestic product.

The figures above and to some extent, the global data and trends, clearly indicate a considerable loss of highly skilled Filipino workers because of migration or what is commonly known as “brain drain”. Although, in the short-run, the economic benefits of allowing and encouraging Filipino workers to seek lucrative jobs abroad are more than the cost, in the long-run, the Philippines may face a shortage of workers it will need once it reaches the economic level of its neighboring countries like Malaysia and Thailand. Thus, there is an urgent task of looking at the stocks of Filipino S&T workers and find out if there is a significant permanent loss probably due to the growing number of family visa applications of skilled workers who are enticed to live in developed countries such as Australia and Canada, which welcome migrant workers.

At present, even though we can roughly estimate the extent of permanent and temporary labor migration at its totality given the estimated stocks and statistics processed from databases of the Commission on Filipino Overseas (CFO) and the Philippine Overseas Employment Administration (POEA), it is worthy to take a closer look both on the database of CFO and POEA to capture the real extent of permanent and temporary migration of Human Resources in Science and Technology (HRST) in the Philippines. It is also crucial to map the destinations and make a general description of the rate of outflow of the sector under study. This way, policies may be formulated to address the issue, and proper accounting of our S&T human capital can be done.

This paper is divided into two parts. The first part contains the objectives of and the significant terms used in the study based on international standards, and the scope and limitations of the study. The second part presents a short discussion on the data gathering and processing as well as details of some related studies before discussing selected general profile of overseas Filipinos from 1981 to 2004.

Notably, the distinct and main feature of this first report is the presentation of the results of the actual study on selected characteristics of Filipino emigrants with S&T education and specialization from 1998 to 2004. Based on the results, conclusions and policy recommendations are drawn.

The second part of this same study deals with overseas Filipino contract workers who had S&T occupations or jobs classified as S&T by the International Labor Organization (ILO) from 1998 to 2004. Finally, the findings, conclusions and policy recommendations of the first and the second part will be combined for final presentation and as a basis for identification of future studies to better capture and institutionalize the gathering of pertinent information about migration of overseas Filipinos in accordance with international standards.

Objectives of the Study

In general, the purpose of this study is to find out the extent of S&T skills migration in the Philippines. In this first report, migration of S&T workforce will be measured by looking at the educational background of those who have chosen to migrate **permanently** in other countries while the succeeding report's main objective is to study the profile of temporary Filipino overseas contract workers who had S&T occupations classified by ILO.

Specifically, this paper will explore and identify the general profile of permanent Filipino Emigrants from 1998 to 2004 in terms of age, gender, country of destination, major occupational group, and educational attainment. Likewise, to find out if there is a significant permanent S&T skill migration that occurred from 1998 to 2004, the educational profile of the registered emigrants will be examined to determine the significant number of migrants with S&T qualifications.

For the second report, the focus will be on the temporary S&T skills migration. This study will attempt to classify the occupational/overseas employment data from POEA and check (relative to these data) if there is indeed a massive outflow of workers and professionals with S&T skills and expertise needed or in shortage of supply based on the current industries demand or as a result of low enrollment and graduation rates of the courses that matched the required occupations.

Finally, based on the findings and analysis of the data, the two reports will provide comprehensive conclusions and policy recommendations to lessen the negative impact of S&T skills migration and to take advantage of the positive contribution of returning contract workers who may be tapped to impart their improved skills and apply these to various industries' needs.

Scope and Limitations of the Study

Although the term *S&T Skills Migration* is used throughout this report, the study adopted the basic definition developed by the Organization for Economic Co-Operation and Development (OECD) to allow some degree of international comparability of data. As defined in the Canberra Manual, *Human Resources in Science and Technology (HRST)* refers to those who: a) successfully completed education at the third level in an S&T field of study; and b) not formally qualified as above, but employed in a S&T occupation where the above qualifications are normally required (OECD, 1995).

Furthermore, this definition applies to the available data in this study, which are based on two dimensions: qualification and occupation. Thus, to quote the 1995 Canberra Manual:

In order to obtain a complete picture of both supply and demand for HRST, the definition is based on two dimensions, qualification and occupation. The qualification axis tells us about the supply of HRST, i.e. the number of people who are currently or potentially **available to work** at a certain level. The demand for HRST, i.e. the number of people who are actually **required** in S&T activities at a certain level, is related to the occupation dimension. Because demand does not always match supply and because skills can be obtained outside the formal education system, the following combined definition is proposed.

Coincidentally, the International Standard Classification of Education (ISCED), developed and recommended by the OECD and used in measuring the supply in HRST, can be matched with the graduate data of the Commission on Higher Education (CHED). At the same time, the classification used in occupation, which is the International Standard Classification of Occupations (ISCO) released in 1988 or widely known as ISCO-88, is applicable to the POEA deployment data.

However, the “HRST core” which is defined by Canberra Manual (OECD, 1995) as the HRST population with both tertiary-level education and an S&T occupation, are not recorded by CFO and POEA probably because the recent and previous relevant work experiences and trainings are given more weight by the foreign employer and foreign immigration agencies than the educational attainment of OFWs and emigrants. In addition, the registered numbers of emigrants are way below the estimated stock of emigrants due to undocumented cases of OFWs with working contracts. Also, increase or changes in the number of family members who have joined the contract workers are not monitored since they are no longer required to update their records in CFO.

The OECD Manual was used in combination with the DOST-SEI system of S&T classification relative to the inclusion of social sciences as HRST. In addition, to permit some degree of International comparability given the depth and intensity of the “science content” of the curriculum of social sciences in OECDs, the graduate of the Social science at post graduate level in the Philippines are considered as HRST (OECD, 1995).

Regarding the follow-up report, some data reclassification is required for POEA Deployment data, which uses the ISCO-68 system of classification. Included in the CHED graduate data are the IT-related disciplines. And similar to the criteria set for CFO’s data, only those with masteral and doctoral degrees are included in the data of graduates under social and behavioral sciences.

Definition of Terms

Finally before we discuss the sampling methodology of the study, it is important to define the following concepts, which are commonly used in most part of this study. All the definitions below are taken from the *Glossary of Migration* created by IOM:

- a. **brain drain** - emigration of trained and talented individuals from the country of origin to a third country, due to causes such as conflict or lack of opportunities.
- b. **country of destination** - the country that is a destination for migratory flows (legal or illegal).
- c. **emigration** - the act of departing or exiting from one State with a view to settle in another. International human rights norms provide that all persons should be free to leave any country, including their own, and that only in very limited circumstances may States impose restrictions on the individual's right to leave its territory.
- d. **international migration** - movement of persons who leave their country of origin, or the country of habitual residence, to establish themselves either permanently or temporarily in another country. An international frontier is therefore crossed.
- e. **irregular migration** - movement that takes place outside the regulatory norms of the sending, transit and receiving countries. There is no clear or universally accepted definition of irregular migration. From the perspective of destination countries it is illegal entry, stay or work in a country, meaning that the migrant does not have the necessary authorization or documents required under immigration regulations to enter, reside or work in a given country. From the perspective of the sending country, the irregularity is for example seen in cases in which a person crosses an international boundary without a valid passport or travel document or does not fulfill the administrative requirements for leaving the country. There is, however, a tendency to restrict the use of the term "illegal migration" to cases of smuggling of migrants and trafficking in persons.
- f. **long-term migrant** - a person who moves to a country other than that of his or her usual residence for a period of at least a year, so that the country of destination effectively becomes his or her new country of usual residence. From the perspective of the country of departure, the person will be a **long-term emigrant** and from that of the country of arrival, the person will be a **long-term immigrant**.
- g. **migrant** - at the international level, no universally accepted definition of migrant exists. The term migrant is usually understood to cover all cases where the decision to migrate is taken freely by the individual concerned for reasons of "personal convenience" and without intervention of an external compelling factor. This term therefore applies to persons, and family members, moving to another country or region to better their material or social conditions and improve the prospect for themselves or their family.

- h. **migration** - a process of moving, either across an international border, or within a State. It is a population movement, encompassing any kind of movement of people, whatever its length, composition and causes; it includes migration of refugees, displaced persons, uprooted people, and economic migrants.
- i. **push-pull factors** - migration is often analyzed in terms of the “push-pull model”, which looks at the push factors, which drive people to leave their country and the pull factors, which attract them to a new country.
- j. **permanent residence** - the right, granted by a host State to a non-national, to live and work therein on a permanent (unlimited) basis.
- k. **temporary migrant workers** - skilled, semi-skilled or untrained workers who remain in the receiving country for definite periods as determined in a work contract with an individual worker or a service contract concluded with an enterprise.

Sampling Methodology/Data Processing

Data were gathered mostly from the databases of the CFO and the POEA which are taken from registration and pre-departure forms required to be filled-up by emigrants and OFWs.

Out of an estimated 3 million emigrants, about 300 thousand are with college degrees and completed graduate level and post-graduate level of study. Furthermore, one-third of this has completed S&T degrees. Given the multitude of S&T degrees, only the top ten S&T specialization or field of study in terms of number of emigrants that reported or indicated their degree at tertiary level are identified and presented since many courses or fields of specializations have small number of degree holders. Nevertheless, these were lumped these into one grouping for complete reporting.

Regarding the data of POEA used in the second report, these are grouped or presented by deployment per country per skill and further sub-category of skills from 1993 to 2004. Based on the more recent classification of occupation formulated by ILO, occupations are reclassified into S&T as defined in ISCO-88.

International Migration Trends and Related Studies

In recent years, there are some notable changes in the international migration trends such as increased concentration of migrants in the developed world, shifts in poles of attraction particularly in Asia, and contribution of international migration to population growth of countries with low fertility levels. Furthermore, other observable factors heightened the occurrence of international migration like increasing interdependence among countries due to economic liberalization, income differentials, accessibility, and disparities in demography between countries with different economic growths (WMR, 2005).

Looking at the relevant factors affecting the regional labor market specifically in Asia, aside from the pace of industrialization, ethnicity, geography and state policy, the

establishment of *production centers for transnational companies seeking more flexible sources of labor to mass produce semi-conductors and related components* was the main reason for the increase in labor demand as in the case of Malaysia and Taiwan in early 1990s. And with these changes, part of the surpluses in labor of countries like the Philippines went not only in the traditional destination countries since the early 1970s to late 1980s which is the Persian region but also in Southeast Asia as the destination countries because of the region's high labor demand in the past ten years (WM, 2003).

In the Philippine case, an average annual labor emigration of about 426 thousand Filipino migrant workers had worked mainly in Southeast Asia, the Gulf area, United States of America, and Europe from 1995 to 1999. About 128 thousand Overseas Filipino Workers (OFWs) were added to the recorded figures as there were many undocumented migrant workers that left the country during the same period (WM, 2003).

In a related ILO-sponsored study, the trends in labor migration observed in the 90s were similar for the Philippines, Indonesia, Thailand and other Asian countries. Although a decade has passed, some of these observations were documented and analyzed only recently. Among these are increases in temporary migration of the following: 1) semi-skilled and unskilled workers both documented and undocumented; 2) female migrant workers; 3) personnel of recruitment agencies including those responsible for processing papers of illegal workers, and finally; 4) contract workers in Asia relative to other traditional destinations like Middle East (Wickramasekara, 2000).

Most of these patterns still hold true in the case of the Philippines based on the 2004 Survey on Overseas Filipinos released by the National Statistics Office (NSO). OFWs working abroad from April to September 2004 increased from 982 thousand in 2003 to 1.06 million in 2004. Seventy-seven percent of these OFWs worked in Asia and a third were laborers and unskilled workers. Genderwise, about 50.7 percent of the OFWs were female. Lastly, majority of the OFWs were in the 25 to 29-age grouping (NSO, 2004).

Relative to other Asian countries except India, the Philippines' share in about 2 million Asian workers who reportedly left their countries to work abroad under contracts, was quite significant and although a large numbers of these OFWs were sent to fill unskilled job, "the migrants workforce also included large numbers of nurses, engineers, computer systems developers, geodetic surveyors, teachers, artists and entertainers " (WM, 2003).

Unfortunately, supporting quantitative data are not available to confirm the size of this high-skilled temporary labor migration. On the other hand, it is easier to estimate permanent Migration by searching online the immigration data and related migration studies officially Conducted by government censuses and statistics offices of the top destination countries for Overseas Filipinos (OFs). Countries with many OFs are of particular interest in this study such as the USA, Canada, Australia and other OECD countries.

Based on US Census 2000 special reports, there were 1.9 million Filipinos and another 0.5 million Asian race with Filipino descent totaling 2.4 million in the US. The Chinese were the only Asian people numbering 300 thousand more than those with Filipino blood. From this figure, we can have a more realistic estimate of the permanent US residents with Filipino origin than the 912 thousand registered emigrants in the US as tabulated by CFO from 1981 to 2004. More importantly, when employed civilian

population 16 years old and above were asked regarding the type of occupation, 38.2 percent of all respondents who considered themselves as Filipinos were more likely to work in management, professional and related occupations. In essence, this is a clear indication that most Filipinos working in the USA are highly skilled and a great loss in the Philippines in terms of human capital (Reeves and Bennett, 2004).

Focusing on the HRST, it is worth looking at statistics in Science and Engineering (S&E) monitored by the National Science Foundation in the US. In 2003, there were 280.3 thousand Philippine-born U.S. residents with S&E and S&E-related highest degree in all degree levels. Only India with 448.7 thousand and China with 294.8 thousand were the foreign countries with more S&E graduates than the Philippines. Breaking down these S&E and S&E-related graduates born in the Philippines, by degree level, there were 232.5 thousand bachelors, 20 thousand masters, and 3.8 thousand doctoral graduates. Clearly, these human resource data suggest how rich the S&T human capital in the Philippines could be if it has S&E-oriented universities at par with the US and other developed countries. Sadly, this also shows a great loss of S&E human resources since these graduates are not residing in the Philippines anymore (SEI, 2006).

Other countries with a bulk of Filipino emigrants, according to Migration Information Website, are Canada and Australia. However, the data are not grouped or classified based on education and occupation but it is most likely that majority of the 1.8 million registered foreigner in Canada who traced their origin in the Philippines are educated and experienced workers in various industries. In the case of Australia, migrants' data compiled by the Immigration office of Australia are significantly higher and more reliable than the official statistics reported by CFO since it is derived from 2001 Census of Australia. Based on the results of the last census, by qualifications or educational background, 38.3 % of Philippine-born migrants in Australia had postgraduate degree, graduate disciplines and graduate certificates, bachelor degrees, advance diploma and diploma level. In addition, in terms of employment, 33.9 % were employed in skilled occupation (DIMIA, CIS).

In 2000, based on the estimates of Docquier and Marfouk, the Philippines had 1.122 million citizens who are at least tertiary-educated but residing in OECD countries. The country was second to United Kingdom's 1.4 million tertiary-educated citizens who are living in other OECD countries. Furthermore, from 12.8 percent in 1990, the size of this group has increased by 2 percent in 10 years.

This estimates is a confirmation of the wide scale loss of locally produced human resources that have chosen to be a part of other nations' present and future workforce. On the other hand, this loss of human capital can be mitigated by having a large "high-skilled diaspora" similar to UK (SEI, 2006).

According to Kapur and McHale (2005), the outflows of highly skilled workers from poor countries to rich countries are due to three long-term trends. First is the desire for innovation where the long-term gains of human capital most manifest. Second factor is because of aging population *putting strong pressures to "import" taxpayers at the margin*. Lastly, the outflows are consequences of wider scope of globalization of production and exchanges of goods, services and trade. These trends hold true for several developed countries that open up their labor market for skilled S&T workers to continue gaining high economic growths.

For the brain drain to occur, two conditions should be observed according to Lowell (2003). The first condition is that *there must be significant loss of highly educated population* and the other one is the adverse economic consequence because of these outflows. In the Philippine context, although the country is producing many tertiary-educated human resources, a large portion of these are not attracted and absorbed by the highly competitive but low-paying jobs, and therefore, left with no choice but to seek further training and education to increase the chance of being hired abroad.

There are many studies dealing with the causes and effects of skilled migration. However, many have no supporting data to back up their claim. Nevertheless, some are related to this study and can enhance some of the succeeding discussions about the major findings.

In the case of Europe and Latin America, Solimano and Pollack (2004) noted the main determinants of migration of individuals with high skills were the following combination of push and pull factors: a) the higher expected income to the destination country based on the per capita income or real wages; b) the costs of migration and social networks; c) political determinants; and d) shortage of skill labor particularly in industrialized countries. In terms of economic effects of high-skill international migration, they also identified possible negative and positive effects in sending and receiving countries. For sending countries, developmental effects mainly due to increase in knowledge flows, ties with foreign research institutions, export opportunities for technology, remittances, as well as valuable overseas management and working experiences are some positive effects aside from human capital effects brought by increased incentive for natives to seek higher skills. For receiving countries, similar positive effects can be observed aside from easing the labor shortage for high skill workers. Brain drain or loss of productive potential due to migration of higher skilled workers and human capital, lower returns of public investment in education, and loss of fiscal revenues from taxation of human capital are some of the possible negative effects in sending countries that are also noted by Solimano and Pollack.

In the Philippines, Alburo and Abella (2002) conducted a study to provide some benchmarks of the brain drain from the Philippines in 2002. This paper is an attempt to look at the extent of brain drain by tracing the pattern of temporary labor migration from 1985 to 1998. Among the important findings of the study is that the estimated 2.5 million or 39 percent of the migrant workers or permanent emigrants who left the country from 1990 to 1998 were college graduates. Furthermore, 20 percent of these workers or emigrants were classified under "professionals, technical, managerial and administrative workers. Nevertheless, the portion of professionals among Filipino emigrants (FEs) decreased from less than 20 percent in 1992 to less than 10 percent in 1998. However, this declining trend may no longer hold true presently since a considerable time has passed.

The calculations of Alburo and Abella which were derived from graduate data of CHED, overseas deployment data of POEA, and registered professionals data of the Professional Regulatory Commission (PRC), give us a reference point to gauge human resources losses due to migration particularly of highly educated manpower such as engineers, nurses, computer and ICT professionals. In summary, among the said professions, engineers posted the highest outflow relative to its additional manpower registered from 1990 to 1998. About 29 percent of engineers who passed the board and added to the stock of licensed engineers had left the country to work abroad during this

8-year period. ICT professionals with about 12 percent, and nurse with 5 percent were the next two professions with most recorded out-migration (Alburo and Abella, 2002).

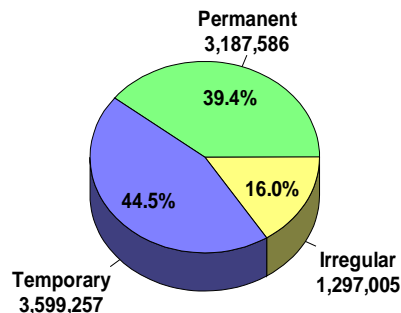
But in the end, the lack of data that capture specific skills and contribution of OCWs and permanent emigrants from destination countries hinder the more comprehensive assessment of the extent of brain drain. Nevertheless, Alburo and Abella (2002) recommended measuring the *counterfactual event* had the OFWs and professional emigrants remained in the country and calculated the economic growth that these workers could have contributed.

In summary, all of the abovementioned studies and reports are indicators of the pervasiveness of brain drain thru skilled migration in the case of the Philippines. However, only a few HRD data on S&T students, professionals and workers were studied and therefore, we cannot measure in exact number the frequency of S&T workers outflows by fields, by occupations and by categories either as temporary contract workers or permanent emigrants. Hopefully, by studying and analyzing the databases of CFO and POEA, we can come up with more specific and relevant indicators in order to arrive at the more objective and verifiable way of measuring the brain drain in human resources with S&T education, training and occupations which are in critical supply in the country.

The Overseas Filipinos and Some Demographic Profile

How many are Overseas Filipinos

According to the latest stock estimate of overseas Filipinos tallied by CFO, as of December 2004, there were about 8 million overseas Filipinos comprised of about 3.6 million temporary contract workers and another 3 million permanent migrants or immigrants abroad plus 1.2 million individuals who are categorized under irregular migration (Fig.1). Currently, this stock estimate represents almost one tenth of the 2005 government-projected 85.3 million population. Likewise, assuming all the temporary contract workers were included in the national labor force that was pegged at 35 million last 2003, as published in the 2004 Philippine Statistical Yearbook, it would be safe to estimate that ten percent of the Philippine total workforce was based overseas. However, the 10 percent workforce based abroad is most likely below the actual figure since a portion of 3 million Filipinos who are permanent residents in other countries and currently employed in various industries are not yet taken into account.

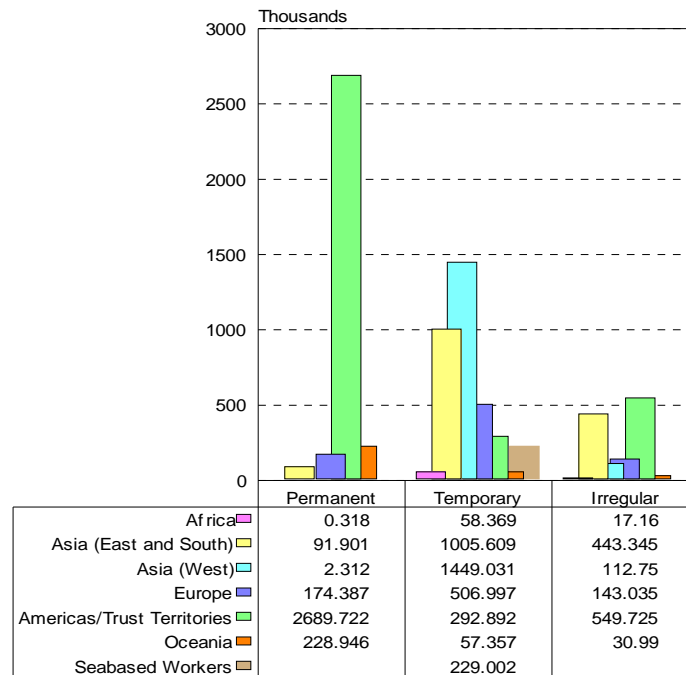


Source: Commission on Filipino Overseas, 2005

Figure 1. Stock Estimate of Overseas Filipinos (As of December 2004)

Where Overseas Filipinos Go

Most temporary OFWs are working in the western part of Asia and the least are working in Africa. Of those undocumented or not officially accounted for who left the country primarily to work overseas, the pattern of emigration is almost the same as of those overseas Filipino who settled permanently in Americas (Fig.2). The significant number of cases of undocumented overseas Filipinos may be attributed to illegal cuddling of overstaying tourists who work and eventually apply for working permit and change their status as legal foreign workers.



Source: Commission on Filipino Overseas, 2005

Figure 2. Stock Estimate of Overseas Filipino Workers (by Continents, December 2004)

Where Overseas Filipinos Settle Permanently

Based on the mapping of the Filipino Emigrants (FEs) worldwide collected by CFO from 1981 to 2004 (Table 1), there are 912, 324 FEs in the US alone, more than half of which live in California and Hawaii. In Canada, half of the 179,551 FEs are living in Ontario. Likewise, in Australia, almost half (49%) are concentrated in New South Wales,. For the entire Europe, the numbers of FEs are almost the same in number of FEs living in New Jersey, USA or British Columbia in Canada.

Although a pattern of migration from our developing country to highly developed countries is clear in the case of the top 3 countries of destination, it seems that Europe is an exception. Similarly, in Asia, only Japan has an extremely large number of FEs reaching 74, 412 out of 80,732, while in countries belonging to Oceania excluding Australia, almost all FEs are based in New Zealand with 5,236 CFO-registered FEs. And

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checking the registered FEs in North America except USA and Canada as well as in entire South America and entire Africa, the officially counted FEs are too small, which are 88, 21 and 85 respectively. Overall, there are about 1.3 million FEs, the bulk of these are mostly in the US (912,324), Canada (179,551), Australia (88,870) and Japan (74,412).

Table 1. Filipino Emigrants (FE) by Selected Country of Destination/ Continent (1981-2004)

US State and Insular Area	FE
California	426,006
Hawaii	92,702
Illinois	43,664
New York	39,550
New Jersey	35,461
Guam	34,977
Washington	30,266
Texas	24,841
Florida	22,589
Virginia	20,500
Maryland	14,043
Nevada	13,375
SUB-TOTAL	797,974
<i>Rest of USA and its Insular Area</i>	<i>114,350</i>
TOTAL FE	912,324
Canada	
Ontario	90,858
British Columbia	37,803
Alberta	19,748
Manitoba	19,452
Quebec	8,650
SUB-TOTAL	176,511
<i>Rest of Canada</i>	<i>3,040</i>
TOTAL	179,551
Australia	
New South Wales	43,678
Victoria	19,488
Queensland	11,708
Western Australia	4,720
South Australia	4,349
SUB-TOTAL	83,943
<i>Rest of Australia</i>	<i>4,927</i>
TOTAL	88,870

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Europe	FE
Germany	9,820
United Kingdom	6,538
Italy	4,934
Spain	3,669
Norway	2,357
Sweden	2,215
Belgium	1,632
Netherlands	1,495
SUB-TOTAL	32,660
<i>Rest of Europe</i>	<i>4,190</i>
TOTAL	36,850
Asia	
Japan	74,412
Taiwan (ROC)	2,037
South Korea	1,931
SUB-TOTAL	78,380
<i>Rest of Asia</i>	<i>2,352</i>
TOTAL	80,732
Oceania (except Australia)	
New Zealand	5,236
Rest of Oceania	101
TOTAL	5,337
Rest of the World	
All Africa	85
North America (except USA and Canada)	88
All South America	21
TOTAL	194
GRAND TOTAL	1,303,858*

* This estimate of the CFO is lower than the actual figure when checked against the Census data of other countries like in Australia, which has 103,990 Philippine-born persons as of 2001 Census. However, not all countries in this table have official Census data of their foreign citizens with Filipino origins making it difficult to find out the actual figure.

Employment Status, Age and Gender of the Registered Filipino Emigrants

Based on the CFO data from 1981-2003, most of the FEs are unemployed but not necessarily unproductive. In fact many of them are students (24.19%) and certainly some of these are currently employed given the span of data collection period of CFO. Limiting our study to those employed FEs, it is quite expected that majority of them are professionals, technical and related workers (10.82%) due to high demand and low supply of S&T workers in developed countries requiring constant influx of skilled workforce they are not able to provide domestically (Table 2). Aside from these pull factors that led to permanent migration of Filipino professionals and technical workers, there are push factors like political instability, weak institutional systems, and other social issues that might contribute to massive and long period of international migration.

Emigration of Science and Technology-Educated Filipinos (1998-2006)

Table 2. Registered Filipino Emigrants by Major Occupational Group, 1981-2003

OCCUPATIONAL GROUPING	TOTAL	PERCENTAGE
A. EMPLOYED		
Professional, Technical, and Related Workers	134,053	10.82%
Managerial, Executive, and Administrative Workers	13,667	1.10%
Clerical Workers	50,986	4.12%
Sales Workers	52,751	4.26%
Service Workers	30,808	2.49%
Agriculture, Animal Husbandry, Forestry Workers and Fishermen	28,661	2.31%
Production Process, Transport, Equipment Operators and Laborers	49,645	4.01%
Members of the Armed Forces	4,443	0.36%
SUB-TOTAL	365,014	29.46%
B. UNEMPLOYED		
Housewives	264,423	21.34%
Retirees	40,833	3.30%
Students	299,733	24.19%
Minors (Below 7 years old)	98,772	7.97%
Out-of-School Youth	2,939	0.24%
Refugees	3	0.00%
No Occupation Reported	167,217	13.50%
SUB-TOTAL	873,920	70.54%
TOTAL	1,238,934	100.00%

In terms of age, almost one-fifth of registered Filipino emigrants are 14 years old and below indicating a movement of future generation consisting of the children of skilled workers, with most of them continuing and pursuing their studies abroad. Those who are at the peak of their career and physical condition belonging to the age group 25-29 years old seem to be highly mobile and comprise the most number of Filipino emigrants (12.83%) among the working age group (20-60) (Table 3).

Emigration of Science and Technology-Educated Filipinos (1998-2006)

Table 3. Registered Filipino Emigrants by Age Grouping, 1981-2003

AGE GROUPING	NUMBER	PERCENTAGE
14 - Below	246,271	19.88%
15 - 19	130,293	10.52%
20 - 24	135,027	10.90%
25 - 29	158,908	12.83%
30 - 34	134,705	10.87%
35 - 39	88,138	7.11%
40 - 44	59,199	4.78%
45 - 49	46,694	3.77%
50 - 54	47,556	3.84%
55 - 59	54,170	4.37%
60 - 64	55,485	4.48%
65 - 69	42,630	3.44%
70 - Above	39,794	3.21%
TOTAL	1,238,870	100.00%

Gender wise, within a 22-year span, 742 thousand out of more than 1.23 million FEs are female, which is almost twice the number of male. On the yearly average, there are 32 thousand female emigrants compared to 21 thousand male. In terms of ratio, for every 100 female, there are 67 male permanently migrating to other countries (Table 4). Perhaps, this trend may be attributed to large number of female professionals who are qualified to work in highly in demand jobs abroad like teachers, nurses and other medical related profession. This assumption can be verified later in succeeding discussion about frequencies of FEs who have completed tertiary S&T qualifications.

Table 4. Registered Filipino Emigrants by Sex, 1981-2003

	MALE	FEMALE	TOTAL	SEX RATIO*
TOTAL	496,696	742,238	1,238,934	67M/100F
Yearly Average	21,595	32,271	53,867	67M/100F

* Sex Ratio is number of Males for every 100 Females

Highest Educational Attainment and other Educational Profile of Registered Filipino Migrants

Of the 1.23 million officially accounted Filipino emigrants in 1988-2004, about 246 thousand have graduated at least in college. Of this, 39 out of every 100 completed S&T undergraduate degrees. Likewise, a little less than 2 thousand have completed a postgraduate degree in S&T. Clearly, when validated with 2003 NSF data on Philippine-born US residents with S&E and related degrees which is about 280 thousand, there is a large undercount which are captured more precisely by official censuses and statistics of the countries of destinations of these highly S&T-skilled human resources (Fig. 3).

The S&T-Educated Filipino Emigrants

Among the tertiary-educated FEs, 39 percent have completed an S&T degree and the remaining 61 percent are graduates of non-S&T courses. Disaggregating the S&T-educated FEs by specific degree according to the most number of graduates, it is quite expected to see nursing and related medical courses as well as engineering and IT among the top 10 S&T degrees completed by most FEs (Fig.3).

S&T Tertiary Degrees with Highest Number of Graduates

From 1988 to 2004, more than one-third of all Filipino migrants who graduated with S&T specializations (96,245) are in nursing (34,852) which is more than the combined graduates of other S&T degrees (19,564). Civil engineering with 8,866 graduates is the second tertiary course completed by most FEs. Also in the top five are those who graduated with a degree in secondary education (8,307). The other top S&T fields of specializations of Filipino migrants are also in engineering, computer science and medical related professions (Fig.3).

This is a natural consequence of demographic factors in developed countries like the USA where medical service workers are in shortage, as more local people prefer pursuing business and IT careers. In the demand side, many developed countries have experienced major skilled labor shortages because of numerous factors like high demand in certain sectors and lack of adequate training facilities. To address these shortages, these countries created immigration policies for attracting skilled labor including S&T personnel who are most needed also in the countries from which these skilled workers originated (Iredale, 2005).

With respect to migration of engineering graduates, several relevant factors are noted by Cervantes (1999) in his analysis of S&T labor market in OECD countries including Australia, Canada and the USA during the 90s. Some of these major factors are the general trends of using technology for increased global competitiveness and productivity by many foreign multinational corporations, more business ventures into knowledge-intensive industries, expansion of service sectors which increase demand for S&T personnel, and skills shortages making salary higher in IT and computer-related employment services.

Emigration of Science and Technology-Educated Filipinos (1998-2006)

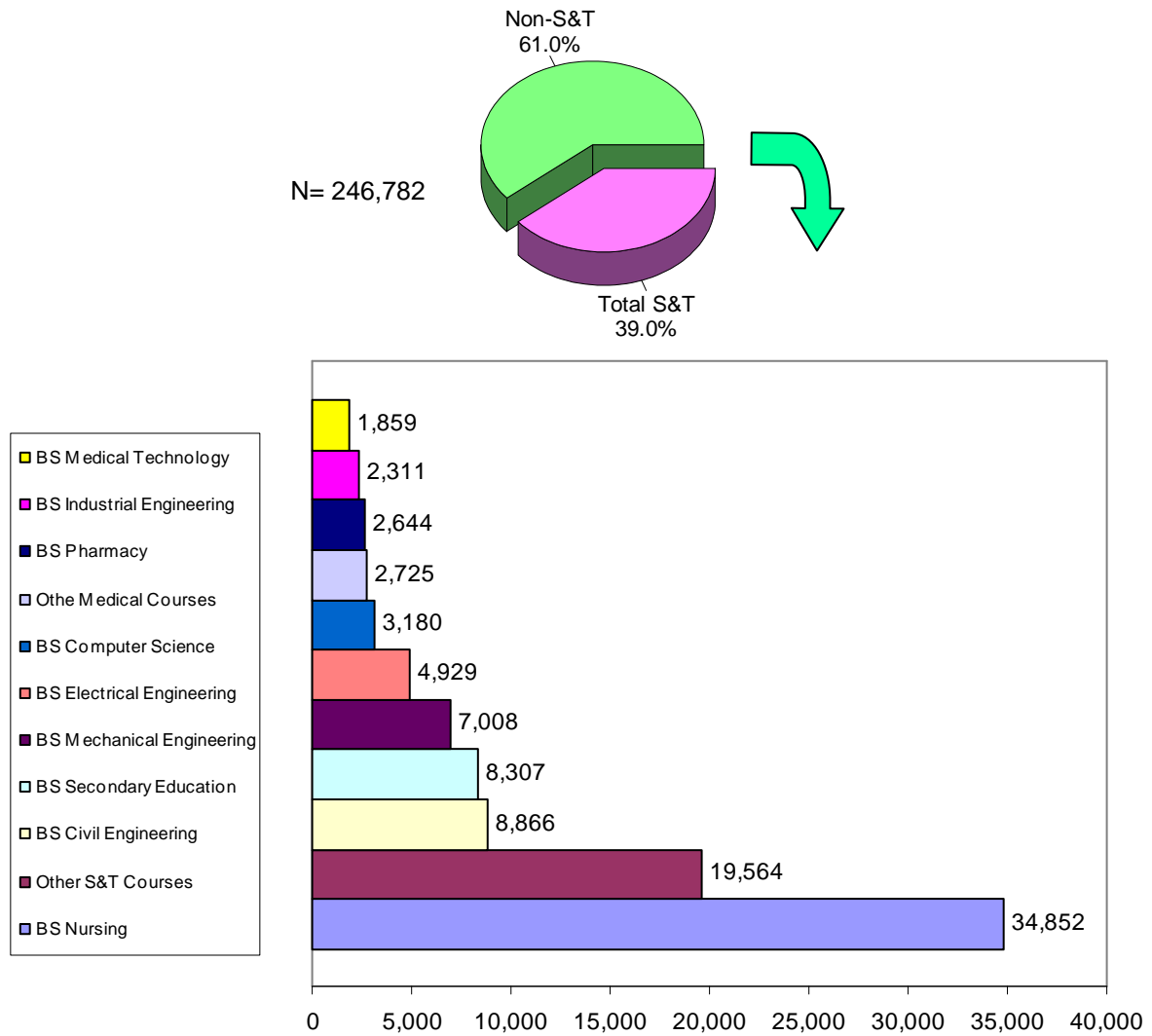


Figure 3. Filipino Emigrants by S&T Classification at Tertiary Level (1988-2004)

S&T Tertiary Degrees of Filipino Emigrants by Major Country of Destination

Figure 4 provides some confirmation of the recent trend in international migration of highly educated human resources from least developed countries like the Philippines to more developed countries such as Australia, Canada and USA. Across countries and cumulatively from 1988 to 2004, most of the CFO-registered Filipino emigrants are nursing graduates. Civil engineering graduates are the next top choice of these countries when granting permanent resident status to S&T-educated Filipinos. The third most prominent degree of Filipino emigrants is secondary education with major, most probably in science, mathematics, special education and English (Tabunda, 2006). The rest of the S&T tertiary degrees with highest graduates are in computer science, other engineering fields and other health-related courses (Fig.4).

Emigration of Science and Technology-Educated Filipinos (1998-2006)

Distinctly, as tabulated in Figure 4, the USA (65,386) has more of all the identified S&T degrees taken by many FEs. The second is Canada (19,013) followed by Australia (6,741) and other countries (5,105) such as UK, Japan, Germany, New Zealand and other more developed countries than the Philippines.

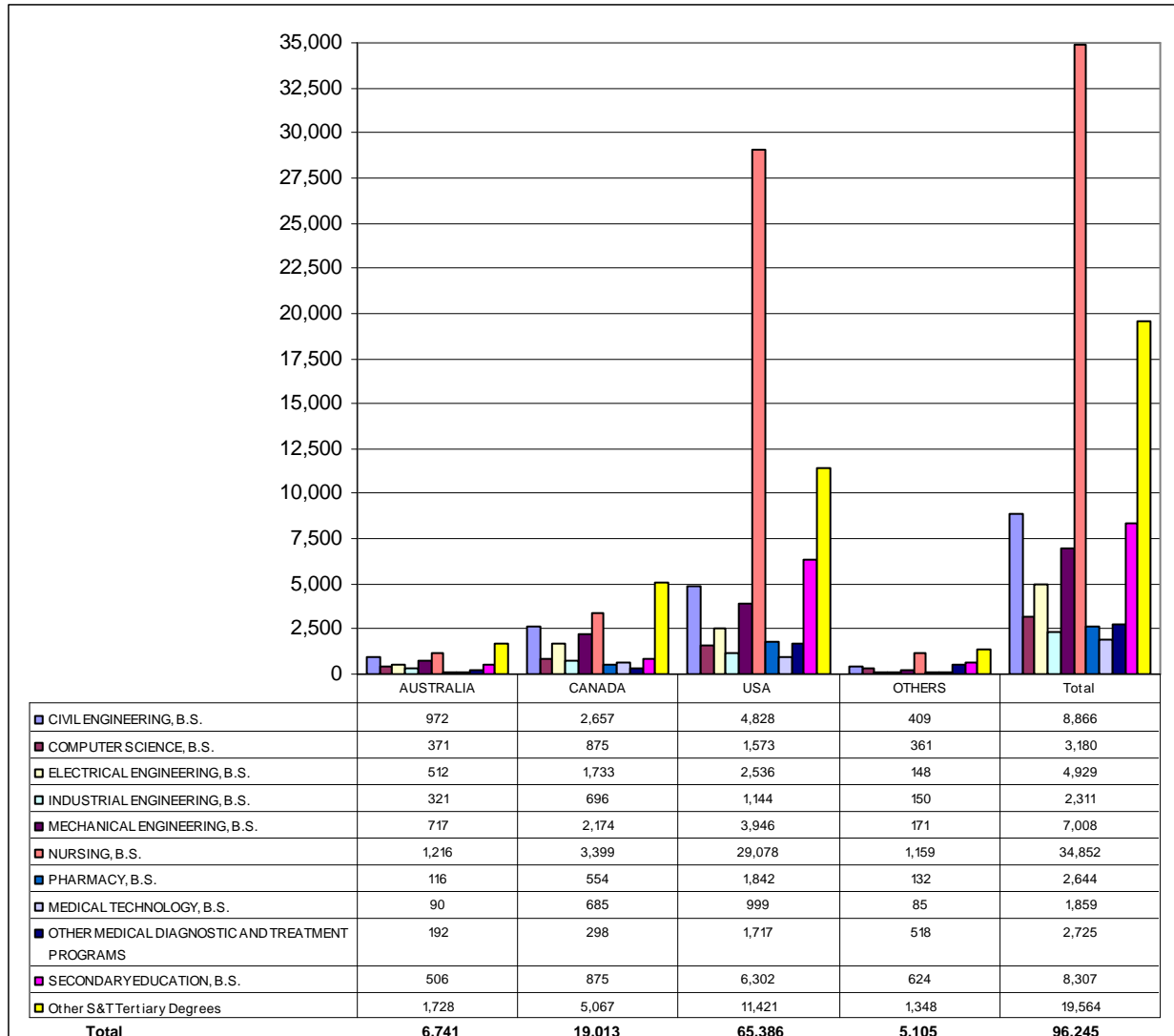


Figure 4. S&T Tertiary Degrees of Filipino Emigrants by Major Country of Destination (1988-2004)

Emigration of S&T-Educated Filipinos to Australia

Annually from 1998 to 2004, an average of about 300 S&T degree graduates migrated to Australia. A big increase transpired in 1999 and this might be due to economic and political factors. In the Philippines, this year marked the second year after the Asian financial crisis that occurred in 1997 and a change in government. Likewise, according to the 1999 Philippine Yearbook, the unemployment surged due to the effect of currency speculation that weakened the peso by more than 70 percent and forced closure of banks and companies that heavily invested in real estate before the currency crisis.

Emigration of Science and Technology-Educated Filipinos (1998-2006)

Coincidentally, Australia has become more open for skilled professionals before and after the Asian currency crisis. Citing the changes happening in Australia posted in the website of Migration Information Source (MIS): “since 1995-1996, skilled migration has increased relative to family migration, which it has outstripped since 1997-1998. In 2002-2003, there were 56,782 permanent residents admitted under the skill program, compared with 40,105 under the family program.” The series of events might had an impact on the skilled migration of Filipino with S&T education to Australia which started to import human resources that its economy requires.

However, CFO has been able to capture, on the yearly average, at most only 10 percent skilled migration to Australia, which based on MIS is more or less 3 thousand annually from 1998-2004 assuming these were mostly permanent resident applicants.

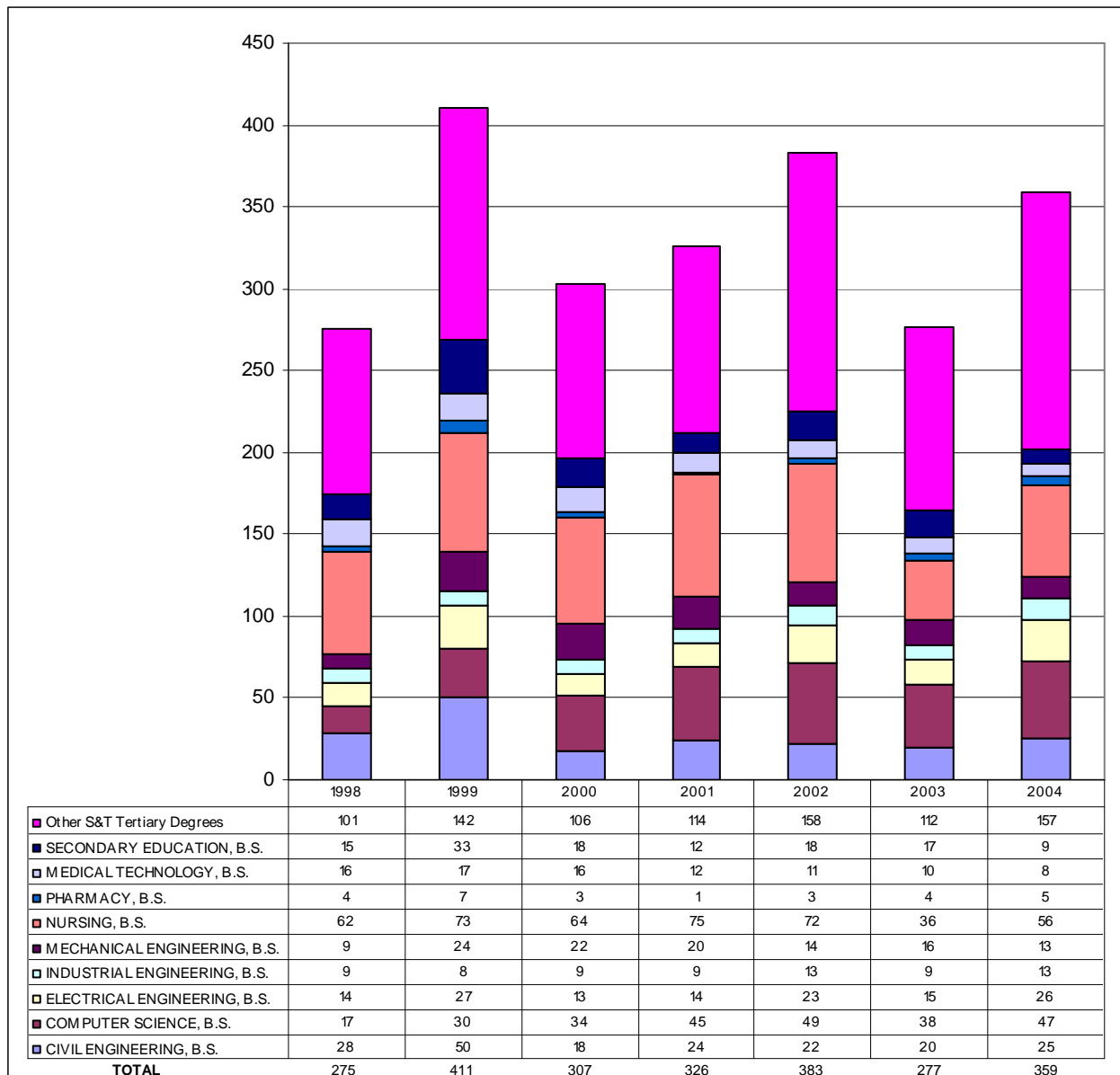


Figure 5. S&T Specializations of Filipino Emigrants at the Tertiary Level in Australia (1998-2004)

Emigration of S&T-Educated Filipinos to Canada

Canada is the second most preferred destination for FEs. A major attractiveness of this country may have something to do with its category as welfare state and its multicultural orientation (Grubel, 2005). From less than 1 thousand in 1998, an increasing pattern of migration of S&T-educated overseas Filipinos has been recorded reaching its highest outflow of about 2 thousand S&T tertiary graduates in 2001 (Fig.6). These phenomena can be traced to several factors. Aside from those related to post-Asian financial crisis and other subsequent economic and political conditions that possibly contributed to the pull factors that led to permanent migration to Canada like in the case of Australia, there was also a push factor that resulted in migration of Philippine-educated HRST to Canada. To quote from the *The Monitor*, an official online immigration publication of Canada:

The high-tech “bubble” and subsequent “bust” had an impact on the number of foreign workers coming to Canada. Many high-tech occupations are classified in the professional occupations in the natural and applied sciences group. Indeed, the flow of these workers has mirrored the fortunes of the high-tech sector... From 1995 to 2001, the stock of these workers rose from 4,958 to 10,407, coinciding with the boom in the high-tech sector and increased demand for IT workers. However, after the bust of the high-tech sector, stocks fell to 9,214 by 2003.

The growth in high-tech sector might partially explain the accelerating skills migration pattern of Filipinos moving to Canada from 1998 to 2001. Within this 3-year period, annual outflow of emigrants with various S&T degrees had more than doubled from its base figure of less than a thousand in 1998. Likewise, the subsequent decreases in 2002 to 2004 might be due to the bust of the same sector.

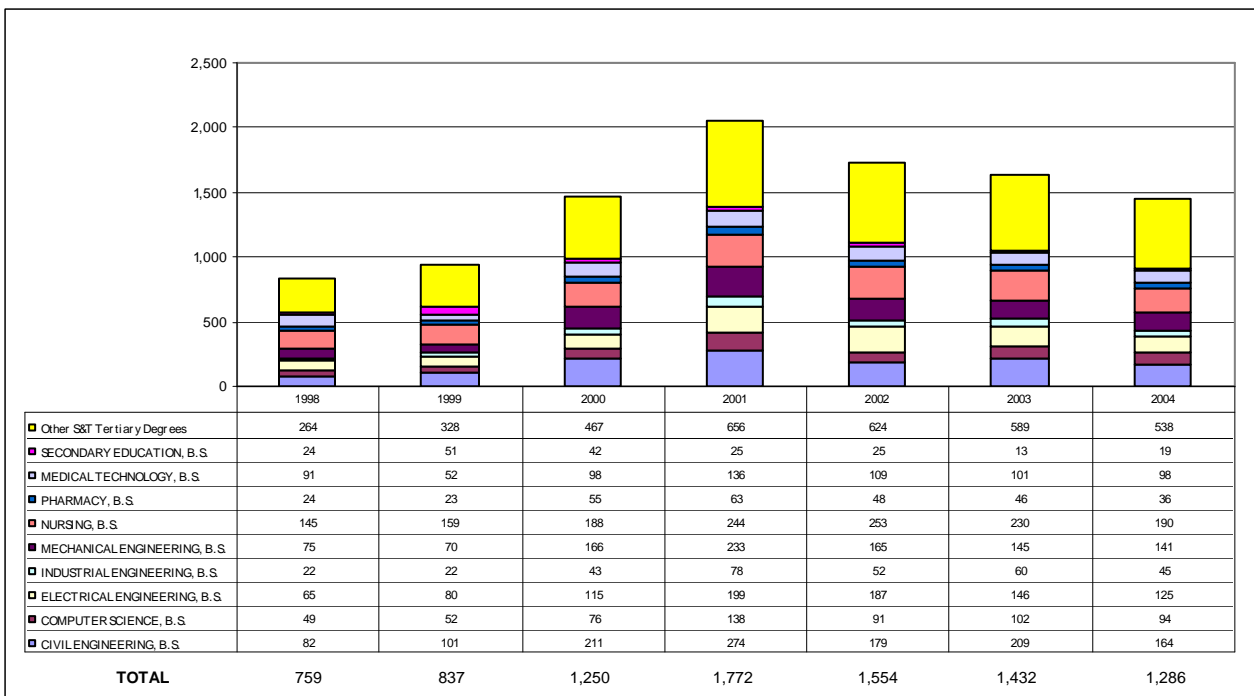


Figure 6. S&T Specialization of Tertiary-Graduated Filipino Emigrants in Canada (1998-2004)

Emigration of S&T-Educated Filipinos to the United States of America

Historically, Filipinos are quite adaptable to American culture as the Philippines was once a colonial state of the USA. In addition, the current Philippine education system is patterned after the education system introduced by the Americans. Because of these, many Filipinos are proficient in English. Consequently, those who finished tertiary education in engineering, medical sciences and other S&T degrees have been exposed to an American-influenced educational system. Given these favorable conditions, American firms are also aggressively recruiting S&T personnel from the Philippines.

From between 2-3 thousand FEs with S&T specializations that left the country in 1998, the figures grew to reach 7 thousand in the next 6 years leading to 2004. The pattern of emigration of S&T-educated Filipinos to the USA seems to be determined by the constant yearly increases in the emigration of those with nursing degree. This pattern is formed possibly due to rising needs for more nursing personnel which the US cannot produce locally. In addition, this large demand for health workers particularly nurses are easily met by the Philippine private educational institutions as enrollment continue to rise as potential students constitute not only those first degree course taker but also other professionals who are more than willing to have a career shift due to expectations of high salaries and favorable living conditions in the USA and other developed countries. Finally, despite the 9/11 terrorist attack in New York, the emigration of highly competent Filipinos with S&T degrees is not tapering off and in fact continues to increase.

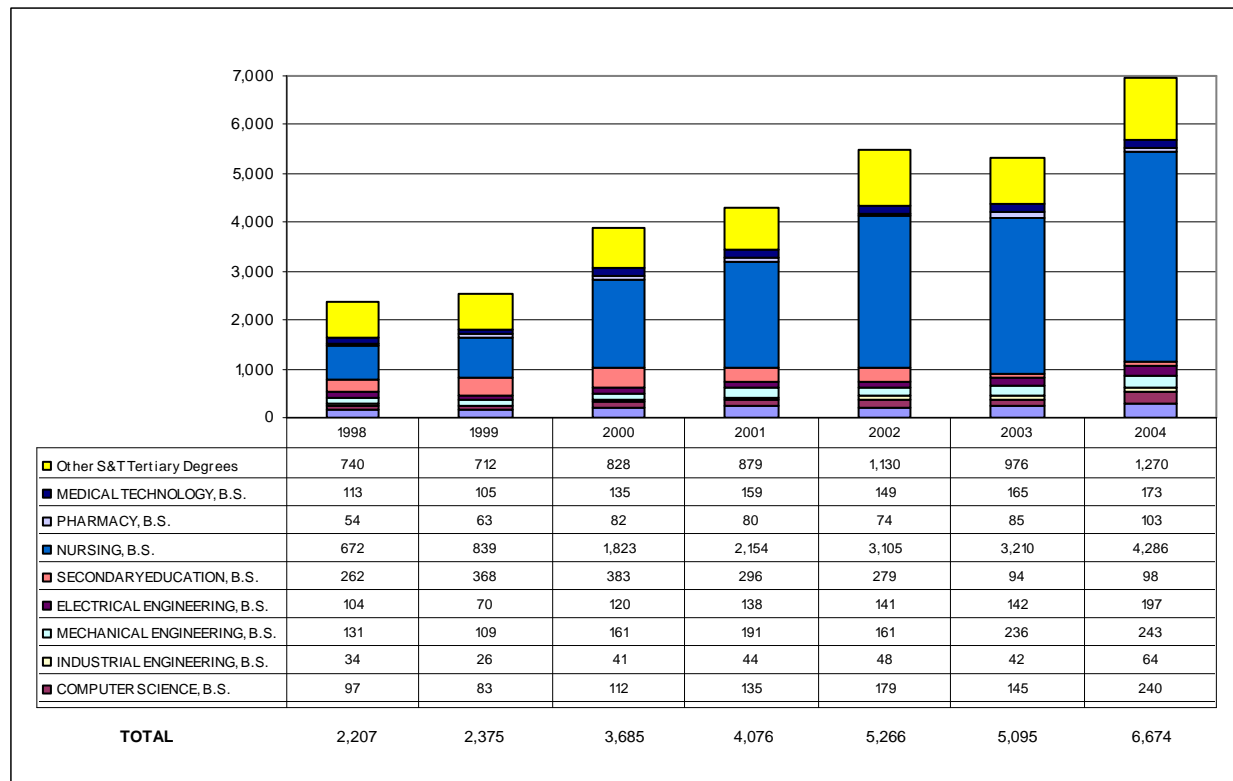


Figure 7. S&T Specializations of Filipino Emigrants at the Tertiary Level in the USA (1998-2004)

Emigration of S&T-Educated Filipinos to Other Countries

Like in the cases of USA, Canada and Australia, which are the top countries of destination for those who graduated with a degree in medical, engineering and secondary education, there is also a modest tendency to migrate in other developed economies for graduates of these S&T courses as shown in Figure 8. These countries are mostly members of OECD such as Germany and United Kingdom while others are also developed economies like Japan and New Zealand.

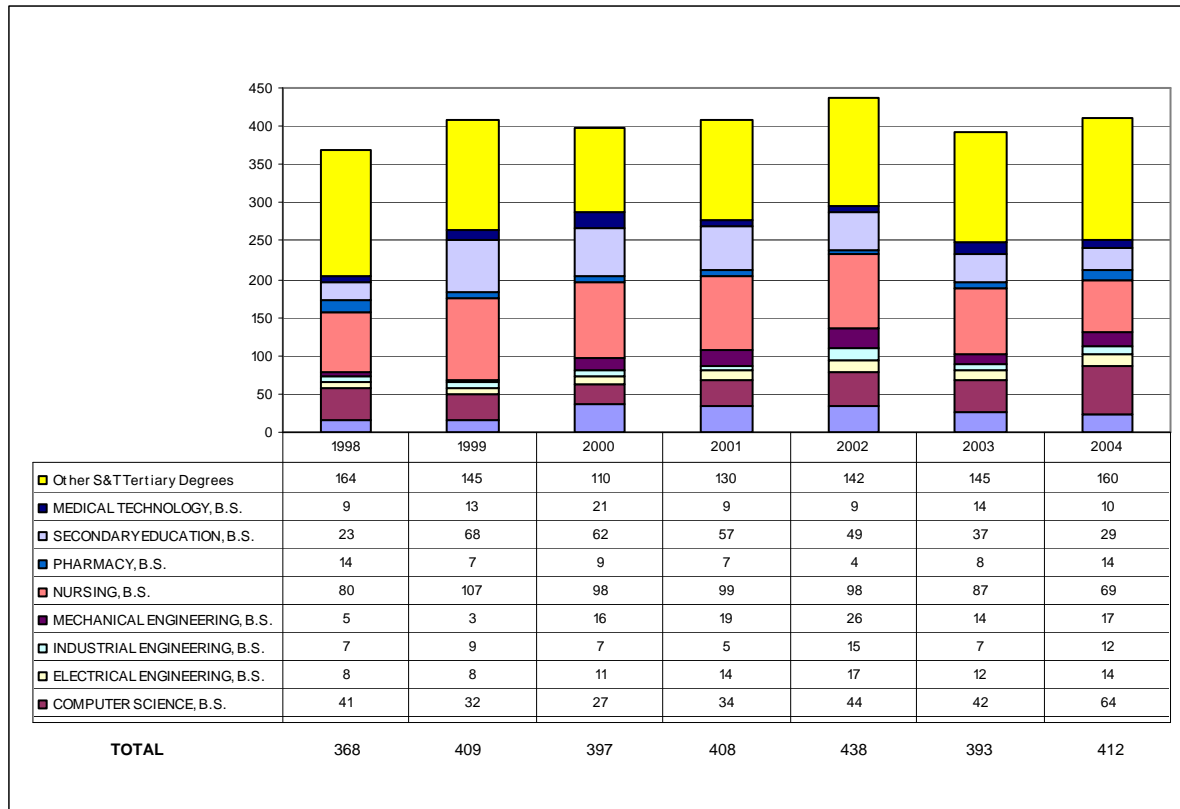


Figure 8. S&T Specializations of Filipino Emigrants at Tertiary Level in Other Countries (1998-2004)

S&T Tertiary Degrees of Filipino Migrants by Age

To some extent the paper of Alburo and Abella (2002), showed the drain in the outflow of Filipino workers were most manifested in the age grouping and educational profile of OFWs and FEs as many of these workers are in the most productive age group (20-50), and possessed longer years of education. This indicates that this labor migration has taken out a significant portion of the national workforce, which have considerable experience and training, and which most likely cannot be filled up by additional fresh college graduates and professionals who have recently passed the board.

Emigration of Science and Technology-Educated Filipinos (1998-2006)

Relative to age, a total of 18,220 registered Filipinos with nursing degrees in 20-30-age grouping migrated out of the country from 1988 to 2004. Furthermore, regardless of country of destination, almost 5 out of 10 Filipino migrants with Civil Engineering are in the most productive age grouping (31-40). This is consistent with the desired characteristics of HRST targeted by many developed countries that have small stock of young S&T workers with this qualification.

Unlike the age distribution of FEs who graduated in civil engineering, about 1 in every 2 Filipino migrants with a degree in secondary education are mostly in the oldest age grouping which is 51 years old and above. This is probably due to the fact that most of these teaching professionals recruited by other countries are required to have long years of experience and because they are also very much in demand, they are not subjected to strict age restriction compared to most of skilled emigrants with engineering education (Fig.9).

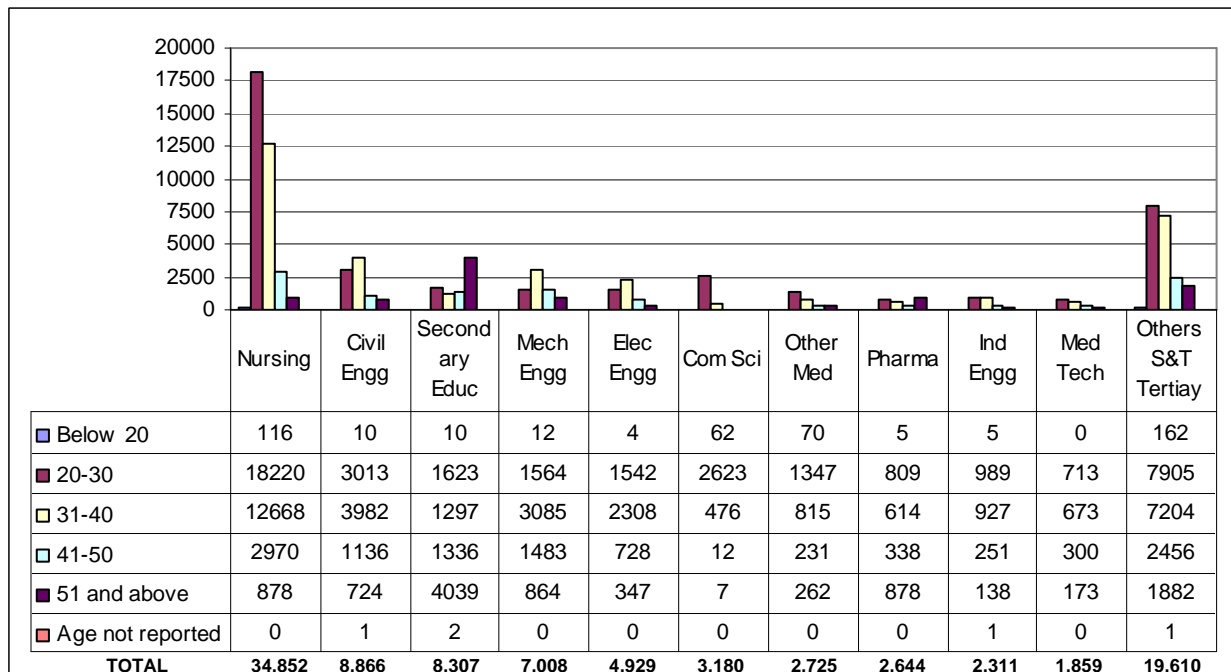


Figure 9. S&T Tertiary Degrees of Filipino Migrants by Age (1988-2004)

S&T Specializations of Filipino Migrants by Gender

Cross-tabulating the number of FEs by gender and by completed highest S&T degree, two common patterns are observable. (Figure 10) The medical and other health-related degrees as well as IT, secondary education, and other S&T tertiary degrees are all female-dominated. On the other hand, engineering degrees with the exception of Industrial Engineering are male-dominated.

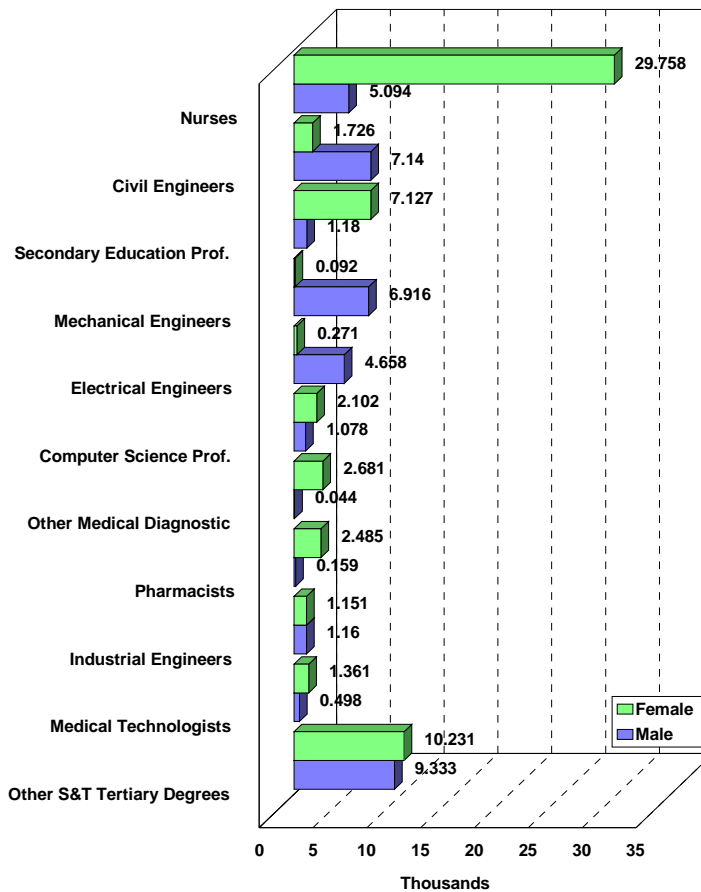


Figure 10. S&T Tertiary Degrees of Filipino Migrants by Age (1988-2004)

Top S&T Specializations of Migrants at Graduate and Post Graduate Level

Although quite small in number, the 1,975 FEs who completed S&T degrees at the graduate and postgraduate level based on the registration data of CFO from 1988 to 2004, are qualitatively the most precious HRST. Still, FEs, who completed a nursing degree at graduate and postgraduate levels, are the largest in this grouping. A distant second are those with postgraduate degree in medicine (168), followed by those postgraduate degree in dental/public health (87) and biology (86). Other S&T fields with the most FEs possessing graduate and postgraduate degree are civil engineering (85), science (76), IT (59), and other engineering specializations such as chemical and industrial (Fig. 11).

Aside from the high cost of educating these select few, these 1,975 FEs who finished S&T graduate and post graduate degrees are most probably the leading experts in their chosen disciplines as they have been equipped with intellectual competence and higher and comprehensive understanding of the theories/principles and practical application of their fields of expertise. Truly, these HRST are not easily replaceable and potentially the future big thinkers and institution builders in the various sectors.

Emigration of Science and Technology-Educated Filipinos (1998-2006)

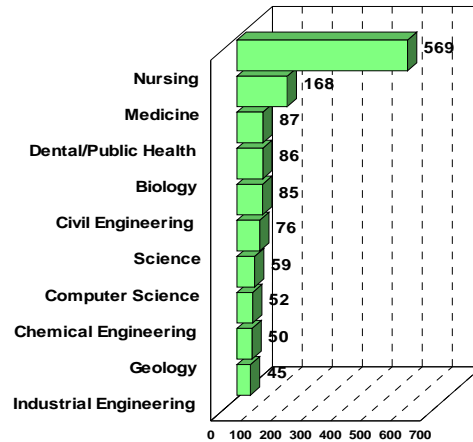


Figure 11. Top Graduate and Post Graduate S&T Specializations of Migrants

Top Post Graduate S&T Specializations of Migrants by Major Country of Destinations

The top graduate and post-graduate S&T specializations of Filipino migrants in USA, Canada, and Australia are nursing, medicine and other allied professions, as well as civil engineering (Fig. 12). Although these numbers are relatively small and might be perceived as negligible when all S&T occupations are taken into account, these professionals are in critical shortages in the Philippines, hence it can be said that these specialized S&T workers are a great loss considering the investment in their education and the value their expertise might add to the economy in general.

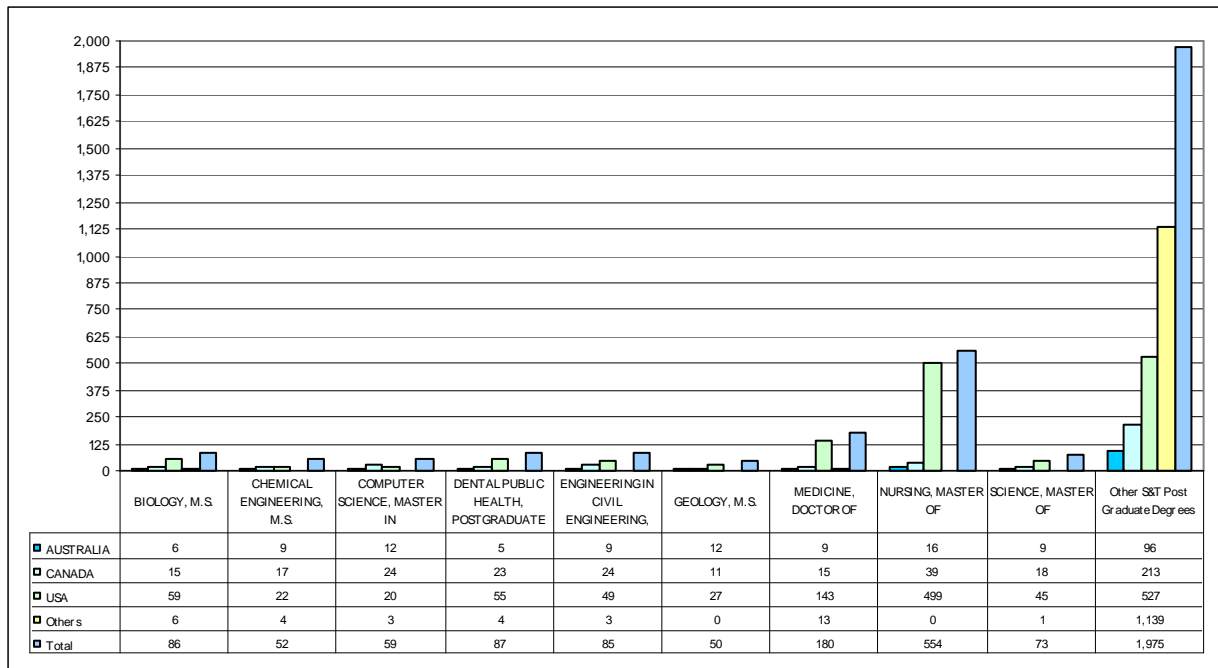


Figure 12. Top Post Graduate S&T Specializations of Migrants by Major Country of Destination

Summaries and Conclusions

The estimated 8 million overseas Filipinos represent almost one tenth of the entire Philippine population. Temporary migrant workers make up almost half of these and majority has been deployed in the western part of Asia. The other 3 million consisted of Filipino emigrants or those who were granted permanent residence to other countries while the rest have gone through illegal migration.

Less than half of the estimated stocks of FEs or about 1.3 million are officially accounted for by the Philippine government. Based on the registration data of these FEs, the top 3 countries of destination are the USA, Canada and Australia. Clearly, these countries are more economically and institutionally advanced compared to the Philippines. Thus, the most likely motivations for migrating are primarily based on economic and other various personal reasons.

Relative to employment, 30% of the CFO-registered FEs have work and a third of these FEs are classified as professional, technical and related workers. In terms of working age group, those in prime working age (25-29) are the largest while genderwise, female FEs are almost twice the number of male. These figures partly indicate that a significant number of FEs are professionals, young and have substantial working experience.

In terms of educational profile, the registration data of CFO have shown that many FEs are highly educated and a sizable portion are tertiary graduates in S&T. Specifically, out of the 1.3 million officially accounted Filipino emigrants in 1981 to 2004, about 246 thousand have graduated at least in college, wherein 39 in every 100 completed S&T undergraduate degrees. Likewise, a little less than 2 thousand have completed a graduate and postgraduate degree in S&T.

By S&T degree or specialization, and across countries from 1988 to 2004, more than one-third of all Filipino migrants who graduated with S&T specializations are in nursing, followed by graduates of other S&T degrees, civil engineering, secondary education, and the rest are in other fields of engineering, computer science and medical related professions. Filipino emigrants with nursing degree are consistently the most visible HRST in terms of their numbers and choice of destinations, confirming the high demand for Filipino nurses at a global scale.

Furthermore, given our large stock of teachers but a modest number of highly qualified secondary education professionals, many are migrating to the USA, which needs many science and math teachers due to shortages of competent secondary teachers and large enrollees in basic education. Similarly, graduates of civil engineering and other engineering such as mechanical, electrical, industrial are also migrating permanently in more developed countries.

Looking at the specific details by major country of destination from 1998 to 2004, an average of more or less 3 thousand skilled workers migrated to Australia based on Australia's official immigration figures. The constant need for skilled migrants in Australia may be attributed to its large migration outflow that is reported at a ratio of 2 persons going out in every 3 who come in. In Canada, the growth in high-tech sector might partially explain the accelerating skills migration pattern of Filipinos moving to this country. The pattern of emigration of S&T-educated Filipinos to the USA seems to be determined by the constant yearly increases in the emigration of those with nursing degree. This pattern is formed possibly

due to rising needs for more medical and health-related personnel, which the US cannot produce locally.

In general, the USA is the first choice of FEs with S&T qualifications most probably because it is home to a large Filipino community, which has blended and easily adapted to American society due to its multiracial composition and openness to diverse culture. Canada and Australia, recognizing that the main driver of innovations and economic growth of the USA rest on its cultural openness and attractiveness to talented and skilled migrants regardless of their ethnicity/nationality, also get a large share of skilled migrants by offering them services and privileges similar to those enjoyed by their citizens in a short period of time. And as expected, a lot of S&T- educated FEs are now living in these welfare state and have already established a community ensuring their smooth integration to their new host countries. It seems the pull factor are the primary driving force in the migration of Filipinos with specific S&T education at the tertiary level due to increasing demand for S&T personnel in industrial and service sectors such as in health, education and ICT.

Based on the findings of the study, there is a considerable permanent loss of HRST. However, a check against the stocks of registered professionals accumulated from 1998 to 2003 reveals that, the extent of brain drain has not reached its critical level as the Philippines has large pool of these professionals who can be tapped to replace the outflows of skilled S&T workers (Table 5).

Table 5. Selected S&T Degrees and Country of Destinations of Filipino Emigrants, Registered Professionals, 1998-2003

S&T Degree	Country of Destinations					Registered Professionals*
	Australia	Canada	USA	Others	Total	
Nursing	382	1,219	11,183	569	13,973	40,138
Civil Engineering	162	1,056	1,192	165	2,575	17,896
Secondary Education	113	180	1,682	296	2,271	586,538**
Mechanical Engineering	105	854	989	83	2,031	11,241
Electrical Engineering	106	792	715	70	1,683	17,646
Pharmacy	22	259	438	49	768	10,022
Medical Technology	82	587	826	75	1,570	10,605

* based on Philippine Labor Market Information website

** overall total from PRC and DepEd

With respect to FEs who completed S&T degrees at graduate and postgraduate level from 1988 to 2004, although quite small in number (1,975), these are qualitatively the most precious HRST. Similar to those bachelor's degree holders, Filipino migrants with graduate and post-graduate S&T specializations in nursing, medicine and other allied professions, as well as civil engineering, also preferred to migrate in the USA, Canada, and Australia. These are the most time-consuming and resource-intensive professionals to produce since not every S&T graduate will be good enough to continue pursuing masteral and doctoral level of education in

S&T discipline, and for those who can do so, a longer time is need before they will eventually graduate in time to replace those who migrated permanently.

Policy Recommendations

The education profile of Filipino emigrants extracted from the database of CFO is a strong indication of skills migration since many of these human resources completed tertiary degrees in S&T. At the bachelors' level, grouping and counting the emigrants by S&T degrees completed, and assuming they were licensed to practice their professions before they emigrate, the size of outflows is not big enough to be considered as massive scale and will not possibly cause a critical labor shortage of highly skilled professionals. However, this pattern and extent may have already changed considering the rapid movement of highly-skilled S&T professionals.

Still those FEs with S&T degrees are a great loss since the development of the local industries requiring these professionals are dependent on the level of skills of the available manpower. To better capture and analyze the current skills migration trend, programs and projects that may shorten the registration time and updating of existing emigrants' records are recommended, i.e., real-time and secured online registration, requiring workers applying for permanent residence visa in other countries to disclose their education, occupation, qualifications, and other vital information in aid of future migration policy studies, etc.

For a long term solution to retain the most skilled professionals (those with masteral an doctoral in S&T) and the leading scientists and engineers (those with postdoctoral degrees in S&T), the government together with the private sectors can set-up S&T universities with well-equipped and functioning R&D laboratories, and fund their proposals, studies and other projects to take advantage of their expertise, education and R&D skills. However, these recommendations will entail a lot of money and may not be feasible because of the risk and cost. Perhaps the most effective program is to organize the FEs and link them to the local and international professional associations and S&T community here to easily solicit their advice, expertise and monitor their stocks which will be initiated by the government at first and turnover to them after a few years.

Finally, it is undeniable that one of the reasons why most Filipinos are enticed to emigrate in these countries has something to do with the economic opportunities, financial incentives and other benefits like higher standard of living and lucrative pay for skilled migrants particularly in S&T. Unfortunately, it will take a long time before we can lure these highly skilled emigrants to come back and practice their professions here.

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