The Financing of Health Care and Health Sciences Education and Training in South Africa

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A dissertation submitted to the Faculty of Commerce, University of Cape Town, in partial fulfilment of the requirements for the Degree of Masters of Commerce (Mcom) in Health Economics

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LIST OF ACRONYMS AND ABBREVIATIONS

ANC  African National Congress
CESM  Classification of Educational Subject Matter
        (as utilised in the SAPSE system)
EPU  Educational Policy Unit
FTE  Full time equivalent
HBTs  Historically Black Technikon
HBUs  Historically Black University
HEU  Health Economics Unit
HSRC  Human Sciences Research Council
HST  Health Systems Trust
HWTs  Historically White Technikon
HWUs  Historically White University
IAHSC  Integrated Academic Health Services Complex
I/R  Instruction and Research
MBChB  Bachelor of Medicine and Bachelor of Surgery
MEDUNSA  Medical University of South Africa
MRC  Medical Research Council
NCHE  National Commission on Higher Education
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<td>NGO</td>
<td>Non-government organisation</td>
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<td>NSFAS</td>
<td>National Student Financial Aid Scheme</td>
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<td>PAWC</td>
<td>Provincial Administration of the Western Cape</td>
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<td>PDoH</td>
<td>Provincial department of health</td>
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<td>PHC</td>
<td>Primary Health Care</td>
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<td>PHP</td>
<td>Public Health Programme</td>
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<td>RDP</td>
<td>Reconstruction and Development Programme</td>
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<td>SAPSE</td>
<td>South African Post Secondary Education (information system)</td>
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<td>TBVC</td>
<td>Trankei, Bophuthatswana, Venda, Ciskei</td>
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<tr>
<td>UDW</td>
<td>University of Durban-Westville</td>
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<tr>
<td>UND</td>
<td>University of Natal (Durban)</td>
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<tr>
<td>UNIBO</td>
<td>University of Bophuthatswana (now the University of the North West)</td>
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<td>UNIN</td>
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<td>UNISA</td>
<td>University of South Africa</td>
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<td>University of Transkei</td>
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<td>UWC</td>
<td>University of the Western Cape</td>
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<td>WFTE</td>
<td>Weighted Full Time Equivalent</td>
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<td>WITS</td>
<td>University of the Witwatersrand</td>
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The usual disclaimer applies.
EXECUTIVE SUMMARY

There are at present 22 universities, 12 technikons and 36 nursing colleges training health personnel. The universities and technikons are primarily funded by the Department of Education as compared to the nursing colleges which are largely funded by the Provincial Departments of Health (PDoH). The current funding of these institutions has come under intense scrutiny, largely due to the financing mechanism's role in the failure of institutions to produce the numbers and types of health personnel required to meet the needs of a comprehensive health system based on the Primary Health Care (PHC) approach (NCHE 1996).

The aim of this study was to critically analyse the funding and expenditure patterns of institutions training health personnel. This included an investigation of the distribution of income from the various sources by geographic areas (i.e. by province), between historically white and black training institutions and between those institutions that are attached to academic hospital complexes and those which are not. The study also attempted, where possible, to determine the unit costs of training different cadres of health personnel.

The methodology included a review of the literature on health personnel education and training, a questionnaire survey of nursing colleges and PDoHs in South Africa, and analysis of the Department of Education's South African Post-secondary Education (SAPSE) data base, which records and monitors the funding, staffing and student data of universities and technikons in South Africa.

The quality and reliability of the data received from the nursing colleges varied considerably across the provinces. This might have been the result of poor information and accounting systems, as well as a reluctance on the part of the colleges to disclose the relevant information. Furthermore, the SAPSE information system is subject to a number of limitations. Firstly, it was difficult to access recent data (only 1992 and 1993 data could be accessed). This considerably limited the extent to which the data presented in this study accurately captures the current financial crisis in higher education and the shifts in government spending on social services (health, education
etc.) since 1994. Secondly, the SAPSE system aggregates data in terms of Classification of Educational Subject Material (CESM) categories, and not by academic programmes, which limited the extent to which the data could be analysed and comparisons made across the various programmes.

For the 1994/95 financial year, a total income of R195 million was estimated for nursing colleges, of which more than 99% was funded by the PDoHs. In 1993, an income of approximately R838 million was allocated to students in health care programmes at the 16 universities and 12 technikons included in this study. Approximately R440 million (52%) of this income was allocated by the Department of Education, in the form of the government subsidy. Technikons were shown to be relatively more dependent than universities on income from the subsidy and tuition fees. Universities, particularly those attached to Academic Hospital Complexes (AHCs), have a greater potential to attract funds from other sources of income, including private grants and donations etc.

The financial sustainability and the poor capacity of technikons, nursing colleges and universities other than those attached to AHCs to attract income from other sources has important implications. It is especially relevant considering that graduates (PHC nurses, medical and dental assistants, environmental officers, etc.) from these institutions will form the critical core of PHC teams. A key result of the study was that in 1993, the income per weighted full-time equivalent (FTE) student was R34,734 for universities attached to AHCs, which primarily train clinicians. In comparison, the allocated income per weighted FTE student at other residential universities was R31,163 and for the technikons was R19,355. Thus, the extent to which the current funding mechanisms support institutions which provide training focusing on the PHC approach, i.e. institutions other than those attached to AHCs is extremely important.

Moreover, the costs to the government of training various cadres of health personnel has become increasingly important, considering that the majority of graduates (mainly doctors) of universities linked to AHCs choose to work in the private sector or to emigration to international markets. In 1992, the costs associated with the emigration of medical, dental and related health care personnel emigrated was approximately R9.4 million (Bunting 1994).
The distribution of expenditure across training institutions by province is an area of equal importance. The highest share of income was absorbed by the nursing colleges, universities and technikons in Gauteng, Western Cape and to a lesser extent, KwaZulu Natal. Nursing colleges in Gauteng, KwaZulu Natal and the Western Cape were responsible for training approximately 37%, 18% and 14%, respectively, of the number of student nurses. These provinces also have the highest concentration of tertiary institutions, particularly universities attached to AHCs, and currently train the largest number of health personnel. Universities and technikons in Gauteng and the Western Cape accounted for approximately 44% and 21%, respectively, of the total Full-time Equivalent (FTE) student enrolments. The concentration of education and training resources in these provinces, especially Gauteng and Western Cape is important considering that these provinces have the highest health personnel to population ratios. The provinces with the poorest health personnel training capacity and the lowest personnel to population ratios are Mpumlanga, Northern Province, and North West. Furthermore, these provinces also contain a relatively larger number of historically black institutions than the other provinces. In 1993, the Historically Black Universities (HBUs) had a higher ratio of FTE students to instruction and research staff than the Historically White Universities (HWUs). The gap in teaching capacity between Historically White technikons (HWTs) and Historically Black technikons (HBTs) was even wider. On average, HBTs had approximately twice as high student to staff ratios than their HWT counterparts. This partly reflects the rapid student growth rate at the historically black institutions.

This study has highlighted the potential influence of the location of tertiary institutions on where health personnel work. This is not only important from an inter-provincial point of view, where improved funding to training institutions in under-resourced provinces might promote an improvement in the distribution of personnel, but also for intra-provincial distributional considerations. As noted previously, while a few provinces have favourable personnel to population ratios, this conceals intra-provincial disparities, particularly between the urban and rural areas. Within the provinces, the possibility of improving and redistributing resources towards training institutions in the relatively less urban and metropolitan areas could be an important mechanism for redistributing personnel.
However, a decision to redistribute resources to under-resourced institutions must also take efficiency implications into account.

One of the most contentious issues facing the health and education sector, is the potential trade-off between improvements in geographic equity and efficiency gains. This study has highlighted two distinct options, both of which are of relevance to the provincial disparities in the nursing college sector and the perhaps more complex inequities experienced in the other tertiary institutions (universities and technikons). The first option of improving the capacity at training institutions in provinces which have been historically under-resourced (Mpumalanga, Northern Province and North West) could be instrumental in improving the distribution of health personnel in those provinces. Moreover, with careful human resource planning, this option might not necessarily entail a trade-off between improving geographic equity and efficiency gains. The alternate option would be for tertiary institutions which have achieved significant economies of scale to increase their intake of students from other provinces, and be compensated by those provinces. The viability of these students then entering community service in their ‘home’ provinces upon graduating needs to be considered as a strategy for improving the distribution of health personnel.

Critical to both these options is improved co-operation and collaboration between the Departments of Health and Education. The NCHE proposal that a co-ordinating body between the two departments be established is critical for two reasons. Firstly, this body can ensure that the education and training of health personnel is appropriate for the needs of a comprehensive health care system based on the PHC approach. Secondly, it is important for identifying areas of duplication in the education and training of health personnel. This is of particular relevance to the training of nurses, which occurs under both the departments of education and health.

Improvements in the management information systems has become a standard recommendation, and almost a cliché in most health sector studies in South Africa. However, the importance of improvements in the recording, processing and analysis of financial and student data at all tertiary institutions cannot be over-emphasised. Firstly, this information is important for identifying areas of inefficiencies at the institutional level.
Secondly, from a policy point of view, management information systems have a critical role to play in ensuring that funds are allocated to institutions that are training personnel with appropriate PHC skills, and that these personnel are deployed in areas of greatest need. Health care provision is a labour-intensive process. Adequate human resource planning, production, distribution and utilisation is critical to ensure that the goals of a restructured health system in South Africa are achieved.
CHAPTER 1:
BACKGROUND, AIMS AND METHODOLOGY

1.1. BACKGROUND

The role and financing of health care personnel is considered critical for the transformation of the South African health system. Two key reasons for their importance is the labour-intensive nature of the health system (and thus the need for appropriately trained staff to deliver health care) and the fact that health personnel account for more than 70% of health sector budgets and expenditure (Mametja and Reid 1996). Within the operations of the health sector, human resources production and financing are often cited as the fundamental issues in understanding the improved efficiency of the sector (Abel-Smith et al 1972).

Health care and health science students are trained across the country at a multitude of tertiary-level institutions. These institutions include universities, technikons and nursing colleges, of which there are approximately seventy recorded in South Africa. In South Africa, health personnel education and training (other than college based nursing training and post-graduate medical training), is the statutory responsibility of the Department of Education, from which subsidies are derived. The Department of Health, via its provincial departments, is responsible for college based nursing education and post-graduate medical training.

In South Africa, the financial crisis confronting higher education has intensified since the mid-1980s, mainly as a consequence of the new, stabilising macro-economic imperatives of the government. In addition, the need to increase the allocation of resources to primary and secondary education, has meant subsidy cuts for higher education. The consequence of this for many tertiary institutions, in particular historically black universities\(^1\) (HBU), has been a rapid increase in student fees and numbers, in the absence of alternative funding sources. Simultaneously, the demand for appropriately trained and qualified health care

\(^1\) The use of the terms "historically black universities" (HBU) and "historically black technikons" (HBT) are used to signify that for historical reasons, student enrolments in these universities or technikons were predominantly black (i.e. African, Coloured and Indian). The currently used terms are "historically disadvantaged" with HBU and HBT or "historically advantaged" with HWU (historically white universities) and HWT (historically white technikons). (Subotzky 1997). These terms are used interchangeably in this report.
personnel has increased, particularly when the losses of human resources to the private sector and international markets are taken into account (Pillay 1993, and Rispel and Behr 1992).

Within the South African education sector, increased pressure on national revenue available for education has in turn meant pressure to examine the budget allocations to primary, secondary and tertiary education. The funding of tertiary level education has come under particular scrutiny, with potential implications for future funding of health personnel education.

It is evident from the review of national policy documents of both the Departments of Education and Health that there is very limited information on the financing available for the education and training of health science students. The National Commission on Higher Education (NCHE), established by the Department of Education in 1994, set out (through a Health Science Working Group), to investigate a new financial and organisational model for the transformation of education and training (NCHE 1996). To date however, there still remains a lack of information on the financial flows and allocations to education and training of health care human resources.

International experience reveals that poor and deficient planning, production and management of human resources have significant and often detrimental implications for the overall delivery of health services (Mejia and Hall 1978, Green 1992, Moorman and Pick 1996). It is argued that poor co-ordination between the planning, production and management components of the human resources development process largely accounts for the problems that are experienced in the delivery of effective health services.

In addition, in many countries, the planning and management of health human resources are usually under the jurisdiction of the health sector, while large sections of production of health human resources falls under the control of the education sector. This organisational arrangement suggests the need for closer co-ordination in the planning and production of health human resources between the two departments. Poor co-ordination between the ministries often has negative implications for the delivery of health services. Furthermore, because of the close and necessary inter-action between the sectors, many of the
problems facing the education sector have immediate (albeit medium-term) repercussions for health care human resources. This factor is what some commentators argue to be a cornerstone of the experience in South Africa (NCHE 1996).

The current funding arrangements have been criticised on the basis of allocating a disproportionate amount of resources to tertiary level care at the expense of Primary Health Care (PHC). For example, in examining the situation of universities attached to academic hospital complexes, the financial allocation for health personnel education and training is largely bound into these complexes through the joint agreement system. Thus, there has been a consequent failure to produce the types and numbers of personnel necessary to meet the needs of the comprehensive PHC approach.

Furthermore, the inherited system of training and educating health personnel in South Africa is highly fragmented. For example, the training of nursing personnel occurs at universities, technikons and nursing colleges. Those students training at colleges, have been funded by provincial Departments of Health (PDoH). It has been argued that this system of funding has to a notable extent marginalised the students' training needs in favour of health service obligations. The emphasis on hospital-based health care has been further emphasised by the "system of joint agreements and appointments", which essentially are agreements that govern the funding arrangements between academic institutions and the various health service authorities. These funding arrangements are regarded as having contributed to institutional and geographical imbalances, which has introduced further inequalities.

The historical consequence of the poor and inappropriate funding and organisational arrangements has been an unequal system of institutional and resource hierarchies in the health personnel education and training system. The purpose of this review of funding is to contribute towards the establishment of funding patterns that will train and develop health personnel in a more appropriate and effective manner.²

1.2 CONDUCTING AN ANALYSIS OF THE “FINANCING OF HEALTH EDUCATION AND TRAINING IN SOUTH AFRICA”

This study was linked to a larger study co-ordinated by the Education Policy Unit (EPU) and the Public Health Programme (PHP) at the University of the Western Cape (UWC). The aim of the broader study is to:

“Present proposals to facilitate the planning and implementation of appropriate human resource development policies, programmes and organisational arrangements in the health system and at post-secondary institutions.”

The purpose of this study was to:

- provide a review of the nature and extent of the current levels of expenditure/financial allocations for health sector human resource development (education and training), and
- estimate the costs of training health care and health sciences students at tertiary institutions in South Africa.

1.2.1 Aim

The overall aim of the financing component is to provide:

a review of the financing and distribution of expenditure on health sector personnel education and training (health care and health science) in South Africa.

1.2.2 Objectives

In focusing on the sources of finance, expenditure and student data on health care and health science programmes at tertiary institutions, the objectives of the study are to:

1. Quantify the total expenditure on health personnel education and training across tertiary institutions (universities, technikons and nursing colleges);

2. Analyse the geographic distribution of health personnel training expenditure and

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resources;

3. Assess the total expenditure by tertiary institutions by source of finance (e.g. Department of Education and PDoH); and

4. Determine the unit costs (e.g. cost per student per annum) of specific categories of health care personnel by conducting a cost analysis as per output data.

In reviewing the sources of finance and expenditure and data on student unit costs, this study seeks to provide information pertinent to the process of generating recommendations for the transformation of the nature of financing health care and health science education and training in South Africa.

1.3 THE INITIAL RESEARCH PROPOSAL AND FACTORS UNDERLYING ITS REVISION

Initially, it had intended to undertake an extensive and detailed survey of all institutions involved in the training and education of health personnel. An initial investigation indicated that this would not be possible, for the reasons summarised below.

1.3.1 Factors Underlying the Review of the Initial Protocol

1.3.1.1 Conducting an independent study of tertiary institutions in South Africa

A national questionnaire survey of tertiary institutions (universities, technikons and nursing colleges) and the nine PDoH had been envisaged as a necessary research process to achieve the objectives of the study. At the outset, given the relatively limited nature of research into this particular area, it was considered essential to conduct a pilot survey. The pilot questionnaire survey was aimed at tertiary institutions, not only for the purposes of establishing the relevance of the questionnaire, but also to determine the capacity of the institutions to provide the required information.
Questionnaires for each of the universities, technikons, nursing colleges and technikons, and the PDoH were developed. The questionnaires focused on three key areas that were central to addressing the objectives of the study. These areas included:

- identifying and quantifying all expenditure and the sources of finance available to the post-secondary institutions;
- describing and analysing the geographic distribution of expenditure and resources across institutions; and
- determining the unit costs (e.g. the cost per student per annum and per graduate) of specific categories of health personnel (e.g. doctors, nurses, health inspectors).

The sample of institutions chosen for the pilot reflected both the mix of institutional types [e.g. Historically Black Universities (HBUs) and Historically White Universities (HWUs) and Historically White Technikons (HWTs) and Historically Black Technikons (HBTs) and the institutions' close physical proximity. The purpose of undertaking an initial survey of a PDoH, was to determine the contributions made to academic health complexes in terms of joint appointment agreements and financial support to students in health care and health science programmes (e.g. nurses).

The pilot questionnaire was circulated to the finance divisions of six tertiary institutions involved in health care and health science education and training and the PDoH in the Western Cape.

These targeted institutions included:
- **Universities**: UCT and UWC;
- **Technikons**: Peninsula Technikon and Cape Technikon;
- **Nursing colleges**: Carinus Nursing College and Sarleh Dollie Nursing College;
- **Provincial Department of Health**: Provincial Administration of the Western Cape (PAWC).

The respondents from the universities and technikons were unable to complete the pilot questionnaire. The key problems cited were that their information systems did not allow for
financial, student and personnel data to be dis-aggregated to faculty and departmental level. Secondly, the time factor associated with accessing the data for the year under review would require considerable effort that could not be justified under their responsibilities.

The respondents from the nursing colleges and the PAWC PDoH were able to provide the information as required in their pilot questionnaires. Both indicated strong support for the gathering of data related to the objectives of the study. In addition they suggested that most nursing colleges and PDoHs would be able to access the information as specified in the pilot questionnaires.

In summary, the overall response to the pilot questionnaires raised important questions as to the viability of the initial methodology, and as a result the ability to meet the objectives, especially with regard to obtaining dis-aggregated data to degree and diploma level (that is, per medical student or professional nurse). Thus conducting an independent survey of universities and technikons proved to be unfeasible.

Consequently, discussions were held with Dr. Dave Cooper (UCT), Professor Ian Bunting (UCT) and Mr. George Subotzky (EPU, UWC), all of who have extensive experience in the area of research on tertiary institutions. The overall conclusion that emanated from the discussions and the pilot questionnaire findings, was that the initial methodology, namely that of a questionnaire survey of tertiary institutions, would not adequately obtain the required data for meeting the objectives of the study. The institutional respondents' concerns were particularly important to the revision of the methodology. The revised process and reliance on secondary data sources are outlined below in Section 1.3.2.

1.3.2 Key Objectives and Methodological Revisions to the Initial Protocol

Based on the pilot survey feedback received from the heads (including the finance officers) of the nursing colleges and PDoH and the inputs of education sector researchers, the methodology was revised.
Given the successful pilot survey and response to the questionnaire for nursing colleges and provincial administrations, there was overall consensus that the national questionnaire survey should proceed as planned.

With regard to the universities and technikons, the alternative reviewed and subsequently pursued, related to accessing the Department of Education's SAPSE institutional information database. This was accessed from the EPU and UCT. This adaptation from the envisaged national institutional-level survey, therefore sought to introduce standardised secondary data according to SAPSE classifications for all university and technikon institutions. In this manner, the revised methodology was linked to the methodology used in an earlier study undertaken by Professor Bunting in 1994 for the Health Expenditure Review project (Bunting 1994, McIntyre et al, 1995). In addition, the EPU database, the source for the baseline data for HBUs, served to cross validate the UCT database information.

1.4 RESEARCH METHODS
This sub-section serves to provide an initial overview of the revised methodology guiding the study. Chapters 3 and 4 provide detailed information on the methodology applicable to the various institutional databases as utilised for this report.

1.4.1 Study Design
The study was conducted using several methods which included:

a. a review of international and South African literature on health care and health science education and training;

b. a questionnaire survey of nursing colleges (see Appendix 3);

c. a questionnaire survey of PDoH in South Africa (see Appendix 4); and

da. accessing and analysing existing data bases (notably the UCT-SAPSE and EPU databases for health care and health sciences education and training at universities and technikons.
The literature review focused on two main aspects, namely to:

- investigate how health education and training is financed within South Africa as compared to other developing and developed countries; and
- explore the key theoretical concepts of relevance to the study.

The initial intention of the study had been to access the most recent financial and student output data available, namely for 1995/96. However, the data varied across the institutions and was largely dependent on what information had been captured and entered onto institutional level databases. As a result, the data obtained in this study for the institutions were for the following financial years:

- 1992/93 in the case of the universities and technikons (as linked to the UWC and UCT databases’ most recent information available);
- 1994/95 in the case of the nursing colleges (as linked to the national nursing colleges survey); and
- 1994/95 in the case of the PDoH (as linked to the national provincial survey).

This differing financial year information poses problems for aggregating and comparing total expenditure across institutions for a specific financial year.

1.4.2 Study Population

The study population consisted of all tertiary institutions which provided training and education in the health sciences in South Africa. These tertiary institutions included:

- 36 nursing colleges;
- 22 universities; and
- 12 technikons.

See Appendices 1 and 2 for a list of all tertiary institutions included in the study. In addition, all nine PDoH were included in the sample framework. As outlined above a separate national PDoH questionnaire was developed.
1.4.3 Data Sources

1.4.3.1 Nursing colleges
A listing of public sector nursing colleges was obtained from the South African Nursing Council (SANC) and validated with the South African Nursing Association (SANA) Hospital and Nursing Yearbook (Engelhardt 1995). Each nursing college was mailed a questionnaire and extensive telephonic follow-ups of non-respondents were undertaken (see Appendix 1: List of Nursing Colleges surveyed).

1.4.3.2 Universities and technikons
Data was obtained from existing databases from UCT (Faculty of Social Science) and UWC (EPU) for the 1992/93 period (see Appendix 2: Universities and Technikons included in the study). Unfortunately at the time of the study the 1992/93 data was the most recent and available information.

1.4.3.3 Provincial Departments of Health (PDoH)
A list of provincial human resources directorates was obtained from the National Department of Health's (NDoH) human resources directorate and each of the provincial directorates were mailed a questionnaire.

1.4.4 Data Collection And Analysis

1.4.4.1 Nursing colleges
Questionnaires were sent to the principals of nursing colleges across all nine provinces in South Africa. As indicated above, the questionnaire was focused on accessing information on the expenditure patterns, sources of finance and courses offered by the colleges. As indicated above, an initial pilot of the questionnaire to selected nursing colleges in the Western Cape served to develop an appropriate and relevant questionnaire.
1.4.4.2 Universities and technikons
Finance, student and staff data of universities and technikons were drawn from the data bases from UCT (Faculty of Social Science) and UWC (EPU). A separate database was constructed from the data accessed.

1.4.4.3 Provincial Departments of Health (PDoH)
Questionnaires were circulated to all PDoH. The objective of the survey was to obtain information on provincial departments' expenditure on academic health complexes. Also, information on provincial departments' financial support to students enrolled in health personnel education and training programmes was obtained. The research instrument was piloted with the Chief Directorate Hospital Services of PAWC (Dr J. Kane-Berman). Various key methodological issues commented upon were reviewed and incorporated into the final questionnaire.

1.4.4.4 Data Entry and Analysis
All institutional data was recorded on separate databases using Microsoft Excel database and spreadsheets. These included universities and technikons, nursing colleges, and the PDoH. Where possible data was cross-validated (e.g. between UCT and UWC SAPSE databases for HBUs and HBTs) and follow-up was conducted where information was not provided according to questionnaire outlined areas. Data were analysed according to the set objective areas.

1.4.5 Limitations of the Study

1.4.5.1 Type of information captured
One of the most severe limitations of the study has been the quality of information available to undertake an assessment of this type. This is linked to the lack of central databases and adequate documentation of the financing of health care personnel education and training. Recognising this national-level issue, various modified strategies were pursued to establish a baseline according to the objectives of the study.
1.4.5.2 Financial year information and time-lags

*Recent financial data* which adequately reflects the expenditure trends at institutions is extremely difficult to access. These difficulties are to a large extent the consequence of inherent weaknesses in the information system documenting the activities of universities and technikons. This issue is linked to two primary areas. Firstly at the individual institutional levels there are varying capacities to capture and enter pertinent expenditure and student data. Only once institutions have successfully captured and validated their data at their respective SAPSE offices do they forward it to more centralised facilities. There are therefore quite considerable time lags associated with this process. Also, the most recent data available from the SAPSE data-base relate to 1992/93.

1.4.5.3 Dis-aggregated financial and student information

The SAPSE database does not provide information that is dis-aggregated down to academic programme level. This seriously limited the extent to which the data could be analysed, and consequently the achievement of all the research objectives.

The above mentioned limitations raise questions as to the validity and appropriateness of the SAPSE data in the current socio-economic and political context. The 1992/93 SAPSE data-base clearly does not reflect the shifts in government sector social spending in the past few years, and the implications thereof for the health and education sectors.

These data limitations necessitated that the objectives, scope and depth of analysis of the study be reconsidered (refer to Section 1.3). As a result of the data limitations, the focus of this report has been directed at providing an initial account of funding of health personnel education and training.

This study however provides important baseline data for an initial assessment of the current situation regarding the financing of health science training in South Africa. The data needs however, to be examined and utilised with caution. Further investigation and follow-up would serve to improve the data and validity thereof.
National departmental support and co-ordination (e.g. from the Chief Directorate of Human Resource Development of the national DoH) would have helped in achieving a higher response rate to the surveys conducted at the nursing college and PDoH.
This chapter is divided into two main sections. The first reviews the key economic concepts of relevance to a discussion on the financing of the education and training of health personnel. The second (section 2.2-2.4) provides a discussion of the distribution and production of health personnel in South African, within the framework developed in the first section.

2.1 Underlying theoretical issues

2.1.1 Human Resource Planning
Green (1995) stresses that the role of planning "...is a response to the dilemma of a scarcity of resources in comparison to the competing health care needs". The pivotal role of human resource planning within broader health sector planning is increasingly being recognised, considering the labour-intensive nature of health services (Abel-Smith 1994, Green 1992, World Bank 1993). The accessibility of primary care services for many South Africans, is dependent on the appropriate deployment of suitably skilled health personnel.

Abel-Smith (1994, p91) emphasises that the "role of planning human resources for health is to ensure that the right mix of skills with the desired orientation is available in the right place and that this is achieved with minimum wastage". Arising from this operational definition, are the two key components of human resource planning. These include the supply of and demand for health personnel (Green (1992). The purpose of planning is to identify and implement strategies to address imbalances that arise between the supply of and demand for health personnel. There are several approaches and models that can be used to determine health personnel requirements (i.e. demand). These include health care demands, health needs, personnel to population ratios and health service-targets. For a detailed discussion of each of these approaches, refer to Hall and Mejia (1978).

Estimating the present and future supply of health personnel, is the other critical
component of human resource planning. Green (1992) argues that the supply of health personnel depends on the current number of health personnel working in the health sector (including the private sector); entry and exit of health personnel in the sector, in relation to emigration, immigration, retirements and deaths; and output of the tertiary institutions engaged in education and training of health personnel. On the basis of an assessment of demand and supply of health personnel, Green (1992) identifies several policies that can implemented in order to address imbalances between demand and supply. On the supply-side, policies include (Green 1992):

1. “altering the output of tertiary institutions; or
2. altering the content of training programmes to produce different skills; or
3. identifying areas where staff can be used more efficiently; or
4. altering personnel policies to recruit health personnel currently not working in the health sector; or
5. altering personnel policies to improve retention rates of staff; or
6. recruit expatriate personnel”.

On the production side, the output (graduates) of training institutions is dependent on the enrolments of institutions, the educational requirements for entry (Abel-Smith 1994) and the efficiency and productivity of education and training resources, amongst other factors. Issues relating to resource allocation, efficiency and equity have been the focus of significant debate in the area of health care, primarily in relation to health care financing and health service delivery. The area of resource allocation, efficiency and equity is clearly pertinent to a discussion on human resource planning, in relation to the financing of the education and training of health personnel.

2.1.2 Production of Health Personnel
The appropriate, efficient and equitable use of the available resources is a major concern for policy makers. There are several definitions of resource efficiency, but the most appropriate for the present discussion is that by Kutzin (1995), where allocative efficiency refers to the “…distribution of resources to priority activities” and technical efficiency emphasises the “…management and use of the resources that have been allocated”. An alternate definition of technical efficiency is “producing the most output
with a given quantity of inputs” or “producing a given amount of output with the minimum of resources” (Hanson and Gilson 1993).

Kutzin’s definition of allocative efficiency emphasises “priority activities”, and has several applications to the production of health personnel. In terms of broader education policies, this might relate to the reallocation of resources between different levels of education (e.g. primary, secondary and tertiary education. In the production of health personnel, allocative efficiency is concerned with firstly, the distribution of resources amongst different types of tertiary institutions (e.g. nursing colleges, universities and technikons), and secondly, the geographic distribution of institutions. The issue of allocative efficiency also arises when considering the distribution of resources in relation to the education and training of different cadres of health personnel.

The cost per unit of output (e.g. graduate) is an indicator that can be used to assess technical efficiency and performance amongst tertiary institutions. It might be found that institutions with different expenditure patterns have comparable unit costs. This might be on account of differences in their number of graduates, the management of these institutions and the utilisation of their resources. Information on unit costs can be also used to identify areas of either economies or diseconomies of scale. Economies of scale result when the number of students graduating increase at a faster rate than the costs associated with the institution. If an institution is not operating at scale efficiency, policy makers are faced with several options. These options might include increasing the student intake, combining institutions and the least favourable option being the closure of the institution. However, such policy decisions are not made solely on the basis of improving efficiency, but have increasingly incorporated equity considerations.

Much of the debate and controversy over the interpretation of ‘equity’ in terms of economic and philosophical considerations has been in the area of health care financing and provision. However, there is little disagreement that equity essentially incorporates the notion of ‘fairness (Donaldson and Gerard 1993). For the purposes of this study, the most appropriate definition is that put forward by Donaldson and Gerard (1993).
They define equity in terms of two dimensions:

- 'financial equity, i.e. burden of financial contributions should be based on ability to pay; and
- equity of access.'

'Financial equity' is particularly significant production of health personnel, where increased costs of education and training can impact adversely on historically disadvantaged students. Donaldson and Gerard (1993 p225) stress that those who are disadvantaged, should not be "...given an additional financial handicap". In addition to increasing their burden of payment, it exacerbate inequities. Rather, an individual's contributions to costs should be determined by his/her ability to pay.

Costs to the students are but one of the barriers that influence the utilisation of tertiary institutions. Other barriers might include the extent to which the distribution of institutions between geographic areas is unequal. Differences and inequities in resource allocation between various institutions (e.g. nursing colleges, universities and technikons), clearly has important implications for the numbers and cadres of health personnel that are trained.

Both the objectives of equity and efficiency cannot be simultaneously be achieved, i.e. a trade-off exists between equity and efficiency (Donaldson and Gerard 1993). This makes it especially difficult for policy-makers, when faced with decisions over resource allocation. For example, a policy to improve the equitable allocation of resources to under-resourced tertiary institutions might require a process of redistribution away from those that are better resourced. This process of redistribution might be at the cost of efficiency (both technical and scale) on the part of the better resourced institutions.

In the following sections the distribution and production of health personnel in South Africa will be discussed. In the context of human resource planning, efficiency and equity issues, the focus will be to highlight the differences between:

- Provinces which are historically 'well-resourced' and those provinces which fall under the former-homelands,
• Universities attached to AHCs and other health personnel education and training institutions;
• HWIs and HBIs; and
• Allocation of resources for the education and training of different cadres of health personnel.

2.2 CURRENT SITUATION
Pick (1995 p103) describes the human resources for health care in South Africa as having “developed in an ad hoc and fragmented manner”, which has resulted in imbalances and inequities in the production and distribution of human resources.

2.2.1 Distribution of Health Human Resources
The ANC National Health Plan (1994) and Mametja and Reid (1996) have identified the following problems as being the most challenging in the distribution of health human resources:
• The over-concentration of health personnel in the private sector, with approximately 43%, 42% and 13% of general practitioners, specialists and dentists respectively working in the public sector (Rispel and Behr 1992);
• The under-provision of health personnel in rural and peri-urban areas, and in informal settlements. In 1980, the doctor to population ratio in the urban areas was 1:1,237 and in rural areas only 1:5,396 (Pick 1995); and
• The over-concentration of public sector health workers in sophisticated hospital-based curative settings, and insufficient workers in primary levels facilities. Approximately 61% of doctors, 82% of specialist doctors, 36% of nurses and 51% of pharmacists employed in the pubic sector, were working in academic and tertiary hospitals (McIntyre et al. 1995).

2.2.2 Production of Health Human Resources
The human resource planning problem of inappropriately trained health personnel in relation to health care needs has been extensively reviewed and documented (ANC National Health Plan 1994, Pick 1995). More specifically, problems relating to the training of health personnel include:
• Insufficient personnel with the necessary training or skills to manage change in accordance with the PHC approach; and
• Insufficient or inappropriately trained staff in fields such as environmental health, health education and promotion, advocacy and management.

2.3 ROLE OF FINANCING OF AND EXPENDITURE ON HEALTH EDUCATION AND TRAINING IN CONTRIBUTING TO CURRENT SITUATION

There are many factors which contribute to the human resource problems being experienced. A framework is presented here for later evaluating the possible role of financing mechanisms and expenditure patterns in higher education in contributing to these problems.

There are at present 22 universities, 12 technikons and 36 nursing colleges offering programmes in health sciences and health care. The universities and technikons are primarily funded by the Department of Education and the nursing colleges and the academic health complexes are largely funded by the Department of Health. The other smaller financing sources include student fees, government and private grants and donations etc.

2.3.1 Main Sources of finance

2.3.1.1 Departments of Health

The nursing colleges are funded through the provincial departments of health (PDoHs). Presently, student nurses are employees on hospital establishments for the duration of their training.

The funding of professional medical and dental personnel working in academic health complexes (AHC) has been controlled through the systems of joint agreements and joint appointments between the provincial health authorities and tertiary institutions. Essentially the "joint agreement" contract determines what share of the staff member's salary the PDoH and the tertiary institution will contribute to and finance. The terms of the agreements between PDoHs and different tertiary institutions vary with regard to the staff (professional versus non-professional), facilities and equipment that are covered, resulting in a highly inequitable system of funding.
2.3.1.2 Department of Education

Funds are allocated to universities and technikons on the basis of the South African Post Secondary Education (SAPSE) 110 formula. The formula is based on (Subotzky 1996):

- Student enrolment (with more weighting credited to enrolments in the sciences and at the postgraduate level);
- Student success rates; and
- Research outputs.

2.3.2 Current Funding Mechanisms

2.3.2.1 Departments of Health

The present status of nursing students as employees of the PDoHs and students of the nursing colleges has come under considerable scrutiny and review. This arrangement has in many instances led to a conflict between the education needs of the students and the service needs of the hospitals, often to the detriment of the training needs.

The differences in the terms of the agreements between provincial health authorities and different tertiary institutions has favoured AHCs, while programmes which are based at primary and secondary level and do not train doctors and dentists (mainly those at technikons and nursing colleges) have been under-resourced. This system has also significantly contributed to the inequity between universities with medical and dentistry programmes (mainly HWUs) and those without (HBUs). This has translated into higher student to staff ratios, low percentages of postgraduates and poor research productivity at the HBUs (NCHE 1996).

2.3.2.2 Department of Education

Currently, the South African higher education sector faces several organisational and financial challenges, which include: rapidly increasing student fees and student numbers; the absence of a viable student loan scheme; and the lack of clarity on a medium-term framework for subsidies to higher education institutions (NCHE 1996).
The SAPSE formula for allocating funds to institutions has been the focus of considerable debate, especially around the areas of the:

- **diverse funding arrangements** for universities, technikons, colleges and institutions previously administered under the former homelands or TBVC states; and
- **inequities in funding between HBUs and HWUs**, where the present system of funding which gives additional weighting to students enrolled in the sciences, success rates and publishing records, has favoured the development and progress of the Historically White Institutions (HWIs) (NCHE 1996; Pillay 1993; Subotzky 1996).

### 2.3.2.3 Dual funders

Currently, there is considerable overlap in the education and training of health personnel, which has resulted in inefficiencies and the wastage of limited resources. For example, nurses are trained at nursing colleges, technikons and universities. Furthermore, the lack of co-ordination between the Departments of Health and Education and poor human resource planning has contributed significantly to the present situation where the education and training of health personnel is to a large extent inappropriate for the health needs of the majority of South Africans.

### 2.3.3 Macroeconomic Context and Impact on Departments of Health and Education

South Africa's real Gross Domestic Product (GDP) growth rate declined from 3.3% in the 1970's to 1.2% in the 1980's (NCHE, 1996). In addition, South Africa's unemployment rate of 32.6% (1994) is amongst the highest in the world (NCHE, 1996). Despite there being an upswing in the economy, the government has emphasised the need to reduce the size of the budget deficit, through tightening public sector spending and increasing revenue. As a result, the health and education sectors have to compete with other social sectors for limited tax revenue. Thus, it has become imperative for each of the social sectors to identify and prioritise areas of greatest need during this period of fiscal constraint.

In the education sector, policy-makers have prioritised basic, primary and secondary education and training (NCHE, 1996). In order to expand and improve basic education and training, it has been necessary to reallocate resources from tertiary to primary education. As a result, large cuts to the budgets for tertiary education have been effected. This has
the HBIs have had to increasingly rely on tuition income, thus shifting the financial burden onto students (EPU, 1996).

2.3.5 Proposed Changes in Funding

2.3.5.1 Proposals of the National Commission on Higher Education (NCHE)

The crises facing the education sector led to the establishment of the National Commission on Higher Education (NCHE) in 1994. The purpose of the Commission was to develop a framework for transforming higher education in South Africa. In view of the complex nature of organisation and financing of health personnel training and education, the subsequent appointment of a Health Science Working and Reference Group by the NCHE was considered necessary. The members of the group were drawn from both the health and education sectors, given that both sectors contribute to the organisation and funding of health personnel education and training. The task assigned to the group was to (NCHE 1996):

- develop an organisational and financing model for the education and training of health care personnel; and
- outline the responsibilities of the health and education sectors.

In the final report to the Minister of National Education, the NCHE proposed the “creation of single education system and a new public funding formula” all of which will be co-ordinated by a Higher Education Council (Sunday Independent 25/08/96). The creation of a single education system is argued as a necessary step in drawing together universities, technikons and colleges, since presently these institutions function, are organised and are funded independently of one another. The most significant implication arising from this has been the recommendation that the nursing colleges be relocated within the Department of Education, and that they be linked to the technikons and universities. This proposal in turn raises the issue of funding. The debate have centred around whether the present system of funding nursing students on the basis of salaries should be replaced by a system of bursaries.

The Health Science Working and Reference group (1996) also proposed far reaching reforms to health science and health education in their proposal “A Future Organisational and Financial Model for the Health Sciences” (see Box 2.1 for a summary of the key
proposals). Central to the proposals on the restructuring of the organisation and funding of health personnel education and training, is that any future model has to give effect to the PHC approach, which is seen as the key mechanism for addressing the inequities and inefficiencies within the present health care system (NCHE 1996).

Box 2.1  Proposals of the Health Science Working and Reference group (1996)

The key proposals of the group were that (NCHE, 1996):

- any future organisation and funding model of health care education should give effect to the PHC approach adopted by the national health system;
- there should be an emphasis on equity;
- the model should be consistent with the new funding proposals for higher education in general;
- those provinces which lack access to educational institutions for health personnel should be prioritised;
- all health science educational institutions should be enabled to enter into joint agreements with the health services;
- if the higher education budget for health personnel education is to be routed through the PDoHs, the latter are acting merely as agencies and that these funds may not be diverted for other purposes;
- there should be subsidies for short-courses, related programmes and training which will provide for a more complete and coherent system of health science education and will allow for considerable expansion of in-service and continuing education training; and the remaining costs should be shared between employee organisations and the individuals undertaking such courses;
- where necessary, a differential should be maintained between the more-favourable subsidy generated by students in the Natural Sciences as opposed to those in the Humanities, which could be an incentive for the development of the health sciences in the future, particularly in those institutions where the Natural Sciences component is presently small; and
- 'base funding' should be provided for those health authorities which maintain and develop service facilities where education and training take place. These should include tertiary hospitals, district hospitals and community clinics. In addition, incremental funding should be awarded to health service providers for their academic activities.

Furthermore, the group proposed that a Joint Health Personnel Education and Training Co-ordinating Committee be established between the Departments of Health and Education, the purpose of which would be to develop policy and co-ordinate the organisation and financing of the health-related education sector.
The objectives of the committee would be to (NCHE, 1996):

- Advise tertiary institutions (universities, technikons and nursing colleges) on the numbers, size and location of these institutions and to ensure that all provinces have access to them;
- Determine the distribution of the training programmes between tertiary, secondary and primary care facilities; and
- Be responsible for determining the respective budgetary responsibilities of the departments of education and health for the educational and health delivery services that each academic health centre is required to deliver.

The group also called for the establishment of a Funding Subcommittee, appointed by the Joint National Health Personnel and Training Co-ordinating Committee, which will in effect be a collaboration between the education and health sectors. “The purpose of this subcommittee will be to create a strategic human resource development plan for the delivery of health care personnel, which can adequately meet the needs of the population by 2005” (NCHE 1996).

The responsibility for the education and training of students in the health care and health sciences will be held jointly by the Joint Health Personnel Education and Training Co-ordinating Committee and regional Integrated Academic Health Service Complexes (IAHSC’s) (Sunday Independent 26/04/96). The IAHSC’s will include all institutions in a particular region offering health science education at all levels of the system (Sunday Independent, 26/04/96). Professor D Sanders, professor of Public Health at UWC and chair of the Health Sciences Working Group, stated that “proposals to change the nature of the academic health complex are the most radical proposals of the document in that they call for the faculty of medicine to extend way beyond teaching hospitals. The guiding principles behind this is that the IAHSC’s will result in a base of generalists being produced with a few specialists, rather than specialists being produced with a small core of doctors and nurses” (Sunday Independent, 26/04/96).
2.3.6 Conceptual Framework

Section 2.2 has attempted to explore the possible links between the current health human resource problems and the production of health personnel, particularly in relation to sources of funding. Some of the key areas which will form the basis of the analysis and discussions in the following chapters are highlighted below.

Although it is clear that the Departments of Health and Education have played significant roles in the training of health personnel, there appears to be limited data documenting the contributions made by each of these departments. This is particularly a problem when one considers the dual funding of AHCs. The extent to which the financing agreements between the Departments of Education and Health and universities linked to AHCs is essential in order to provide a comparison of the funds which are allocated to other residential universities and technikons. This is particularly important given that the majority of graduates (mainly doctors) of universities linked to AHCs choose to work in the private sector, after being trained at considerable cost to the government. The extent to which the current funding mechanisms support universities other than those attached to AHCs and technikons, which provide training emphasising the PHC approach, needs to be determined.

Since the majority of the universities attached to AHCs are HWUs, an estimation of the funds allocated to HWUs and HBUs is necessary. This is particularly important in order to assess the extent to which HBUs have been disadvantaged by the historical funding arrangements. The current education crisis has impacted harshly on both historically white and black institutions. However, as pointed out by Subotzky (1997) the crisis has had a particularly devastating effect on the financial viability of the historically black institutions. Here again, it is important to determine the extent to which institutions have been able draw on other funding sources during budgetary cut-backs.

The current education crisis also carries implications for the proposal that the nursing colleges should be the responsibility of the Department of Education. The current need to expand primary and secondary education impacts on the financial viability of the Department of Education bearing the costs of the colleges. This is an area which needs to be urgently reviewed.
All of the issues raised above need to be reviewed and analysed in terms of the broader geographic distribution of training institutions. The extent to which the current distribution of institutions has influenced the distribution of health personnel is an issue which has been raised previously in other discussions (Mametja and Reid 1996). Therefore, it is necessary to assess whether redressing geographic inequities through improvements in the funding of institutions in under-resourced provinces can improve the distribution of health care workers to areas of greatest need.

2.4  DISTRIBUTION OF EXPENDITURE

2.4.1  Nursing Colleges

A review of the geographic distribution of nursing colleges has indicated that nursing colleges are not equitably distributed amongst the provinces. Nursing colleges have historically been concentrated in Gauteng, Western Cape and KwaZulu-Natal (Lamprecht 1996). The extent to which the location of colleges influences the provinces in which graduates work is particularly important for planning purposes. Table 2.1 indicates the distribution of public sector registered nurses relative to the population dependent on public health services in each of the provinces.

Table 2.1:  Public sector registered nurses per 100,000 population by province (1992/1993)

<table>
<thead>
<tr>
<th>Province</th>
<th>Distribution of registered nurses across provinces</th>
<th>Registered nurse per 100,000 population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eastern Cape</td>
<td>7,208</td>
<td>181.8</td>
</tr>
<tr>
<td>Free State</td>
<td>3,903</td>
<td>197.4</td>
</tr>
<tr>
<td>Gauteng</td>
<td>11,037</td>
<td>273</td>
</tr>
<tr>
<td>KwaZulu Natal</td>
<td>9,747</td>
<td>159.9</td>
</tr>
<tr>
<td>Northern Cape</td>
<td>740</td>
<td>123.6</td>
</tr>
<tr>
<td>Northern Province</td>
<td>4,705</td>
<td>137.6</td>
</tr>
<tr>
<td>North West</td>
<td>3,666</td>
<td>150.7</td>
</tr>
<tr>
<td>Mpumalanga</td>
<td>1,969</td>
<td>95.1</td>
</tr>
<tr>
<td>Western Cape</td>
<td>7,208</td>
<td>283.8</td>
</tr>
<tr>
<td>National average</td>
<td>52,231</td>
<td>184.8</td>
</tr>
</tbody>
</table>

Source: Development Bank of South Africa (1994)

Table 2.1 indicates that Gauteng and the Western Cape have the highest public registered nurse to population ratios of 273 and 283.8 per 100,000 respectively, in contrast to provinces such as Mpumalanga where the ratio is 95.1 per 100,000. There is an obvious need to increase the number of nurses being trained in Mpumalanga, and other provinces (Eastern Cape, KwaZulu Natal, Northern Cape, Northern Province, and
North West) with a relative shortage of nurses. Information linking the distribution of colleges and nursing students across the provinces, with data on the number of nurses required within each province is critical for policy makers.

In addition to distributional issues, the expenditure and unit costs associated with the training of nurses and specific programmes (e.g. the training of professional nurses) will be considered. This is important in terms of identifying areas of resource inefficiencies and potential economies of scale.

2.4.2 Universities and Technikons
An analysis of the expenditure patterns of the tertiary institutions is important for identifying differences in the allocation of resources across the provinces, differences between the HWIs and HBIs and between those institutions which are attached to AHCs and those which are not.

A review of the distribution of tertiary institutions shows that universities and technikons have been concentrated in the Gauteng and Western Cape provinces. Furthermore, the majority of these institutions have been HWIs, which have benefited historically from the subsidy formula. As a consequence, expenditure on tertiary institutions has been skewed in favour of institutions in Gauteng and the Western Cape, many of which are HWIs. Presented below in Tables 2.2 and 2.3 is a distribution of direct university costs and expenditure by Department of Education on universities and technikons (for 1988 and 1992) in terms of their involvement in the training of health personnel (Bunting 1994).
Table 2.2: Comparison of direct university costs with national education subsidy payments: health care programmes (Rand million)

<table>
<thead>
<tr>
<th>UNIVERSITIES</th>
<th>DIRECT UNIVERSITY COSTS</th>
<th>NATIONAL EDUCATION SUBSIDY (%)</th>
<th>SUBSIDY LESS DIRECT COSTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential universities linked to AHCs</td>
<td>136.4</td>
<td>245.4</td>
<td>95.0</td>
</tr>
<tr>
<td>Universities linked to dental hospitals only</td>
<td>5.7</td>
<td>10.3</td>
<td>4.9</td>
</tr>
<tr>
<td>Other residential universities</td>
<td>10.0</td>
<td>13.6</td>
<td>10.8</td>
</tr>
<tr>
<td>Distance universities</td>
<td>2.3</td>
<td>3.5</td>
<td>5.8</td>
</tr>
<tr>
<td>TOTAL: UNIVERSITIES</td>
<td>154.4</td>
<td>272.8</td>
<td>116.5</td>
</tr>
</tbody>
</table>

Source: Bunting (1994)

Notes to Table 2.2:
1. Universities linked to academic teaching hospitals (Cape Town, MEDUNSA, Natal, OFS, Pretoria, Stellenbosch and Witwatersrand)
2. Universities linked to dental hospitals only (Durban-Westville, Western Cape)
3. Other residential universities: (North, Port Elizabeth, Rand Afrikaans, Rhodes, Vista, Zululand).
4. Distance university: UNISA

Table 2.3: Comparison of direct technikon costs with national education subsidy payments: health care programmes (Rand million)

<table>
<thead>
<tr>
<th>TECHNIKONS</th>
<th>DIRECT TECHNIKON COSTS</th>
<th>NATIONAL EDUCATION SUBSIDY</th>
<th>SUBSIDY LESS DIRECT COSTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential technikons</td>
<td>6.8</td>
<td>18.5</td>
<td>7.6</td>
</tr>
<tr>
<td>Distance technikons</td>
<td>0.1</td>
<td>0.4</td>
<td>0.1</td>
</tr>
<tr>
<td>TOTAL: TECHNIKONS</td>
<td>6.9</td>
<td>18.9</td>
<td>7.7</td>
</tr>
</tbody>
</table>

Source: Bunting (1994)

Notes to Table 2.2:
1. Residential Technikons (Cape, Northern Transvaal, Mangosuthu, ML Sultan, Natal, OFS, Peninsula Port Elizabeth, Pretoria, Vaa)
2. Universities: Triangle and Witwatersrand).
3. Distance: (Technikon SA)

In 1992, R291.7 million was spent by universities and technikons on health sciences education (Tables 2.2 and 2.3). Of this total expenditure, R245.4 million (84%) was accounted for by the seven universities linked to AHCs (see Table 2.2). Approximately R186 million was allocated by the Department of Education for the education and training of health personnel. Approximately 84% (R137.9 million) of the university subsidy was allocated to the seven universities linked to AHCs in 1992 (Table 2.2). This expenditure is an underestimate of the costs associated with universities linked to AHCs, since it excludes the contributions made by the PDoH in support of joint appointments. However, it can be
concluded that the majority of resources available for the training of health personnel are consumed by universities associated with AHCs. The implication of this is that these universities have been highly productive in terms of research and teaching outputs, which weighs favourably in terms of securing subsidies from the Department of Education.

Tables 2.4 and 2.5 indicate the unit costs associated with graduates in health science programmes from tertiary institutions.

**Table 2.4: Unit costs per graduate in health care programmes at universities**

<table>
<thead>
<tr>
<th>UNIVERSITIES</th>
<th>TOTAL GRADUATES</th>
<th>COSTS TO NATIONAL EDUCATION FOR SUBSIDY PAYMENTS</th>
<th>DIRECT UNIVERSITY COSTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential universities linked to AHCs</td>
<td>2,815 (75%)</td>
<td>33,700 49,300</td>
<td>48,500 87,600</td>
</tr>
<tr>
<td>Universities linked to dental hospitals only</td>
<td>166 (4%)</td>
<td>29,500 18,900</td>
<td>34,300 47,500</td>
</tr>
<tr>
<td>Other residential universities</td>
<td>385 (10%)</td>
<td>28,100 34,600</td>
<td>26,000 38,300</td>
</tr>
<tr>
<td>Distance university</td>
<td>400 (11%)</td>
<td>14,500 14,200</td>
<td>5,800 4,700</td>
</tr>
<tr>
<td>TOTAL: UNIVERSITIES</td>
<td>3,766 (100%)</td>
<td>30,900 40,200</td>
<td>40,100 66,500</td>
</tr>
</tbody>
</table>

Source: Bunting (1994)

**Table 2.5: Unit Costs Per Diplomate in Health Care and Health Science Programmes at Technikons**

<table>
<thead>
<tr>
<th>TECHNIKONS</th>
<th>TOTAL DIPLOMATES</th>
<th>COSTS TO NATIONAL EDUCATION FOR SUBSIDY PAYMENTS</th>
<th>DIRECT TECHNIKON COSTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential technikons</td>
<td>876 1,297</td>
<td>8,700 16,200</td>
<td>7,800 14,300</td>
</tr>
<tr>
<td>Distance technikons</td>
<td>1 2</td>
<td>100,000 100,000</td>
<td>100,000 400,000</td>
</tr>
<tr>
<td>TOTAL: TECHNIKONS</td>
<td>877 1,299</td>
<td>8,800 16,300</td>
<td>7,900 14,500</td>
</tr>
</tbody>
</table>

Source: Bunting, 1994

In 1992, the unit Department of Education subsidy costs per university graduate and technikon diplomate, were R40,200 and R16,300 respectively (See Tables 2.4 and 2.5). The subsidy costs per graduate from universities linked to AHC was R49,300 which is notably higher than the other universities and technikons. This information is particularly relevant when related to the number of health personnel who work in the private sector and have emigrated. In 1992, approximately 166 medical, dental and related health care personnel emigrated (Bunting 1994). The cost to the government of this brain drain was
It has been recognised that despite the decrease in the subsidy to tertiary institutions, health personnel are still being trained at a considerable cost to the public sector. However, a significant proportion of them choose to work in the private sector, upon completing their training. Viable mechanisms for recouping the financial contributions made by the state, especially from those who work in the private sector, is an issue which has received significant attention over the past few years. The proposed introduction of two years vocational training by the Interim National Medical and Dental Council for all doctors completing their internship has represented a major step by the government in meeting two important challenges. Firstly, the period of vocational training will allow the government to recover a proportion of the expenditure invested in the training of doctors (Mametja and Reid 1996). Secondly, this is an important strategy for redistributing doctors to areas of greatest need (rural areas and lower level facilities).

The extent to which the physical location of the training institutions, particularly the AHCs, influences where graduates work is important when considering the significant geographic maldistribution of health personnel. The analysis conducted by Bunting has revealed that many of the institutions associated with AHCs are concentrated in Gauteng and the Western Cape, implying a disproportionate allocation of resources to these two provinces. Table 2.6 indicates the distribution of public sector doctors and pharmacists across the provinces.
A review of the distribution of doctors and pharmacists in the public sector shows large differences in the availability of personnel across the provinces, with a high concentration in Gauteng and the Western Cape (Table 2.6). In 1992, the Western Cape had 4.7 times more doctors per 100,000 population than Mpumalanga which was the province with the lowest doctor to population ratio. Similarly wide differences arise when the distribution of pharmacists between the best staffed province (Western Cape) were compared with the lowest staffed province (Northern Cape).

In 1994/95, approximately 16% of all doctors and 23% of dentists were located in the Western Cape. Almost 37% and 47% of doctors and dentists respectively were working in Gauteng (Mametja and Reid 1996). This is significant in view of the fact that the Western Cape and Gauteng account for approximately 9% and 17% of South Africa's total population respectively (Central Statistical Services 1994). If the location of training institutions does influence where health personnel work, it raises the further issue of how to ensure that health personnel work in areas of greatest need.

2.4.3 Summary
A review of the literature has revealed that a significant proportion of resources are being allocated to universities attached to AHCs, which focus on the training of doctors, dentists and specialists. The extent to which this situation reflects the reorientation of the health care to a PHC approach, away from a doctor-driven service is a matter of concern.
The analysis of unit costs by Bunting (1994) revealed that the unit costs associated with graduates from institutions associated with AHCs were substantially higher than the unit costs of those students graduating from universities and technikons not associated with AHCs. This is important in that graduates from the latter institutions and from nursing colleges (primary health care nurses, medical and dental assistants, environmental officers, etc.) will form the critical core of primary health care teams. It has been argued that the improved funding of these institutions is crucial to ensure that the required number of personnel are trained with the necessary skills to meet the needs of a comprehensive health system. The present study will explore these and other related issues.

It is important to note that Bunting’s study did not include the financing and expenditure of the nursing colleges. This study will thus provide a more comprehensive review of all training institutions, as well as accessing more recent information databases. Central to the analysis, is an investigation of some of the distributional issues raised here, in terms of financing and expenditure.
3.1 METHODOLOGY

3.1.1 Study Design
This study provides a key set of baseline data, since no systematic, national review of the financing and expenditure of nursing colleges has been previously undertaken in South Africa. However, there have been smaller localised studies. For example, concurrent with this study, an investigation into the rationalisation of the Western Cape nursing colleges was being undertaken. This investigation included an audit of the colleges' expenditure.

This study attempted to obtain data from all South African nursing colleges which provided nursing education and training for the 1994/95 financial year. A listing of public nursing colleges was obtained from the South African Nursing Council (SANC) and validated with the South African Nursing Association (SANA) Hospital and Nursing Yearbook (Engelhardt 1995) (See Appendix 1 for a list of all nursing colleges included in the study).

A pilot questionnaire survey was conducted of nursing colleges in the Western Cape province in September 1996. The purpose of the questionnaire was to determine the feasibility of obtaining data on expenditure patterns, funding sources, courses offered and student registration data for the 1994/95 period. This was followed by a national survey between August and September 1996 of all thirty nursing colleges. Each of the colleges was mailed a questionnaire (See Appendix 3: Questionnaire to nursing colleges). In addition, extensive telephonic follow-ups of non-respondents was undertaken where necessary. Follow-up procedures undertaken related specifically to colleges located in Gauteng, Northern Province and Eastern Cape provinces.

3.1.2 Approach to Cost Data Analysis
For each of the colleges, information was obtained for total recurrent expenditure, which included the costs of personnel and overheads. Colleges' personnel expenditure included the costs of academic, service and administrative staff and student nurses. Overhead costs
included the costs of stationery, postal services, vehicle and building maintenance et cetera.

3.1.2.1 Disaggregating total recurrent costs

The financial information system at many nursing colleges does not allow for recurrent costs to be apportioned to the different cost categories. For example, some colleges could not dis-aggregate their total personnel costs down to the various staff categories (e.g., academic staff). A database was compiled of all colleges which had data dis-aggregated into all of the categories. For these colleges, the expenditure on the different categories (staff and overheads) were expressed as a percentage of total recurrent expenditure (e.g., students’ salaries percentage allocation of total expenditure was determined). These percentages were then used as an estimate for dis-aggregating the costs of the remaining nursing colleges.

The above-mentioned method of apportioning total expenditure (for both personnel and overhead expenditure) rested on the assumption that there were no significant differences in the breakdown of total costs across the nursing colleges. The method is illustrated by means of an example (See Box 3.1)

Box 3.1: Dis-aggregating Total Recurrent Expenditure for Nursing Colleges

**Example: Nursing College X**

With regard to nursing college X, total personnel costs were R2,748,000. The costs of academic and administrative staff were not disaggregated.

From the derived percentage allocation of those colleges which provided the disaggregated information, it was estimated that academic and administrative staff represented on average, approximately 15.6% and 4.3% of total expenditure respectively. Their combined percentage allocation was 19.9%.

However, if the percentage allocations of academic and administrative staff are expressed as percentages of their combined allocation (19.9%), their share of personnel costs (after deducting the costs of the other staff categories) was 78% and 22% respectively. These percentages were then used to disaggregate personnel expenditure for the remaining nursing colleges.

Therefore, the dis-aggregation used for nursing college X recurrent expenditure, was estimated at 78% x R2,748,000 = R2,143,440 for academic staff and 22% x R2,748,000 = R604,560 for administrative staff.
3.1.2.2 Determining recurrent expenditure being administered by the hospital

A significant number of the nursing colleges' budgets are administered by the provincial hospitals to which they are attached. Therefore, certain cost centres were reflected on the financial statements of the hospitals, and not that of the colleges. These expenditure categories included that of personnel, overheads and administration.

In order to obtain an approximation of these costs, the method outlined in Box 3.2 was used. Here again, the colleges which provided dis-aggregated total expenditure data were used as a basis for estimating expenditure on categories that were being administered by the hospitals (see Section 3.1.2.1). The method is explained by means of an example (see Box 3.2).

Box 3.2: Determining Nursing College Recurrent Costs being Administered by the Hospital

**Nursing College Y**

With regard to nursing college Y, the expenditure on service personnel was not documented, given that the cost was being borne and administered by the hospital. Therefore, the total recurrent cost of the college was underestimated.

Based on the information for colleges which provided disaggregated data (as described in section 3.1.2.1 and box 3.1), it was estimated that service personnel (e.g. cleaners, messengers etc.) on average account for 3% of total recurrent costs. Therefore, given the total recurrent costs of the nursing college Y (R30,347,000), it was assumed that the costs were underestimated by 3% i.e. only 97% of the total recurrent costs had been included.

Total costs including the costs of service personnel, were then estimated using the following formula: R30,347,000 x 100/97 = R31,285,567.
Therefore, the costs of service personnel = 3% x R31,285,567 = R938,567

3.1.2.3 Unit costs of registered nursing college students

This sub-section describes three approaches to determining the cost per registered nursing student. The methodology and limitations of each are described below.
3.1.2.3.1 The crude unit cost method for calculating the cost per registered nursing college student

The crude cost analysis for registered nursing college students was based on a formula which factors in total expenditure per province divided by the total students registered (including information for all respondent nursing colleges). The student data was based on an average of the annual registered students for 1994 and 1995.

The major limitation of this method is that it includes the costs of student salaries, which are only paid to students registered for the four-year basic diploma course. This method allocates student salaries to all registered students, including those who are not paid salaries.

3.1.2.3.2 The crude unit cost method excluding student salaries as a basis for calculating the cost per registered nursing college student

This method excludes the costs of students' salaries in order to estimate the costs per student. As students' salaries only apply to the four year basic diploma students, this method provides a more realistic estimation of cost per course and registered student. The obvious limitation of this approach is that it gives equal weighting to all students (as indicated above).

3.1.2.3.3 Unit cost per diploma student

In order to determine the cost per diploma student across the various provinces, the following approach was used. Firstly, recurrent costs (excluding students' salaries) associated with the diploma students were estimated on the basis of the number of students registered. These estimates were then combined with expenditure on salaries to determine the total recurrent costs associated with these students. Refer to Box 3.3 for a detailed breakdown of the methodology.
Box 3.3: Unit Cost Per Diploma Student

<table>
<thead>
<tr>
<th>Unit cost per diploma student in Province Z</th>
</tr>
</thead>
<tbody>
<tr>
<td>In Province Z, students registered for the basic diploma course represented 85% of the total students registered. Recurrent expenditure (excluding salaries of students) amounted to R8,804,314. Recurrent expenditure (excluding students' salaries) associated with diploma students = R8,804,314 x 0.85 = R7,483,667. Recurrent expenditure was combined with students' salaries to determine the total allocation to diploma students: R7,483,667 + R16,827,922 = R24,311,589. The total number of students registered for the basic diploma course were 650. Therefore, the unit cost per student enrolled for the diploma course was: R24,311,589 / 650 = R37,402</td>
</tr>
</tbody>
</table>

Each of the above mentioned approaches will be analysed in the next section which examines the results of the national survey of nursing colleges. In reviewing the analysis, the key assumptions and limitations, as indicated above, need to be borne in mind.

3.2 RESULTS: NURSING COLLEGES IN SOUTH AFRICA

This section provides the results of the national survey of nursing colleges in South Africa. These will include the:

- Nursing colleges surveyed and the respondents to the survey;
- Sources of finance for nursing colleges;
- Expenditure by each of the nursing colleges; and
- Courses offered and student registration at each of the nursing colleges.

The results are aggregated by province and are presented in detail within the relevant appendices of the report.

3.2.1 Nursing Colleges Surveyed and Respondents

The SANC identified thirty nursing colleges operating in South Africa for the 1994/95 period (Lamprecht 1996). After cross-checking with the Hospital and Nursing Yearbook (Engelhardt 1995) thirty colleges were identified, with the slight difference of recording separate information for seven affiliated campuses to the Natal College of Nursing. A total of thirty six questionnaires were therefore distributed for this survey. The questionnaires distributed to the Natal affiliate campuses were captured under the Natal College of Nursing.
A total of twenty-seven questionnaires were completed and returned, yielding a response rate of 75% (See Appendix 1). Completed questionnaires were received from all provinces, with the exception of the college in Mpumalanga. The following reasons were cited by the nine nursing colleges which did not complete the questionnaire:

- student and staff strikes during the period of the survey;
- lack of staff, time and capacity to complete the questionnaire at two of the colleges; and
- refusal to complete the questionnaires (e.g. lack of interest in the questionnaire and research process).

Table 3.1: South African Nursing Colleges Surveyed by Province and Response Rates:

<table>
<thead>
<tr>
<th>Province</th>
<th>Number of Nursing Colleges Included in the Survey</th>
<th>Number of Responses to Survey</th>
<th>% Responses to Survey</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eastern Cape</td>
<td>4</td>
<td>2</td>
<td>50%</td>
</tr>
<tr>
<td>Free State</td>
<td>3</td>
<td>2</td>
<td>67%</td>
</tr>
<tr>
<td>Gauteng</td>
<td>9</td>
<td>8</td>
<td>72%</td>
</tr>
<tr>
<td>KwaZulu Natal</td>
<td>9</td>
<td>6</td>
<td>67%</td>
</tr>
<tr>
<td>Mpumalanga</td>
<td>1</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Northern Province</td>
<td>3</td>
<td>3</td>
<td>100%</td>
</tr>
<tr>
<td>Northern Cape</td>
<td>1</td>
<td>1</td>
<td>100%</td>
</tr>
<tr>
<td>North West</td>
<td>2</td>
<td>1</td>
<td>50%</td>
</tr>
<tr>
<td>Western Cape</td>
<td>4</td>
<td>4</td>
<td>100%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>36</td>
<td>27</td>
<td>75%</td>
</tr>
</tbody>
</table>

It is necessary to recognise that the financing, expenditure and registration information provided in the next section, relates specifically to the nursing colleges which responded to the survey.
Graph 3.2 indicates the PDoHs percentage share of total income for colleges in each of the provinces.

Colleges in Gauteng, KwaZulu Natal and Northern Province reported receiving no income from other sources, besides that from their respective PDoHs (Graph 3.2). Colleges in the Western Cape indicated receiving a relatively higher percentage of their income from the other sources (i.e. fees, college council funds and fund raising activities) than the other colleges. It should be noted that the colleges in the Western Cape were urged more strongly by their PDoH\(^1\) than those in the other provinces to provide and disclose all information with regard to their sources of income and their expenditure. Therefore the financial information presented in this section is likely to represent an underestimate and may contain a few inconsistencies. Refer to Appendix 6 for a detailed account of the income available from each of the sources.

### 3.2.3 Nursing Colleges' Total Recurrent Expenditure for 1994/95

Graph 3.3 presents the overall recurrent expenditure of the nursing colleges in 1994/95. Since the information presented relates only to the colleges which responded to the survey, the expenditure information presented is an under-estimation of total expenditure.

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\(^1\) The questionnaire survey coincided with the PAWC PDoH task team which focused on the rationalisation of nursing colleges.
Also, only recurrent costs are presented, because of the difficulty associated with obtaining capital costs.

Graph 3.3: Nursing Colleges total recurrent expenditure (1994/95)

Graph 3.3 indicates that total recurrent expenditure for the respondent nursing colleges amounted to approximately R290.4 million for the 1994/95 financial year.

A comparison of the income (Graph 3.1) and expenditure figures reveals some disparities, especially for colleges in the provinces of Gauteng, KwaZulu Natal, Northern Cape, Northern Province, and North West. Colleges in Gauteng had the greatest disparity between their reported income (R31.3 million) and recurrent expenditure (R96.8 million). These disparities were mainly due to two factors. Firstly, a large number of the colleges had indicated that certain of their cost centres were being administered by the hospitals to which they were attached. Therefore, their expenditure statements underestimated their actual costs. Secondly, as noted in Section 3.2.2, the colleges had probably poorly reported the income that they had received from other sources besides the PDoH. The Western Cape's comparative expenditure and income data supports the earlier statement that the colleges in the Western Cape provided a more accurate account of their income and expenditure situation than the other colleges.
Appendix 7 provides a detailed breakdown of recurrent expenditure into its two key components i.e. personnel and overheads. On average across all the nursing colleges, personnel expenditure accounted for approximately 95% (R277 million) of total recurrent expenditure. Across the provinces, personnel expenditure ranged from approximately 89% of recurrent expenditure in the Free State to 99% in KwaZulu Natal. This wide variation in the range indicates that further investigation might be necessary.

Expenditure on overheads represents approximately 5% of total recurrent costs. Across provinces, overhead expenditure varies from 1% in KwaZulu Natal to 11% in the Free State. The high level of expenditure on overheads in the Free State (11%), given the national average of 5%, is an area which might also require further investigation.

### 3.2.4 Disaggregated Personnel Expenditure for Nursing Colleges 1994/95

Graph 3.4 presents a breakdown of personnel expenditure in relation to academic, administrative, and service staff and student salary expenditure across the nursing colleges. A detailed breakdown of personnel expenditure for each of the provinces is provided in Appendix 8.

![Graph 3.4: Disaggregated personnel expenditure of nursing colleges (1994/95)](image)

On average, expenditure on student salaries accounted for approximately 68% (R189 million) of total personnel expenditure (Graph 3.4). Expenditure on student salaries clearly accounts for the majority of personnel expenditure, despite the variation across the
provinces. A breakdown for each of the provinces indicates that student salaries ranged from 61% in the Free State to 75% in the Western Cape province (Appendix 8). The significant expenditure on student salaries has critical implications for any future proposals concerning the colleges' organisation and funding.

The next significant personnel expenditure group was that of academic staff, who accounted for 23% (R63.1 million) of total personnel costs. Administrative and service staff together accounted for almost 9% (R2.5 million). The only province which indicated a significantly higher level of expenditure on service personnel was the Northern Cape (14%).

3.2.5 Courses offered and Registration at Nursing Colleges in South Africa

3.2.5.1 Courses offered at nursing colleges

Table 3.2 presents a summary of courses offered by the colleges and the number of years required to complete them. For a detailed list of the courses offered, refer to Appendix 9.

<table>
<thead>
<tr>
<th>Courses offered at nursing colleges</th>
<th>Prescribed Number of Years to Complete Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auxiliary</td>
<td>1</td>
</tr>
<tr>
<td>Enrolled</td>
<td>2</td>
</tr>
<tr>
<td>Bridging</td>
<td>2</td>
</tr>
<tr>
<td>Basic diploma</td>
<td>4</td>
</tr>
<tr>
<td>Basic supplementary</td>
<td>1</td>
</tr>
<tr>
<td>Post basic</td>
<td>1-1.5</td>
</tr>
<tr>
<td>Advanced</td>
<td>1</td>
</tr>
<tr>
<td>Short courses</td>
<td>0.16-0.5 (2 - 6 months)</td>
</tr>
</tbody>
</table>

The average period required to complete the courses ranged from 2 months (for short courses) to 4 years or 48 months (for the basic diploma programme) (Table 3.2). Colleges in all the provinces offered the four year basic diploma, as well basic supplementary courses such as midwifery, psychiatry and community nursing. The extent to which post-basic, advanced and short courses were provided varied across the provinces. Colleges in Gauteng, KwaZulu-Natal and the Western Cape tended to provide a wider range of post-basic and advanced courses than the colleges in the other provinces, while short courses
were provided by colleges in the provinces of Gauteng, Northern province and the Western Cape.

3.2.5.2 Student registration
Between 1994 and 1995, an average of 10,324 students were registered at the nursing colleges which responded to the survey (Appendix 10). Graph 3.5 indicates the average distribution of students across the provinces between 1994 and 1995, for those nursing colleges which responded to the survey.

The majority of students were located at colleges in the provinces of Gauteng (37%), KwaZulu Natal (18%) and the Western Cape (14%) (Graph 3.5). The Northern Cape and North West provinces recorded the lowest number of registered students. It should also be noted that the student numbers at colleges in the Eastern Cape is underestimated, since no data was provided by the Transkei and Ciskei nursing colleges. The college in Mpumalanga also did not provide any data.
Graph 3.6 indicates the average distribution of students across the different courses between 1994 and 1995.

Students registered for the basic diploma accounted for the majority (78%) of total registration across all courses (Graph 3.6). This carries important implications for any future model regarding their organisation and funding.

Table 3.3: Distribution of basic diploma students per 100,000 by provinces (1994)

<table>
<thead>
<tr>
<th>Province</th>
<th>Total number of basic diploma students</th>
<th>Basic diploma students per 100,000 population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eastern Cape</td>
<td>1,305</td>
<td>25</td>
</tr>
<tr>
<td>Free State</td>
<td>1,159</td>
<td>57</td>
</tr>
<tr>
<td>Gauteng</td>
<td>4,371</td>
<td>104</td>
</tr>
<tr>
<td>KwaZulu Natal</td>
<td>2,420</td>
<td>58.5</td>
</tr>
<tr>
<td>Northern Cape</td>
<td>140</td>
<td>23.3</td>
</tr>
<tr>
<td>Northern Province</td>
<td>746</td>
<td>21.1</td>
</tr>
<tr>
<td>North West</td>
<td>500</td>
<td>19.8</td>
</tr>
<tr>
<td>Mpumalanga</td>
<td>134</td>
<td>6.2</td>
</tr>
<tr>
<td>Western Cape</td>
<td>1,365</td>
<td>53.3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>12,170</strong></td>
<td><strong>41.7</strong></td>
</tr>
</tbody>
</table>

1. Basic diploma students: Includes non-respondent nursing colleges.

Table 3.3 indicates that the diploma student to population ratios range from 6.2 per 100,000 population in Mpumalanga to 104 per 100,000 population in Gauteng.
Interestingly, Gauteng’s ratio is almost twice as high as that of the next highest provinces (Free State and Western Cape).

3.2.5.3 Attrition rates

Table 3.4 indicates the attrition rates for the different courses in 1994 and 1995.

Table 3.4: Nursing Colleges Attrition Rates (%) Per Course

<table>
<thead>
<tr>
<th>ATTRITION RATES</th>
<th>Enrolled</th>
<th>Bridging</th>
<th>4 year basic diploma</th>
<th>Basic supplementary</th>
<th>Post basic</th>
<th>Advanced</th>
<th>Short courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1994</td>
<td>3%</td>
<td>3.7%</td>
<td>8.3%</td>
<td>0%</td>
<td>0.7%</td>
<td>0%</td>
<td>3.6%</td>
</tr>
<tr>
<td>1995</td>
<td>2.6%</td>
<td>3.5%</td>
<td>5.1%</td>
<td>1.4%</td>
<td>0.8%</td>
<td>1.7%</td>
<td>2.6%</td>
</tr>
</tbody>
</table>

Attrition rates varied from approximately 8.3% in 1994 to 5.1% in 1995 for the basic diploma course (Table 3.4). The attrition rates for the other courses were lower, with the post basic, basic supplementary and advanced courses, having the lowest rates in both 1994 and 1995.

3.2.6. Unit Costs For Registered Nurses in South Africa

In calculating the cost per nursing college registered student, various methods were used (see Section 3.1.2.3).

3.2.6.1 Crude cost per nursing college student

Graph 3.7 presents a crude cost analysis of the nursing colleges. Expenditure per registered student was determined by dividing total recurrent expenditure by the average number of students registered between 1994 and 1995 for each of the provinces. Expenditure on student salaries was included in this analysis.
The average expenditure per student across all the provinces was R28,134. Average expenditure ranged from R24,125 in KwaZulu Natal, to as much as R38,638 in the Northern Province (Graph 3.7). Although the Northern Province’s total expenditure (R28.9 million) was comparable to that of colleges in the Eastern Cape (R25.6 million) and the Free State (R29.9 million), the average expenditure per student at colleges in the Northern Province was significantly higher. This is mainly accounted for by the relatively lower number of students registered in the Northern Province as compared to the other two provinces.

As noted previously, the limitation of this unit cost estimation method is that it allocates the costs of salaries paid to student nurses, to all registered students.

3.2.6.2 The costs per nursing college student excluding student salaries
Graph 3.8 indicates the average expenditure per registered student. In this analysis, the salaries of students are excluded.
When student salaries are excluded, the average expenditure per registered student was approximately R9,823. The provinces with the lowest expenditure per student were KwaZulu Natal (R7,342), Gauteng (R8,592) and Western Cape (R9,781). As in the previous section, the average expenditure for colleges in the Northern Province (R15,434) was significantly higher than the other provinces. Here again, this is essentially because of the significantly lower number of students registered at the colleges in the Northern Province, relative to expenditure levels.

### 3.2.6.3 Allocating costs to students registered for the four year basic diploma

Students registered for the four-year basic diploma course on average represent 78% of total registration across the provinces. The total costs associated with these students were approximately R268 million. This was approximately 92% of total recurrent expenditure. Graph 3.9 indicates the unit costs associated with these student (including student salaries).
The average expenditure across all the colleges was approximately R33,161. Average expenditure ranged from R27,714 at nursing colleges in KwaZulu Natal to R39,660 in the Northern Province. This large difference is essentially because of the significant differences in the number of diploma students registered relative to expenditure levels.

3.2.6.4 Estimating the expenditure for nursing colleges which did not respond to the survey

As stated earlier, out of a total of thirty-six colleges surveyed, only twenty-seven (75%) responded to the survey. Therefore, the data presented underestimates the total expenditure for South African nursing colleges. In order to get a closer estimate of expenditure of all nursing colleges, costs had to be estimated for those colleges which had not responded to the survey. This was undertaken in the following way.

The total number of students registered for the basic diploma course at the colleges which did not respond to the survey was obtained from the SANC (1997). Based on the SANC information, it was estimated that the average number of students registered at non-
respondent colleges between 1994 and 1995 was 1,590. The overall costs of these students were then estimated on the basis of a unit cost of R33,161 per student.

The costs of training diploma students at the colleges which had not responded to the survey were then estimated to be approximately R52,7 million. As determined earlier, the costs associated with diploma students account for approximately 92% of total recurrent costs. This approximation was used to extrapolate the total recurrent costs for the non-respondent colleges, which was approximately R57,3 million. Box 3.4 below outlines the methodology of estimating the extrapolated recurrent cost expenditure for non-respondent nursing colleges.

**Box 3.4: Estimating the Expenditure Associated with Non-Respondents to the Survey**

<table>
<thead>
<tr>
<th>Average number of basic diploma students registered at non-respondent colleges 1994/95:</th>
<th>1,590</th>
</tr>
</thead>
<tbody>
<tr>
<td>Costs per basic diploma student (see Table 3.11):</td>
<td>R33,161</td>
</tr>
<tr>
<td>Recurrent costs associated with diploma students:</td>
<td>R52,725,990</td>
</tr>
<tr>
<td>Total recurrent costs associated with non-respondent colleges:</td>
<td>R52,725,990 x 100 / 92 = R57,310,859</td>
</tr>
</tbody>
</table>

This means that recurrent expenditure for all nursing colleges in South Africa was R347.7 million in 1994/95.

3.3. SUMMARY AND DISCUSSION: NURSING COLLEGES IN SOUTH AFRICA

Based on the results presented above, a number of key issues require further consideration. These areas need to be contextualised and discussed within the broader structural and financing proposals currently being advanced for the education and health sectors.

3.3.1 Data limitations

3.3.1.1 Quality of data

At the outset, it should be noted that the quality and reliability of the data received from the nursing colleges varied considerably across the provinces. This might be the result of poor information and accounting systems, as well as a reluctance on the part of the colleges to disclose the relevant information. Although extensive follow-ups were undertaken to verify
problem areas, the accuracy of the data provided is still a matter of concern. As indicated above, actual expenditure data were only obtained for 75% of nursing colleges in South Africa. Therefore caution should be exercised when interpreting and drawing conclusions from the data presented.

### 3.3.1.2 Accounting for hidden and indirect costs

Although many of the nursing colleges operated autonomously from the hospitals to which they were attached, they were in fact still being administered by the hospitals in most cases. This implied that they were unable to provide all the relevant finance data, especially with regard to the costs of students' salaries, service personnel and overheads. An apportioning of total hospital administrative costs (e.g. recognising shared administrative and clerical functions and personnel) is certainly likely to have an effect on the expenditure levels cited in this report. It is through processes like the rationalisation of nursing colleges (e.g. as currently being undertaken in the Western Cape province) and the creation of separate accounting and cost centres, that these costs will be more easily identified.

### 3.3.2 Summary Points

#### 3.3.2.1 Income and expenditure of nursing colleges

Historically in South Africa the college sector (nurse and teacher training) has received full government funding (NCHE 1996). The rationale for this has been that since the "output of colleges are of direct benefit to the public sector rather than the private sector (as teachers and nurses would presumably be), then the government must fund the activities of that college in full" (NCHE 1996). In the 1994/95 financial year, a total income of R194.7 million was reported by nursing colleges which had responded to the survey, of which more than 99% was allocated by the PDoHs.

A total recurrent expenditure of R290.4 million was reported by the nursing colleges for 1994/95. The inclusion of an estimated expenditure associated with the non-respondent colleges (R57.3 million) in the study, increases the expenditure to R347.7 million. The highest levels of expenditure were reported in Gauteng (R96.8 million), Western Cape (R47.3 million), and KwaZulu Natal (R43.8 million) provinces. Expenditure on students' salaries (R189 million) accounted for more than half of total recurrent expenditure of the
colleges surveyed. The high levels of expenditure borne by colleges in Gauteng, Western Cape and KwaZulu Natal need to be considered especially in view of the budgetary cuts to the historically 'well-resourced' PDoHs, namely Gauteng and the Western Cape.

The data indicated that the highest unit costs associated with diploma students were borne by colleges in the Northern Province (R39,660), North West (R38,420) and Northern Cape (R38,328). This is mainly accounted for by the low student registration at the colleges in these provinces and possibly the inefficient utilisation of resources, due to diseconomies of scale. Therefore, within the context of human resource planning and the need for improved student intake and thus reduced unit costs, the issue of colleges' economies of scale needs to be reviewed.

Currently, the Western Cape PDoH is exploring mechanisms for rationalising the four nursing colleges operating in the province, in the context of the decreasing budgetary allocations. The Gauteng PDoH is also engaged in a similar process of restructuring their nursing colleges and is faced with having to close four of their colleges in 1999. Improvements in the utilisation of human and financial resources, which relate primarily to economies of scale in terms of administrative structures, transport and teaching functions, are amongst the expected outcomes. The process of rationalisation is likely to embody a reduction in the numbers of students admitted for the four-year basic diploma, considering the significant level of expenditure on students' salaries.

In the context of the considerable costs borne by the PDoHs in Gauteng and the Western Cape, preference for admittance to the diploma course might be given to students from within the provinces, and who would work in these provinces once qualified. Although colleges in Gauteng and the Western Cape are involved in training students from other provinces, the actual number of such students and the extent of the dependency on the training capacity within these two provinces has not been quantified in this study. However, in terms of service provision, these two provinces have the most favourable nurse to population ratios, which further raises the question of whether students from other provinces return to their provinces once they qualify. The extent to which the training capacity in the Western Cape and Gauteng may contribute to the
relative under-supply of nurses in the Northern Province, North West and Mpumlanga should be explored further.

In light of this and the pressure to rationalise colleges, there are two options that might have to be considered regarding the future of the colleges. The first option would be for provinces with poor training capacity (e.g. Northern Province, North West and Mpumlanga) to compensate the colleges in the Western Cape and Gauteng for training their students, which should be linked to a service obligation on the part of the students. The second option would be to embark on a process of improving the training capacity within those provinces with the poorest training capacity and lowest nurse to population ratios (Northern Cape, Northern Province, North West and Mpumlanga). The gap between the number of registered nurses required to meet the national nurse to population average (Table 2.1) and the number of diploma being trained in these provinces of Northern Province, North West and Mpumlanga is considerable (Table 3.3). By increasing the student intake, colleges in these provinces, in addition to might being able to realise economies of scale and improvements in terms of cost-efficiency, might also be able to improve their distribution of nurses.

3.3.2.2 Nursing colleges and the NCHE proposals

The current funding and dependency of the colleges on the PDoHs needs to be considered in relation to the NCHE's proposal (1996) for a single co-ordinated system of higher-education. This implies linking the nursing colleges with universities and technikons into a single co-ordinated system. The proposal has two key aims. Firstly, by integrating nursing colleges under the Department of Education, it is foreseen that the current lack of co-ordination between the Departments of Education and Health will be addressed. Secondly, it is hoped that the education and training component of nursing education will be enhanced. It has been argued that the education component of student nurses has been compromised, mainly as a result of their service obligations within the Department of Health.

The proposal for the replacement of the current salary system with that of a bursary system, has met with misgivings from students over their financial predicament, since the proposed bursaries might not be comparable to the salaries they currently receive.
As estimated in this study, students' salaries amounted to approximately R189 million in the 1994/95 financial year. The financial responsibility that this might place on the Department of Education need to be carefully considered by the Departments of Education and Health. The proposal needs to be considered in the context of the current financial crisis facing tertiary education. The expansion of primary and secondary education has largely been realised through a reallocation of resources from tertiary education. This raises the question of the ability of the Department of Education to bear the costs of training nurses through a system of bursaries. If students continue to be funded by the PDoHs, the feasibility and ability of colleges in provinces where budget cuts have been implemented (Gauteng and the Western Cape) to continue training students from other provinces needs to be urgently reviewed. Both options (salaries vs. bursaries) carry significant implications for the Departments of Health and Education.

An issue which has arguably been neglected in the discussions, is the implication of the proposal for the delivery of services. Since students spend a significant amount of time involved in service delivery, the impact on the provision of services and the extent to which hospitals have become dependent on student nurses needs to be considered further.

3.3.3 Recommendations

3.3.3.1 Improved information systems

Standardised processes should be introduced and co-ordinated across provinces through the national Department of Health to assess the full disclosure and reporting of income received by nursing colleges. In this regard, collaborative links between the NDoH and PDoHs are needed to develop and strengthen the training capacity and sustainability of colleges for which they are responsible.

Improvements regarding the recording/capture, processing and analysis of relevant financial and student data should be made. This can be done firstly by standardising and simplifying the information systems required for colleges. Secondly, if possible a periodic audit and analysis of the costs of training nurses should be conducted in a sample of nursing colleges. This will prove vital in maintaining adequate financial management systems and improving the financial accountability of the colleges.
Finally, given the link of administrative functions of nursing colleges to hospitals, specific cost centres need to be identified. This will serve to improve the recording of key recurrent expenditures and shared costs associated with nursing colleges (e.g. the costs of students’ salaries, service personnel, overheads, administrative costs).

3.3.3.2 Identifying areas for improvements in efficiency

- Geographic equity

The National Department of Health has committed itself to addressing and reducing the disparities between the 'well-resourced' provinces (Gauteng and Western Cape) and those which have been historically under-resourced. Budget cuts have left the Gauteng and Western Cape PDoHs with little alternative but to rationalise and down-scale their nursing colleges as one of the areas where costs can be reduced. The implies that the colleges in Gauteng and the Western Cape will increasingly focus on meeting the health personnel needs of their respective provinces.

One of the key findings of this study was that colleges in the historically under-resourced provinces did not achieve the economies of scale that colleges in Gauteng and the Western Cape did. Besides low student intake, factors of structural inefficiencies might account for the diseconomies of scale experienced at these colleges. If this is the case, increasing the student intake might not necessarily result in achieving economies of scale. Under these circumstances, improving geographic equity might be at the cost of improvements in efficiency. An option which requires further considerable deliberation is the smaller provinces continuing to have their students trained at colleges in the Gauteng and Western Cape and compensating the provinces responsible for training.

- Increased emphasis on Human Resource Planning

There is an urgent need for increased emphasis on linking the training of nurses (production) with the needs of the health services. This should explicitly include considerations of the inter-provincial distribution of colleges and its implications for the deployment of nurses across the provinces.
On the production side, performance and unit cost indicators need to be integrated and actively utilised within provincial and national human resource planning processes. The increasing application of these indicators may indeed offer opportunities for achieving economies of scale, efficiency gains and performance improvements, particularly for those colleges which are being rationalised.

Recognising the fragmented and racial history of nursing colleges, mechanisms to enhance capacities of historically under-resourced colleges are required. This might include exploring mechanisms for sharing capacity and skills amongst colleges (e.g. exchange programmes).

3.3.3.2 Critical evaluation of funding
The roles and areas of responsibility of the Departments of Health and Education need to be critically evaluated, especially in relation to the proposals made by the NCHE. This is also critical for identifying areas of duplication in training, and developing and implementing strategies for improved education and training.

3.3.4 Further Research Into Nursing Colleges
- Nursing Colleges, particularly within the Northern Province, Eastern Cape, Northern Cape, and North West) which reported high levels of recurrent expenditure in relation to low levels of student registration require further investigation. This is necessary to identify the extent to which there might be poor resource utilisation, particularly that of personnel.

- Of equal concern were the relatively low levels of student registration, which also contributed to the high unit costs of these colleges. There appear to be areas for gains in efficiency and cost saving in these colleges. A more detailed analysis could contribute to improving both the levels of resource utilisation and reducing the expenditure of these colleges.

- One of the limitations of the study, was that it was not possible to compare the costs of training nurses at the nursing colleges with that of the tertiary institutions. Presently, there is considerable duplication between institutions engaged in the
training and education of nurses. There are clearly benefits to be gained from reducing duplication amongst the training institutions, however such a process would require close co-operation between the departments of Health and Education. This is clearly an area that requires further investigation, in view of the NCHE recommendation for a single co-ordinated system for the training of health personnel.
4.1 METHODOLOGY

4.1.1 Study Design
As outlined in Chapter 1 of this report, a pilot survey of universities and technikons in the Western Cape province revealed that a national survey of tertiary institutions was not possible. The major reasons for this were the lack of relevant data at the institutional level as well as the difficulties pointed out by other education sector researchers. These related to collecting updated expenditure and student output data from tertiary institutions, especially for the historically black universities and technikons and the institutions located in the former homelands. This required extensive reliance on secondary data sources.

Data was obtained from existing databases from UCT (Faculty of Social Sciences, Professor Ian Bunting) and Western Cape (EPU, Mr. George Subotzky). Both universities are involved in national projects to analyse the Department of Education's SAPSE data and reports. The data obtained from UCT related to the years 1992 and 1993. The data accessed from UWC focused on the HBUs and related to the year 1992. This database was updated for 1993 with data obtained from UCT. These databases contained the most recent information for universities and technikons, and are based on the SAPSE information system accessed obtained from the national Department of Education. (Refer to Appendix 11 for definitions on some of the more commonly used SAPSE terminology).

Tertiary institutions are required to report their information in relation to:

- Student data;
- Staff data; and
- Finance data.

The SAPSE system groups the courses offered by tertiary institutions according to their subject into Classification of Educational Subject Matter (CESM) categories. Students
enrolled in the health care and health sciences are classified under "CESM 09". These include courses in medicine, dentistry, veterinary sciences, pharmacy, audiology, occupational therapy, radiology and radiotherapy amongst others (Hendry and Bunting 1993).

4.1.2 The SAPSE system and associated databases for tertiary institutions in South Africa and their limitations

This sub-section provides an overview of the SAPSE system, the databases and the limitations which served to impact on the study objectives. Twenty-two universities and twelve technikons were included in the study. No SAPSE data were available for the universities of Bophuthatswana, Transkei, Fort Hare, Venda and QwaQwa. Hence, these universities were not included in the study. (See Appendix 2 for a listing of Universities and Technikons included in this study).

4.1.2.1 Student data

Since all student data and SAPSE information are presented in terms of CESM categories, it was not possible to determine the costs of categories of students and graduates enrolled for specific degrees and diplomas (e.g. students enrolled for degrees in physiotherapy, nursing, dentistry etc.).

In addition to presenting the student enrolment in terms of a "head count", the SAPSE system indicates enrolment in terms of weighted full-time equivalents (weighted FTE). A weighted FTE differs from a student head count enrolment, in that only full-time students are counted as single units (e.g. if a full-time undergraduate student is required to take four courses, but only enrols for one course, that student would be counted as \( 1/4 = 0.25 \) of a FTE enrolled student) (Hendry and Bunting 1993). A FTE is then weighted for the level of the degree (e.g. undergraduate students are given a weighting of one, honours students are given a weighting of two, masters students are given a weighting of three and doctoral students a weighting of four).

4.1.2.2 Staff data

As in the case of student data, the SAPSE system also records and analyses staff data in terms of FTE. A FTE staff member is defined as "a staff member employed in a full-
time post for the full 12 months of an academic year. Therefore, a full-time lecturer who was on the payroll of a university for only 8 months of an academic year, would be $1 \times \frac{8}{12} = 0.67$ of an FTE staff member” (Hendry and Bunting 1993).

SAPSE defines instruction and research staff to include those “who are involved for more than 50% of their time on the instruction of students and on the conducting of research (e.g. professors, lecturers, teaching and tutorial assistants, part-time lecturers, research officers)” (Hendry and Bunting 1993). These staff members may also be involved in activities such as mounting of public concerts and exhibitions and the undertaking of contract research for outside bodies (Hendry and Bunting 1993).

4.1.2.3 Finance data

An objective of the study was to access the most recent financial and student output data. However, the 'most recent data' varied across the institutions according to the different databases. The most recently available SAPSE reports for analysis in this study were those for 1992 and 1993.

The approach to analysing and interpreting the data in this study is similar to that followed by Bunting (1994). Capital costs and clinical teaching costs were excluded, primarily because of the difficulty associated with obtaining this information. It is acknowledged that clinical teaching forms a major part of instructional costs, since the costs of educating and training health personnel include not only instruction at the teaching facilities but also at the health care delivery sites. The financial information collected was that of recurrent costs at the academic institutions.

Students enrolled in health care programmes attract a larger subsidy than students enrolled for other courses, since the costs of instruction and research to them is higher (Steele 1996). They also generate higher levels of income from research grants and contracts, and private gifts. Based on a review of tertiary institutions in South Africa, Steele (1996) attached the following weighting to students in the natural sciences (including health care and health sciences):

- Government subsidy: 2.67  
- Tuition fees: 1.40
• Other sources of income: 2.00
• All items of expenditure: 2.75

Based on Steele’s weighting factors associated with students enrolled in health care programmes, an estimation of the allocation of the various sources of income to these programmes was determined. An example of the approach is provided in Box 4.1. The example illustrates the allocation of the subsidy to health care programmes. The approach adopted for determining the allocation of the other sources of income (tuition fees, government grants and contracts, private gifts and contracts etc.) is similar, except different weightings are used for each of them.

Box 4.1: The Allocation of the Subsidy to Health Care Programmes

A. Allocating Government Subsidy: Example: University A

Government subsidy to university A = R66.6 million

To determine the allocation of the subsidy, science students had to be weighted in order that they might be comparable to students in other disciplines. Thus, all weighted FTE students enrolled in science programmes (including health care) were weighted (2.67) and converted into an equivalent of weighted FTE humanities students:

Sciences equivalent: \(2411 \times 2.67 = 6,437\)
and humanities total FTE student enrolment: = 376

The sum was then found of the weighted FTE equivalent student enrolled in the humanities and sciences = 6,813

The government subsidy per weighted FTE equivalent student enrolled in the humanities and sciences was then estimated, where the government subsidy to university A was found to be R66.6 million = R66.6 million/6813 = R9,775

The subsidy to students enrolled in health care programmes was then estimated. Firstly, the weighted FTE equivalent of these students (1911) was weighted (2.67) in order to covert them into humanities equivalents: 1911 x 2.67 = 5102 humanities equivalent.

The total government subsidy to students enrolled in health care programmes was calculated:
= R9,775 x 5102 = R49.9 million
4.1.2.4 Classification of universities and technikons by province

This sub-section classifies tertiary institutions involved in the training of health personnel according to those which have been Historically White Universities (HWUs), Historically White Technikons (HWT), Historically Black Universities (HBUs) and Historically Black Technikons (HBTs). Table 4.1 indicates the classification of universities in terms of them being either HWU or HBU and their provincial locations.

Table 4.1 Distribution of Universities across Provinces and classified in terms of HWU and HBU

<table>
<thead>
<tr>
<th>SET</th>
<th>UNIVERSITIES</th>
<th>HWU/HBU</th>
<th>PROVINCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Cape Town</td>
<td>HWU</td>
<td>Western Cape</td>
</tr>
<tr>
<td></td>
<td>Stellenbosch</td>
<td>HWU</td>
<td>Western Cape</td>
</tr>
<tr>
<td></td>
<td>Pretoria</td>
<td>HWU</td>
<td>Gauteng</td>
</tr>
<tr>
<td></td>
<td>Witwatersrand</td>
<td>HWU</td>
<td>Gauteng</td>
</tr>
<tr>
<td></td>
<td>Natal</td>
<td>HWU</td>
<td>KwaZulu-Natal</td>
</tr>
<tr>
<td>B</td>
<td>Rhodes</td>
<td>HWU</td>
<td>Eastern Cape</td>
</tr>
<tr>
<td></td>
<td>Potchefstroom</td>
<td>HWU</td>
<td>Mpumalanga</td>
</tr>
<tr>
<td></td>
<td>Orange Free State</td>
<td>HWU</td>
<td>Free State</td>
</tr>
<tr>
<td>C</td>
<td>Durban-Westville</td>
<td>HBU</td>
<td>KwaZulu-Natal</td>
</tr>
<tr>
<td></td>
<td>Western Cape</td>
<td>HBU</td>
<td>W. Cape</td>
</tr>
<tr>
<td></td>
<td>The North</td>
<td>HBU</td>
<td>Northern Province</td>
</tr>
<tr>
<td></td>
<td>Zululand</td>
<td>HBU</td>
<td>KwaZulu-Natal</td>
</tr>
<tr>
<td>D</td>
<td>Port Elizabeth</td>
<td>HWU</td>
<td>Eastern Cape</td>
</tr>
<tr>
<td></td>
<td>Rand Afrikaans</td>
<td>HWU</td>
<td>Gauteng</td>
</tr>
<tr>
<td>E</td>
<td>MEDUNSA</td>
<td>HBU</td>
<td>Gauteng</td>
</tr>
<tr>
<td></td>
<td>South Africa</td>
<td>HWU</td>
<td>Gauteng and national</td>
</tr>
</tbody>
</table>

Source: Bunting (1994) and Steele (1996)

Notes:  
A: 5 large, long established universities  
B: 3 medium/small, long established universities  
C: 4 newly established (post 1950) universities  
D: 2 medium/small size, newly established (post 1950) universities  
E: 2 universities of discrete nature (as per SAPSE definition system)

The universities linked to academic teaching hospitals include Cape Town, Medunsa, Natal, Pretoria, Stellenbosch, Free State and Witwatersrand, all of which, with the exception of Medunsa, are long established HWUs.
Table 4.2 indicates the classification of technikons in terms of them being either HWT or HBT and their provincial locations.

Table 4.2  Distribution of Technikons across Provinces and classified in terms of HWT and HBT

<table>
<thead>
<tr>
<th>SET</th>
<th>TECHNIKONS</th>
<th>HWT/HBT</th>
<th>PROVINCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Cape Town</td>
<td>HWT</td>
<td>W. Cape</td>
</tr>
<tr>
<td></td>
<td>Pretoria</td>
<td>HWT</td>
<td>Gauteng</td>
</tr>
<tr>
<td></td>
<td>Witwatersrand</td>
<td>HWT</td>
<td>Gauteng</td>
</tr>
<tr>
<td></td>
<td>Natal</td>
<td>HWT</td>
<td>KwaZulu-Natal</td>
</tr>
<tr>
<td>B</td>
<td>Vaal Triangle</td>
<td>HWT</td>
<td>Gauteng</td>
</tr>
<tr>
<td></td>
<td>Port Elizabeth</td>
<td>HWT</td>
<td>Eastern Cape</td>
</tr>
<tr>
<td></td>
<td>Orange Free State</td>
<td>HWT</td>
<td>Free State</td>
</tr>
<tr>
<td>C</td>
<td>M.L. Sultan</td>
<td>HBT</td>
<td>KwaZulu-Natal</td>
</tr>
<tr>
<td></td>
<td>Peninsula</td>
<td>HBT</td>
<td>W. Cape</td>
</tr>
<tr>
<td>D</td>
<td>Northern Transvaal</td>
<td>HBT</td>
<td>Northern Province</td>
</tr>
<tr>
<td></td>
<td>Mangosutho</td>
<td>HBT</td>
<td>KwaZulu-Natal</td>
</tr>
<tr>
<td>E</td>
<td>Technikon South Africa</td>
<td>HWT</td>
<td>National</td>
</tr>
</tbody>
</table>

Source: Bunting (1994)

Notes:  
A: 4 large, long established technikons  
B: 3 medium/small, long established technikons  
C: 2 smaller, newer technikons  
D: 2 small rural technikons  
E: 1 distance learning technikon (as per SAPSE definition system)

Refer to Appendices 13 and 14 for a detailed outline of the programmes offered by each of the universities and technikons.
4.2 RESULTS - UNIVERSITIES
The results of the universities and technikons are presented in Sections 4.2 and 4.3 respectively and are grouped in terms of the student, staff and financial data. Data are presented for 1992 and 1993, which limits the extent to which trends can be analysed.

4.2.1 University Student Data
In this sub-section, the data presented relates to the enrolments in the health care and health sciences programmes. More specifically this includes:
- weighted FTE enrolments,
- masters and doctoral enrolments, and
- total graduates.

4.2.1.1 Weighted full-time equivalent enrolments
As noted in section 4.1.2.1, SAPSE indicates enrolment in terms of weighted FTE, which only considers full-time students as single units and assigns proportionately higher weights to higher levels of study. In 1992, the weighted FTE enrolment in health care programmes across the sixteen universities was approximately 22,209 (Appendix 14). On average, the enrolment in health care programmes was approximately 9% of total student enrolment. Between 1992 and 1993, health care enrolments grew by 6%. In comparison, the total weighted FTE enrolment across all CESM categories, grew by 1%, suggesting that the enrolment in health care programmes outpaced that in the other CESM categories.

Graph 4.1 indicates the distribution of weighted FTE enrolments by province in the health care programmes (excluding enrolments at UNISA).

Note: The University of the North submitted identical information for 1992 and 1993.

The largest number of weighted FTE enrolments in health care programmes were in universities in Gauteng and Western Cape (Graph 4.1). In Gauteng, the weighted FTE enrolments accounted for nearly 50% of the total health care enrolments in 1992 and 1993. Universities with the highest growth rates were those in the Eastern Cape (11%), KwaZulu Natal (9.4%) and Gauteng (8%). Universities in the Free State and Mpumalanga had negative growth rates of -2% and -4% respectively.
Graph 4.2 indicates the distribution of FTE enrolments between the HWUs and HBUs.

Enrolments at the HWUs constitute 82.7% and 80.9% of total health care enrolments in 1992 and 1993 respectively (Graph 4.2). However, the rate of growth of enrolments in the HBUs was significantly higher than that of HWUs. Between 1992 and 1993, enrolments at the HBUs increased from 3,490 to 4,080, which was an increase of almost 17%. With the exception of the universities of the Western Cape and the North, all the HBUs had growth rates in health care programmes in excess of 20%. However, this rapid growth rate was not limited to health care programmes. A similar growth rate was found across all other programmes offered by the HBUs (Appendix 14). In contrast, the growth rate of enrolments in health care programmes across HWUs was approximately 4% between 1992 and 1993.

Between 1992 and 1993, weighted FTE enrolments in health care programmes accounted for approximately 12% of the total enrolments at the HWUs. In contrast, enrolments in health care programmes accounted for approximately 7% and 8% of the total enrolments at the HBUs in 1992 and 1993 respectively.
Table 4.3 indicates the distribution of enrolments between the seven universities which are attached to AHCs and the remaining universities.

Table 4.3: Universities: Distribution of weighted FTE enrolments between universities linked to AHCs and other residential universities

<table>
<thead>
<tr>
<th>Universities</th>
<th>Weighted FTE enrolments in health care programmes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1992</td>
</tr>
<tr>
<td>Universities linked to AHCs</td>
<td>17,021 (84%)</td>
</tr>
<tr>
<td>Other residential universities</td>
<td>3,194 (16%)</td>
</tr>
<tr>
<td>TOTAL</td>
<td>20,215</td>
</tr>
</tbody>
</table>

Enrolments at universities attached to AHCs account for approximately 84% of the total enrolments. Furthermore, three of these universities (Medunsa, Pretoria and Witwatersrand) are located in Gauteng, which together account for almost 47% of the total enrolments. This contributes further to the disparities between the provinces.

4.2.1.2 Masters and doctoral FTE enrolment

The total number of students enrolled for health science postgraduate programmes was 3,915 in 1992 and 3,393 in 1993. This was approximately 16% of the total number of students enrolled across all postgraduate programmes. Graph 4.3 indicates the distribution of students enrolled for postgraduate programmes by province. With regard to Medunsa, no data were available for 1993. Therefore, the overall total for Gauteng is underestimated for 1993.
Across the provinces, postgraduate enrolments in the health care and health sciences were concentrated in Gauteng and Western Cape, which together accounted for 75% and 72% of total postgraduate enrolment in 1992 and 1993 respectively (Graph 4.3). Furthermore, enrolments in these provinces were concentrated at those universities associated with AHCs.

Table 4.4 indicates the distribution of students between the HWUs and HBUs and between those institutions attached to AHCs and other residential universities. This analysis excludes UNISA. The lack of data for MEDUNSA underestimates the enrolments for both the HBUs and that of the universities attached to AHCs for 1993.
Table 4.4: Universities: Distribution of postgraduate headcount enrolments (1992 - 1993)

<table>
<thead>
<tr>
<th>Postgraduate headcount enrolments</th>
<th>1992</th>
<th>1993</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distribution of postgraduate students between HWUs and HBUs:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HWUs</td>
<td>3,431</td>
<td>3,319</td>
</tr>
<tr>
<td>HBUs</td>
<td>454</td>
<td>36</td>
</tr>
<tr>
<td>Distribution of postgraduate students between universities attached to AHCs and other residential universities:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Universities attached to AHCs</td>
<td>3,547</td>
<td>3,082</td>
</tr>
<tr>
<td>Other residential universities</td>
<td>338</td>
<td>273</td>
</tr>
</tbody>
</table>

A comparison of the HWUs with the HBUs reveals that the majority (88%) of postgraduate students were enrolled at the HWUs (Table 4.4). The HBUs' significantly lower postgraduate enrolment is essentially a consequence of the universities performing mainly as undergraduate teaching institutions, "generally offering the lower qualification levels in a narrow range of disciplines associated with homelands and ethnic civil service structures" (Subotzky 1997). This has severely limited their ability in drawing the government subsidy. The details of the factors which guide the allocation of the government subsidy will be discussed in greater detail in Section 4.2.3.

4.2.1.3 Total graduates

In 1992 out of a total of 45,700 graduates, 4,030 (8.8%) graduated from the health care programmes. This trend was similar to that in 1993. Graph 4.4 indicates the distribution of graduates across the provinces in 1992 and 1993.
More than two-thirds of all the graduates (excluding UNISA) were from universities in Gauteng and Western Cape. One of the critical factors which determines the income generating capacity of universities is the number of graduates and success rates. This factor has played an especially important role in the extent to which universities have been able to stake claims on the subsidy from the Department of Education.

4.2.1.4 Summary of student data
Between 1992 and 1993, overall student numbers as well as enrolments in health care programmes increased significantly. Across the provinces, students were concentrated at universities in Gauteng and the Western Cape. Also, within these two provinces a large percentage of students were enrolled at institutions linked to AHCs. Although the data system does not provide an account of the student enrolment in the various health care programmes, it can be deduced that a significant proportion of the students enrolled at institutions linked to AHCs were registered for the MBChB (i.e. training as doctors).

A comparison of the HBU and HWU indicates that enrolments in health care programmes were concentrated in the HWUs. The NCHE (1996) argues that this is
largely the result of the apartheid policies which promoted the study of the sciences (natural and health) and engineering in the HWUs and encouraged studies in the humanities in the HBUs. Also significant is the wide discrepancy in enrolment in postgraduate degrees (honours, masters and doctorates) between the HWUs and HBUs. HBUs have had a larger concentration of students in undergraduate as opposed to postgraduate programmes in comparison with the HWUs. Since the SAPSE funding system favours postgraduate programmes and enrolment in health care programmes, HWUs have benefited from this student profile. The implications of this for staffing levels will be discussed in the following section.

4.2.2. University Staff Data

This sub-section presents the data on instruction and research (I/R) staff involved in health care programmes. SAPSE does not include data on administrative\(^1\) and service\(^2\) staff. Also, I/R staff are very narrowly defined to include only those who spend more than 50% of their time on I/R. This system of categorisation obviously does not include the time of clinicians and consultants at AHCs who are involved in teaching, but who spend less than 50% of their available time on I/R activities.

Universities in Gauteng and Western Cape together accounted for approximately 78% of the total staff available in I/R in the health care programmes. These universities, particularly those linked to AHCs, have greater teaching and research capacity than the other universities. Graph 4.5 indicates the ratio of FTE students to FTE I/R staff at universities across the various provinces.

---

\(^1\) Administrative staff: “vice-principals, registrars, assistant registrars, librarians, accountants, computer programmes, laboratory technicians, clerks, secretaries, typists, carpenters, electricians” (Hendry and Bunting 1993).

\(^2\) Service staff: “unskilled workers in a university (e.g. gardeners, cleaners, messengers, security guards)” (Hendry and Bunting 1993).
Although universities in Gauteng and the Western Cape have a greater teaching capacity than the other provinces, they also have a larger student intake (Graph 4.5). Therefore, their FTE student to FTE I/R staff ratios are comparable to the other provinces. The province with the highest ratio was the Northern Province, despite their comparatively low student intake in the health sciences. This might be the result of the relatively lower teaching capacity in the Northern Province.

Table 4.5 presents a comparison of the ratio of FTE students to FTE I/R staff, between HWUs and HBUs; and universities attached to AHCs and other residential universities.
Table 4.5: Universities: Ratio of FTE students to total FTE I/R staff in health care programmes (1992 & 1993)

<table>
<thead>
<tr>
<th>Comparison between HWUs and HBUs:</th>
<th>Ratio of FTE students to total FTE I/R staff</th>
</tr>
</thead>
<tbody>
<tr>
<td>HWUs</td>
<td>1992</td>
</tr>
<tr>
<td></td>
<td>9.5</td>
</tr>
<tr>
<td>HBUs</td>
<td>8.9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Comparison between universities attached to AHCs and other residential universities:</th>
<th>Ratio of FTE students to total FTE I/R staff</th>
</tr>
</thead>
<tbody>
<tr>
<td>Universities attached to AHCs</td>
<td>1992</td>
</tr>
<tr>
<td></td>
<td>9.2</td>
</tr>
<tr>
<td>Other residential universities</td>
<td>10.2</td>
</tr>
</tbody>
</table>

A comparison of the HWUs and HBUs reveals a significant change between 1992 and 1993 (Table 4.5). In 1993, the HBUs had a higher ratio than the HWUs of FTE students to I/R staff. This was primarily the result of the rapid growth rate of FTE students in the HBUs, which outpaced that of the HWUs.

The universities attached to AHCs had slightly more favourable student to staff ratios than the other universities (Table 4.5). Although the universities contribute to a proportion of the teaching time of staff on joint appointments, an accurate estimation of the extent to which this improves the ratio of FTE students to FTE I/R staff at the institutions linked to AHCs could not be determined given the limitations of the data.

4.2.3 University Finance Data

4.2.3.1 Sources of income for health care programmes at universities

The sources of income available to the universities include tuition fees, the subsidy from the Department of Education, government grants and contracts (e.g. MRC, HSRC) and private gifts and contracts. The SAPSE information system does not allow for the above-mentioned sources to be disaggregated and allocated to the various CESM categories. Thus, the allocations to the health care programmes had to be estimated (refer to section 4.1.2.3 above).

The total income allocated to students enrolled in health care programmes was R654.2 million and R756.7 million in 1992 and 1993 respectively, suggesting an increase of approximately 15.7% (Appendix 15). The income available for health care programmes
accounted for approximately 16.7% and 16.9% of the overall income available to universities in 1992 and 1993 respectively.

Graph 4.6 indicates the percentage distribution of income from the different sources.

![Graph 4.6: Universities: Sources of income for health care programmes (1992 - 1993)](image)

The subsidy from the Department of Education is still the largest source of income (52%) (Graph 4.6). However, in recent years this subsidy has been drastically cut as a result of the financial crisis in tertiary education. The allocation of the Department of Education's subsidy to tertiary institutions is based on the SAPSE 110 formula. The allocation of the formula (Bunting 1994) is weighted in favour of:

- Student enrolment (with more weighting credited to enrolments in the sciences and at the postgraduate level);
- Student success rates; and
- Research outputs.

The other significant source of income was that from government grants and contracts, private gifts and contracts (indicated as 'other sources' in Graph 4.5). The data indicates that between 1992 and 1993, these sources of income accounted for almost 34% of total income available.

Graph 4.7 indicates the distribution of income for health care programmes amongst the provinces. UNISA's data is not included in Graph 4.7.
Universities in Gauteng and the Western Cape together accounted for approximately 75% of the income available (Graph 4.7). These two provinces have a concentration of HWUs and universities which are linked to AHCs, and have the highest student numbers.

Table 4.6 indicates the distribution of income between HWUs and HBUs and universities which are attached to AHC and other residential universities. UNISA’s data is not included in the analysis.

Table 4.6: Universities: Distribution of income for health care programmes (1992 & 1993)

<table>
<thead>
<tr>
<th></th>
<th>Rand million</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1992</td>
</tr>
<tr>
<td>Comparison between HWUs and HBUs:</td>
<td></td>
</tr>
<tr>
<td>HWUs</td>
<td>516.3 (82%)</td>
</tr>
<tr>
<td>HBUs</td>
<td>112.4 (18%)</td>
</tr>
<tr>
<td>Comparison between universities attached to AHCs and other residential universities:</td>
<td></td>
</tr>
<tr>
<td>Universities attached to AHCs</td>
<td>540.5 (86%)</td>
</tr>
<tr>
<td>Other residential universities</td>
<td>88.2 (14%)</td>
</tr>
</tbody>
</table>

A comparison of HWUs and HBUs indicates that approximately 82% (R516.3 million) of the total income (R628.7 million) was allocated to the HWUs (Table 4.6). Of the total
income, the subsidy accounted for almost 51% (R317.5 million). Approximately 78% (R247.7) of the subsidy was allocated to the HWUs. Since the HWUs have a higher enrolment in health care programmes and at the post-graduate level, these institutions were allocated a higher weighting by the subsidy formula.

The extent to which the HWUs and HBUs have been able to draw on income from 'other sources' has varied. A comparison of the HWUs and the HBUs reveals that the income derived by HWUs from these sources increased from R192.5 million (1992) to R213.5 million (1993) This was an increase of approximately 11% (R21 million). The HBUs' total share of income from these sources increased by 18% (R6.5 million) between 1992 and 1993. Despite this increase, HBUs have had to rely on tuition fees to a greater extent that the HWUs to supplement their income (Subotzky 1997). Between 1992 and 1993, HWUs income from tuition fees increased by almost 15%. In comparison, tuition fee income for the HBUs increased by 33.3%.

Between 85 - 86% of the total income available was allocated to the universities attached to AHCs (Table 4.6). However this data does not include the allocation of funds from PDoH to these universities in support of joint appointments, which significantly underestimates their true income. Thus, the discrepancies between these institutions and the other residential universities, may be larger than has been established on the basis of the SAPSE reports.

4.2.3.2 Allocation of income per weighted FTE enrolled student

This sub-section presents an analysis of the total allocation of income per weighted FTE enrolled students. The units of analysis are the weighted FTE student output and financial data in terms of the total income (government subsidy, tuition fees, and other sources). Appendix 16 indicates the total allocation of funds per weighted FTE students in the health care programmes.

Between 1992 and 1993, the average allocation per weighted FTE enrolled students increased from R31,086 to R34,036 (Appendix 16), which was an increase of approximately 9.5%. Graph 4.8 indicates the income per weighted FTE for each of the provinces.
The income allocated per weighted FTE enrolled student increased across universities in all of the provinces, between 1992 and 1993 (Graph 4.8). In 1992, income per FTE ranged from R21,607 (Northern Province) to R36,515 (Western Cape) and in 1993, it ranged from R21,607 (Northern Province) to R39,413 (Eastern Cape). The high allocation of income per weighted FTE enrolled student at universities in the Eastern Cape can be attributable to the low weighted enrolment at the institutions. In comparison, the low estimation for the university in the Northern Province could be the result of the overall low level of income available to this institution, relative to the number of weighted FTE enrolled students. The extent to which differences in the mix of health care students (e.g. MBChB versus physiotherapy) accounts for differences in the income per student between provinces requires further investigation.

Table 4.7 presents a comparison of the distribution of income per weighted FTE student, between HWUs and HBU, and universities attached to AHCs and other residential universities.
Table 4.7: Universities: Distribution of income per weighted FTE student  
(1992 & 1993)

<table>
<thead>
<tr>
<th></th>
<th>1992</th>
<th>1993</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comparison between HWUs and HBUs:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HWUs</td>
<td>30,870</td>
<td>34,747</td>
</tr>
<tr>
<td>HBUs</td>
<td>32,206</td>
<td>31,667</td>
</tr>
<tr>
<td>Comparison between universities attached to AHCs and other residential universities:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Universities attached to AHCs</td>
<td>31,755</td>
<td>34,734</td>
</tr>
<tr>
<td>Other residential universities</td>
<td>27,614</td>
<td>31,163</td>
</tr>
</tbody>
</table>

In 1992, the average income per weighted FTE student at the HBUs (R32,206) was higher than that of the HWU's (R30,870) (Table 4.7). In contrast in 1993, the average income per weighted FTE at the HWUs (R34,747) exceeded that of the HBUs (R31,667). The rapid student growth rate in the HBUs, which exceeded the HWUs, is one of the contributing factors. Also, the subsidy income allocated to the HBUs grew at a slower rate than the growth in student FTEs. Between 1992 and 1993, the subsidy per weighted FTE student at the HWUs increased by 18%. In comparison, the subsidy per weighted FTE student at the HBUs decreased by approximately 7%. The income allocated per weighted FTE was significantly higher for the universities attached to AHCs than the other universities in both 1992 and 1993 (table 4.7).

4.2.3.3 Bursaries provided by PDoH: Provincial survey results

Appendix 17 indicates the bursaries awarded by the PDoHs, to students in health care programmes in the 1994 academic year. Only four out of the nine PDoHs provided the information requested. Therefore, the total number and value of bursaries awarded is understated.

Students who received financial support were those enrolled in undergraduate and postgraduate nursing degrees, bachelor of medicine and bachelor of surgery (MBChB), pharmacy, dental therapy and surgery, physiotherapy, occupational therapy, speech therapy, optometry, radiology and dietetics. PDoHs in the Free State, KwaZulu-Natal, Northern Cape and Western Cape awarded 707 bursaries amounting to approximately R6.5 million to students. Approximately 80% (R5.2 million) of the bursaries were awarded to students enrolled for the MBChB.
4.2.3.4 Summary of financial data for universities
The subsidy from the Department of Education is the largest source of income for the universities. A significant proportion of the subsidy, and other income is absorbed by universities in Gauteng and the Western Cape. These provinces also have a high concentration of HWUs, which account for the majority of the funds allocated to health care programmes, which has tended to increase the gap between the HWUs and HBUs. While HWUs and those attached to AHCs have the highest student numbers, they on average have higher income levels per FTE student than other universities. The extent to which this is influenced by differences in the mix of health care students could not be determined.

4.3 TECHNIKONS

4.3.1 Technikon Student Data
As in Section 4.2, this sub-section presents the enrolments in the health care and health sciences in relation to:
- weighted FTE enrolments,
- postgraduate enrolments, and
- total graduates.

4.3.1.1 Weighted FTE Enrolments at technikons
On average, FTE students enrolled in the health care programmes account for almost 5.4% of total student enrolment (Appendix 18). Between 1992 and 1993, the weighted FTE enrolments for health care programmes increased by almost 5.6% (excluding weighted FTE enrolments at Technikon SA) as compared to the overall enrolment which increased by 8.2%.
Graph 4.9 indicates the enrolments for each of the provinces.

The highest FTE enrolments in the health care programmes were in Gauteng and KwaZulu Natal (Graph 4.9). The combined enrolments of these two provinces accounted for approximately 63% and 59% of total FTE student enrolment in 1992 and 1993 respectively. Despite the large percentage share accounted for by Gauteng, enrolment at colleges in this province decreased by approximately 5% between 1992 and 1993. Growth rates for FTE enrolment in the health care programmes were particularly high for technikons in the Northern Province (29%), Free State (22%), and KwaZulu Natal (12%).
Table 4.8 indicates the distribution of enrolments between HWTs and HBTs.

Table 4.8: Technikons: Distribution of weighted FTE enrolments between HWTs and HBTs

<table>
<thead>
<tr>
<th>Technikons</th>
<th>Weighted FTE enrolments in health care programmes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1992</td>
</tr>
<tr>
<td>HWTs</td>
<td>2,112</td>
</tr>
<tr>
<td>HBTs</td>
<td>1,207</td>
</tr>
<tr>
<td>TOTAL</td>
<td>3,319</td>
</tr>
</tbody>
</table>

A comparison of the enrolment at the HBTs with the HWTs, indicates that almost 64% of total FTEs in the health care programmes were enrolled in the HWTs (Table 4.8). Between 1992 and 1993, the enrolments at the HWTs and HBTs grew by approximately 7.5% and 2.2% respectively.

4.3.1.2 Postgraduate headcount enrolments at technikons

In 1992 and 1993, 146 and 178 students were enrolled for postgraduate courses in health care programmes. These postgraduate students are masters and doctoral equivalents. Graph 4.10 indicates the distribution across the provinces.

Postgraduate students enrolled at technikons in Gauteng accounted for the largest proportion of total enrolled postgraduate students (Graph 4.10). They constituted 66% of total postgraduate enrolment in 1992 and 46% in 1993.
Table 4.9 indicates the distribution of postgraduate headcount enrolments between HBTs and HWTs.

Table 4.9: Technikons: Distribution of postgraduate headcount enrolments
(1992 - 1993)

<table>
<thead>
<tr>
<th>Technikons</th>
<th>Postgraduate headcount enrolments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1992</td>
</tr>
<tr>
<td>HWTs</td>
<td>140</td>
</tr>
<tr>
<td>HBTs</td>
<td>6</td>
</tr>
<tr>
<td>TOTAL</td>
<td>146</td>
</tr>
</tbody>
</table>

Enrolments in postgraduate health care programmes were concentrated in the HWTs (Table 4.9). This has counted favourably for these institutions, in that it has allowed them to be able to generate higher subsidies and thus better staffing levels than HBTs.

4.3.1.3 Total graduates at technikons

In 1992 and 1993, there were 1,329 and 1,520 graduates respectively in the health care programmes. They represented approximately 10% of the total graduates across all programmes.

Graph 4.11 indicates the distribution of graduates across each of the provinces in 1992 and 1993.
Graduates in Gauteng and Western Cape accounted for almost two-thirds (62%) of total graduates (Graph 4.11). As noted earlier, the SAPSE funding system gives additional weighting to student success rates. This has ensured that institutions in Gauteng and Western Cape and predominantly those that are HWTs have been able to generate high levels of funding.

Table 4.10 indicates the distribution of graduates between the HBTs and HWTs, excluding graduates from Technikon SA.

Table 4.10: Technikons: Distribution of graduates between HWTs and HBTs (1992 - 1993)

<table>
<thead>
<tr>
<th>Technikons</th>
<th>Graduates</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1992</td>
</tr>
<tr>
<td>HWTs</td>
<td>870</td>
</tr>
<tr>
<td>HBTs</td>
<td>453</td>
</tr>
<tr>
<td>TOTAL</td>
<td>1323</td>
</tr>
</tbody>
</table>

Between 1992 and 1993, approximately 65% of the graduates were from HWTs (Table 4.10). Despite the HBTs having a lower number of students graduating, they exhibited a higher graduate growth rate (18%) than the HWTs (12%) between 1992 and 1993.

4.3.1.4 Summary of student data

On average, students enrolled in health care and health science programmes at technikons account for approximately 5% of total enrolment. Weighted FTE enrolments were concentrated at technikons in Gauteng, KwaZulu-Natal and the Western Cape. Furthermore, more than two-thirds of students were enrolled at HWTs.

The number of postgraduate enrolments and graduates were significantly higher for the HWTs than the HBTs. As was argued earlier, the study of both health care and health sciences and postgraduate programmes was promoted at the historically white tertiary institutions by apartheid policies. This has had significant implications for the staffing and funding arrangements for these institutions.
4.3.2 Technikon Staff Data

Between 1992 and 1993 the total number of FTE I/R staff employed in health care programmes accounted for approximately 8% of total FTE I/R staff. Almost two-thirds of them were employed at technikons in KwaZulu Natal and Gauteng. On average, the ratio of FTE health care students to weighted FTE I/R staff was 16 in 1992 and 20 in 1993. This was lower than the overall ratios across all other CESM categories. A possible explanation for this could be that the subsidy formula makes a greater provision for FTE I/R staff in health care programmes, because of the higher costs associated with these programmes.

Graph 4.12 provides a comparison of the student to staff ratios between the HWTs and HBTs.

![Graph 4.12: Technikons: Ratio of FTE students to I/R staff for health care programmes (1992 - 1993)](image)

On average, the HWTs tended to have better student to staff ratios than the HBTs (Graph 4.12). On average, HBTs had approximately twice as high student to staff ratios than their HWT counterparts. The high student to staff ratios at the HBUs impacts adversely on their teaching load and has often been given as one of the primary reasons for the low research output of the HBUs.
4.3.3 Technikon Finance Data

4.3.3.1 Sources of income for health care and health sciences
Technikons derive their income from the same sources of funding as the universities. These include the subsidy from the Department of Education, tuition fees, government grants and private gifts and contracts. As in the case of the universities, the allocation of the subsidy to the technikons is based on student enrolment (especially that in the sciences and at postgraduate level); student success rates, and the research output of the institutions.

Graph 4.13 indicates the percentage contribution of income from the different sources.

Graph 4.13: Technikons: Sources of income for health care programmes (1992 - 1993)

Other income 24%

Tuition fees 16%

Subsidy (Department of Education) 60%

The total allocation to technikons for health care programmes increased from R65.4 million in 1992, to R80.8 million in 1993 (Graph 4.13). This was an increase of approximately 23.6%. The subsidy from the Department of Education accounted for approximately 60% of the total income available (Graph 4.13). Income from other sources (government grants and contracts, private gifts etc.) accounted for about 24% of total income.
Graph 4.14 indicates the distribution of total income across the provinces. Funds allocated to Technikon SA are not included.

Graph 4.14: Technikons: Distribution of total income for health care programmes by province (1992 - 1993)

Almost 62% of the total income was allocated to technikons in Gauteng and KwaZulu Natal (Graph 4.14). Between 1992 and 1993, the most significant increases in income were at technikons in the Northern province (67.8%), KwaZulu Natal (25%) and Gauteng (17.7%). It should be noted that all three of the technikons in Gauteng offer programmes in dentistry. The teaching costs associated with dentistry are higher than with other health care programmes offered by technikons. This may partially explain the higher allocation from the subsidy to these technikons.
Table 4.11 indicates the distribution of income between the HWTs and HBTs.

<table>
<thead>
<tr>
<th></th>
<th>Government subsidy (%)</th>
<th>Tuition fees (%)</th>
<th>Other income (%)</th>
<th>Total income (Rand million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HWTs</td>
<td>64</td>
<td>62</td>
<td>68</td>
<td>71</td>
</tr>
<tr>
<td>HBTs</td>
<td>36</td>
<td>38</td>
<td>32</td>
<td>29</td>
</tr>
<tr>
<td>Total income</td>
<td>39.3</td>
<td>46.8</td>
<td>10.2</td>
<td>13.3</td>
</tr>
</tbody>
</table>

Approximately two-thirds of the total income available was absorbed by the HWTs in 1992 and 1993 (Table 4.11). Of the total income arising from the subsidy (excluding the subsidy made to Technikon SA), the HBTs share increased from 36% in 1992 to 38% in 1993 (Appendix 19). The HBTs share of total income arising from tuition fees decreased from 32% in 1992 to 29% in 1993. Their share of income arising from the other sources (public and private grants and contracts etc.) also decreased, from 42% in 1992 to 34% in 1993.

4.3.3.2 Total income per weighted FTE enrolled student

On average, the income per weighted FTE enrolled student in health care programmes increased from R19,355 in 1992, to R22,169 in 1993, reflecting an increase of approximately 14.5% (Appendix 20). The income per enrolled student in health care programmes is approximately 1.8 times higher than that on students enrolled in other programmes.

Graph 4.15 indicates the income per weighted FTE student at technikons for each of the provinces.
In 1992, the average income per weighted FTE student ranged from R17,637 (Gauteng) to R23,438 (Free State) (Graph 4.15). In 1993, it ranged from R18,447 (Eastern Cape) to R23,855 (Northern Province). Across the provinces, those with the most significant increases in the allocation per enrolled student between 1992 and 1993, were Northern Province (29.7%), Gauteng (24.5%) and KwaZulu Natal (15.5%).

Table 4.12 presents a comparison of the distribution of income per weighted student between the HWTs and HBTs.

Table 4.12: Technikons: Distribution of income per weighted FTE student between HWTs and HBTs (1992 & 1993)

<table>
<thead>
<tr>
<th>Technikons</th>
<th>1992</th>
<th>1993</th>
</tr>
</thead>
<tbody>
<tr>
<td>HWTs</td>
<td>22,301</td>
<td>27,069</td>
</tr>
<tr>
<td>HBTs</td>
<td>19,718</td>
<td>22,852</td>
</tr>
</tbody>
</table>

Across the HBTs, the average allocation per student in the health care programmes increased by approximately 16% from R19,718 in 1992, to R22,852 in 1993 (Table 4.12). With regard to the HWTs, the allocation per FTE health care student, increased from R20,514 in 1992 to R22,146 in 1993, which was an increase of almost 21%. The differential between the HWTs and HBTs increased from 13% in 1992 to 18% in 1993.
4.4 SUMMARY OF UNIVERSITIES AND TECHNIKONS

4.4.1 Quality of Data
In some instances, inaccuracies were found in the SAPSE database (UCT-Faculty of Social Science). This was the result of poor reporting of information on the part of the tertiary institutions. Concerted efforts were made to verify these inaccuracies through consultations with Professor I Bunting (UCT). However, not all potential inaccuracies could be addressed. As a result, the data presented should be interpreted with caution.

4.4.2 Student Enrolment in Health Care Programmes
Approximately 25,588 and 26,808 weighted FTE students were enrolled at universities and technikons in 1992 and 1993 respectively. The majority (86%) of these FTE students were enrolled at universities. Between 1992 and 1993, the enrolment in health care programmes at the universities (6%) grew slightly faster than the technikons (5.6%), if the enrolments at the distance learning institutions are excluded.

Across both the universities and technikons, the FTE enrolments were concentrated at institutions in Gauteng (44%), Western Cape (21%) and KwaZulu Natal (12%). A comparison of the enrolments between the historically white institutions (HWIs) and the historically black institutions (HBIs), indicates that the HWI's enrolments comprised 80% of total enrolment in 1992. This percentage declined to 78.7% in 1993. Between 1992 and 1993, enrolment at the HBIs grew by approximately 13.1%, as compared to a growth rate of 4.2% experienced by the HWIs. The data indicates that the differentials in enrolments between the HWTs and HBTs was smaller than that between the HWUs and HBUs.

It can be summarised that the education and training of health personnel is concentrated in the:
- provinces of Gauteng and the Western Cape;
- universities as opposed to the technikons;
- HWUs as opposed to the HBUs; and
- universities attached to AHCs.
This concentration has had an influence on the funding of health personnel education and training.

### 4.4.3 Sources of Finance

Between 1992 and 1993, a total income of R719.6 million and R837.6 million respectively, was allocated to students in the health care and health sciences at the sixteen universities and twelve technikons included in this study. Of the total funds allocated, 90% was allocated to universities.

The sources of income included the subsidy from the Department of Education, tuition fees, and other sources (government contracts and grants, private gifts and contracts). The income from tuition fees and the government subsidy account for approximately 14% and 52% respectively of the total income available. Technikons are relatively more dependent than the universities on the subsidy and tuition fees than the universities. Universities have a greater potential to attract funds from other sources of income.

HWUs have been able to attract a larger share of the subsidy, as a result of their relatively greater emphasis on science (including health care) programmes, postgraduate programmes and research output. This has also played a key role in them being in a position to secure funds from public and private research institutes. The extent to which the HBUs are able to draw funds from both the Department of Education and other sources are constrained by their concentration in undergraduate and humanities programmes and relatively poor research capacity. In recent years these universities have had to increasingly rely on tuition fees to maintain their income.

The universities attached to AHCs together accounted for approximately 75% of the total income available for both universities and technikons. Since this study was not able to access reliable data on the funding arrangements between PDoH and the AHCs, the actual levels of financial contributions in support of joint appointments to these institutions could not be determined. However, it is widely acknowledged that the system of joint appointments have ensured higher staffing levels at these institutions. This has meant that these institutions have not only been highly productive in teaching, but also in research output. These institutions have thus been able to procure higher subsidies.
from the Department of Education. Furthermore, in 1994, 80% of the total amount of bursaries (R5.2 million) provided by the PDoH, were awarded to students enrolled for the MBChB. This system of awarding bursaries to students enrolled predominantly for the MBChB emphasises training in curative care and fails to support the training of other health care students. The latter area needs closer review, particularly when considering the current health care personnel needs within a transforming PHC orientated approach.

4.4.4 Income Per Weighted FTE Enrolled Student in the Health Care and Health Sciences

On average, the allocation of total income to weighted FTE students enrolled at the universities (R31,086) is almost 1.5 times higher than that allocated to weighted FTE students enrolled at the technikons (R19,355). Amongst the universities, the allocation per weighted FTE enrolled student ranged from R21,607 (University of the North) to R50,000 (Rhodes University). In 1993, the average income per FTE student was approximately 10% higher for the HWUs than the HBUs. In comparison, the differential between the HWTs and HBTs was almost 18%. This suggest that the disparities are greater for the technikons than the universities. Students enrolled at some of the institutions linked to AHCs (particularly, MEDUNSA, Stellenbosch and Witwatersrand) were also allocated a significantly higher level of income than the national average in 1992 (R31,086) and 1993 (R34,036).

4.4.5 Universities and Technikons and the NCHE Proposals

In the working document "An Organisational and Financial Model for the Health Sciences", the NCHE Health Science Group called for the transformation of the present system of health personnel education which emphasises medical and dental training. A key observation of this group was that the system has failed to educate and equip sufficient personnel with the necessary knowledge and skills to manage the change to the PHC approach. The SAPSE system, upon which the subsidy allocations to institutions are made, has been the subject of considerable criticism, mainly on the grounds of worsening the disparities between the HWIs and HBIs. Further, a disproportionate amount of funding is made in favour of universities as opposed to technikons, despite the fact that technikons are responsible for health personnel who form the critical core of PHC teams. Thus, any future model for the funding of health
personnel education and training must be consistent with, and give effect to the PHC approach.

The present system of health personnel education and training has emphasised curative, hospital based care, through its disproportionate allocation of funding from both the Departments of Health and Education to AHCs. It is questionable whether this is in line with and supports the reorientation to the PHC system, away from the doctor-driven services. Furthermore, one of the contradictions that arises is that while the government devotes considerable resources to training doctors, dentists and other health professionals, the majority leave soon after graduating to work in the private sector. For example, 93% of dentists, 89% of pharmacists, 66% of specialist doctors, 62% of general doctors work in the private sector (Rispel and Behr 1992). In addition, Bunting (1994) estimated that the full cost to the government of health personnel who emigrated in 1992, amounted to R9.4 million. In light of the current debate on community service, this issue needs further consideration.

Based on the data and a review of the distribution of personnel between geographic areas, it appears that doctors and dentists (in both the public and private sectors) are concentrated in Gauteng and the Western Cape. These two provinces also have the highest concentration of universities attached to AHCs. This raises the question of how to ensure that personnel work in areas of greatest need. In particular, the potential influence of the location of training institutions on where health personnel work requires further investigation. If there is a strong link between the location of training institutions and areas of work, it is crucial that the training capacity of institutions in the provinces of Mpumalanga, North West and Northern Province are improved. In the context of considerable budget constraints in both the health and education sectors, the strengthening of capacity in these provinces might require reallocating resources from 'better-resourced' institutions.

A redistribution of resources in order to redress historical inequities might entail a rationalisation of 'better-resourced' institutions, particularly in the provinces with a relative concentration of training capacity. As with the nursing colleges, a decision to
redistribute resources to historically under-resourced areas must take efficiency implications (especially potential economies of scale) into account.

4.4.6 Limitations

The most significant limitations encountered in the study are captured under four broad areas. Firstly, there was difficulty in accessing the most recent data for 1995, 1996 and 1997. Thus, the extent to which the data presented in this study accurately captures the financial crisis in higher education is limited. In addition, shifts in government sector social spending since 1994, and the implications thereof for the education and training of health personnel are of concern.

Secondly, the SAPSE system aggregates data in terms of CESM categories and does not present data for the academic programme level. This significantly limited the extent to which the data could be analysed and comparisons made across the various programmes.

Thirdly, no data were available for the tertiary institutions in the former TBVC (Transkei, Bophuthatswana, Venda and Ciskei) states. Prior to 1995, many of these institutions received significantly higher government allocations than they would have received had they also been subject to the subsidy formula (NCHE 1996). Upon integration into the SAPSE system of funding, many of these institutions are experiencing extensive problems in coping with the smaller government subsidies.

The budgets of AHCs include the costs of teaching by clinical staff, in terms of joint appointments. Universities contribute a significant proportion to joint appointments. However, this study underestimates the total expenditure on joint appointments, since it was possible to capture the contributions made by the PDoHs.

4.4.7 Reviewing the SAPSE information system

The SAPSE information system whereby tertiary institutions report their student, funding and staff data to the Department of Education, needs to be critically reviewed. In addition, the extent to which the SAPSE subsidy system entrenches the historical
disparities between training institutions requires further investigation. However, the lines between HWIs and HBIs are becoming increasingly blurred as student profiles at the institutions are changing. Further research is needed to consider the extent to which changing student profiles (in terms of increasing enrolment of students from historically disadvantaged backgrounds) at the HWIs are reducing the disparities.

4.4.8 Further Research Areas
Emanating from this study there are several areas which potentially emerge for further study. These include the need for:

- An evaluation of the updated 1995, 1996 and 1997 financial and student output data for all tertiary level institutions is necessary. There should be close collaboration between the Departments of Education and Health in relation to the SAPSE system's database and subsequent subsidy allocations.

- An analysis of the current financial situation of the tertiary institutions in the former TBVC states is required. The funding arrangements between these institutions and their administrative structures differed from institutions in the "former RSA". Incorporation of these institutions into the SAPSE funding system has not been without difficulty. The capacity of these institutions in, terms of the education and training of health personnel, has not been addressed and requires further research and investigation.

- The funding arrangements between PDoHs and AHCs is currently one of the more controversial areas within health human resources fora. The complexity of the arrangements between PDoHs and AHCs, and the interrelationship between teaching, research and patient care in the education and training process, has made research into this area difficult. However, this is clearly an area which requires investigation into estimating the actual levels of expenditure by the provinces in support of the training component of joint agreements.

- A phased introduction of a research initiative to document the cost of specific programmes is required. For example the costs associated with the training and
education of specific health care and health science students (medical doctors, dentists, PHC nurses etc.) is necessary.
CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

This chapter draws together the most significant and critical results highlighted in chapters 3 and 4, and discusses them within the framework developed in chapter 2.

5.1 CONCLUSIONS

5.1.1 Distribution of Total Expenditure Across Institutions Training Health Personnel

In the 1994/95 financial year, a total income of R194.7 million was estimated for the nursing colleges. In 1993, a total income of R837.6 million was allocated to students in health care programmes at the sixteen universities and twelve technikons included in this study. Approximately R439.6 million (52%) of the total income allocated to universities and technikons was allocated by the Department of Education, in terms of the government subsidy. Noting the problem associated with the different financial years that were used for estimating the colleges, universities and technikons institutions' income as well as taking account of the different funding sources (Department of Education and Department of Health), the data does suggests that a disproportionate amount of governments funds were allocated to the universities and technikons as opposed to nursing colleges.

Within the university and technikon sector, the key findings were that:

- the majority of funds were skewed in favour of universities as opposed to technikons;
- amongst the universities, a disproportionate amount of funds were absorbed by the HWIs as opposed to HBIs, and
- on average, the total income per weighted FTE student was significantly higher for students enrolled for health care programmes at universities attached to AHCs than at technikons and other residential universities.

The current system responsible for training health personnel can be described as an inverted pyramid, where the largest proportion of available funds are allocated in favour of universities (as opposed to technikons and nursing colleges). Many of these universities are predominantly HWUs and attached to AHCs, where the primary focus is on training doctors, dentists and specialists. Furthermore in 1994, 80% of the total amount of bursaries (R5.2 million) provided by the PDoH, were awarded to students enrolled for the MBChB. This system is clearly inconsistent with the PHC approach, since it further focuses...
training on doctor-based curative care. It fails to focus on the education and training of other health care students, despite the fact that graduates from nursing colleges (primary health care nurses) and non-AHC universities and technikons (medical and dental assistants, environmental officers, etc.) will form the critical core of PHC teams.

The NCHE (1996), in its proposal for the transformation of the present system, recognises that the present system has failed to educate and train sufficient health personnel to manage the change to the PHC approach. Thus, any future model for the funding of health personnel education and training must be consistent with, and give effect to the PHC approach.

At the core of the disparities between HWIs and HBIs, and universities attached to AHCs and other residential universities, is the SAPSE funding formula. Central to the formula are various output variables, two of which are student success rates and research publication rates. HBIs have often had lower success rates chiefly because they enrolled far larger numbers and proportions of students from educationally disadvantaged backgrounds than HWIs. This has meant a HBU could receive approximately 15% less in subsidies because of its comparatively lower student success and research publication rates (NCHE 1996).

Given that HBUs have far larger enrolments of economically and educationally disadvantaged students than HWUs, the allocation of the subsidy through the formula is unjustifiably inequitable. Although HWUs are increasing their intake of students from historically disadvantaged backgrounds, further investigation is needed to assess the extent to which these students are from economically and educationally disadvantaged backgrounds. The possibility that HBUs have a higher intake of students from relatively poorer educational backgrounds than the HVUs needs to be explored further. If this is the case, the historical disparities between HWUs and HBUs might not be reduced.

5.1.2 Distribution of Total Income Between Provinces
The highest share of income was absorbed by the nursing colleges, universities and technikons in Gauteng, Western Cape and to a lesser extent, KwaZulu Natal. This is understandable since these provinces have the highest concentration of tertiary institutions, particularly universities attached to AHCs, and currently train the highest number of health personnel. Although a province such as KwaZulu Natal might train a
relatively high number of health personnel as well as appear to have a comparatively favourable distribution of health personnel (nurses, doctors, pharmacists etc.), there are stark differences in the distribution within the province. The majority of these personnel are concentrated in the urban areas and the rural areas face a shortage of personnel.

Two key areas on the provincial distribution of income need further discussion:

- the current rationalisation of nursing colleges in the Western Cape and Gauteng has far reaching implications, especially in terms of the 'spillover' training benefits for the other provinces; and
- the extent to which the concentration of institutions in Gauteng, Western Cape and KwaZulu Natal influence where graduates work is important when considering the significant maldistribution of resources.

Chapter 3 has described the current process of rationalising colleges in the Western Cape and Gauteng and the closure of four colleges in Gauteng by 1999. In addition, student nurses in Gauteng have agreed to a form of community service upon graduation, the alternative to which would be to pay back half the cost associated with their training. The implications of the rationalisation for other provinces, particularly those where the current training capacity is limited, must be considered. If these provinces do rely on colleges in Gauteng and the Western Cape to train their students, they face difficult choices. The possible options available to these colleges were described in Chapter 3, and involve a possible trade-off between geographic equity and gains in efficiency. Geographic equity can be improved through improving the training capacity and student intake at colleges in Mpumalanga, Northern Province and North West. The second option would be for Mpumalanga, Northern Province and North West provinces to utilise the existing economies of scale in colleges in Gauteng and Western Cape, and reimburse these provinces for the costs of training. The possibility of these provinces entering into community service agreements with their students upon completion of their training is an option that could improve the distribution of nurses in those provinces.

The potential influence of the location of tertiary institutions on where health personnel work has been highlighted previously in this study. This is not only important from an inter-provincial point of view, where improved funding to institutions in under-resourced provinces might improve the distribution of personnel, but also for intra-provincial distributional considerations. As noted previously, while many provinces have favourable personnel to
population ratios, this conceals intra-provincial disparities particularly between the urban and rural areas. Within the provinces, the possibility of improving and redistributing resources towards training institutions in the relatively less urban and metropolitan areas could be an important mechanism for redistributing personnel. However, a decision to redistribution resources to under-resourced institutions must also take efficiency implications into account.

5.2 RECOMMENDATIONS

5.2.1 Human Resource Development Plan
The challenge of training health personnel with the appropriate skills to meet the requirements of the PHC approach and the population's health care needs should be a key component of a Human Resource Development (HRD) plan. The development of such plans at the provincial level has been hampered by the delays in establishing HRD structures in some of the provinces. ‘In the Eastern Cape, HRD organograms have not been fully developed and in KwaZulu Natal it was reported that there was no HRD directorate by the end of 1996 because the Public Service Commission had not approved it’ (van Niekerk and Sanders 1997).

5.2.2 Improved Co-Operation Between the Departments of Health and Education to Promote PHC
The issue of whether responsibility for the training of health personnel should rest either with the Department of Health or Education, has been the source of considerable debate. One of the goals of the health system is to ensure that the education and training of health personnel is appropriate for the needs of a comprehensive health care system based on the PHC approach. Central to this, is increased and improved collaboration between the Departments of Health and Education. This collaboration should be formalised through the establishment of a co-ordinating body between the two departments (NCHE 1996). Furthermore, collaboration between the two departments is necessary for identifying areas of duplication in the education and training of health personnel. This is of particular relevance to the training of nurses, which occur under both the departments of both education and health.

The proposal by the NCHE for the creation of a single education system which draws together universities, technikons and nursing colleges is a crucial step in achieving this.
Moreover, redistributing resources in favour of the nursing colleges, technikons and those universities engaged in training and equipping health personnel with knowledge and skills more appropriate to the PHC approach is crucial. The disproportionate allocation of resources by both the Departments of Health and Education to universities attached to AHCs has played an instrumental role in the current problem of inappropriately trained health personnel ill-equipped with skills necessary for meeting the major health care needs.

5.2.3 Distribution of Health Personnel Between and Within Provinces
At the provincial level, improving the absolute number of personnel trained relative to the population should not be an end in itself. This concern fails to take account of the problem of the distribution of personnel within each provinces to areas of critical need.

The proposed introduction of two years of vocational training by the Interim National Medical and Dental Council for all doctors completing their internship can be an important mechanism for redistributing doctors to areas of greatest need, particularly the rural areas. The agreement entered into between the Gauteng PDoH and student nurses is important in that it will not only recapture a proportion of the costs associated with training, but will play an instrumental role in redistributing nurses to areas of need.

5.2.4 Improving Geographic Equity and Efficiency
One of the most contentious areas facing all social sectors, including health, is the potential trade-off between equity and efficiency gains. Two options have emerged from the discussions on the provincial disparities in the nursing college sector, and the perhaps more complex inequities experienced in the other tertiary institutions (universities and technikons). The first option of improving the training capacity at training institutions in provinces which have been historically under-resourced could be instrumental in improving the distribution of health personnel in those provinces and addressing equity. The alternate option would be for tertiary institutions which have achieved significant economies of scale to increase their intake of students from other provinces, and be compensated by those provinces. The viability of these students then entering community service in their 'home' provinces upon graduating needs to be considered as a strategy for improving the distribution of health personnel.

In view of the increasing role of nursing colleges, technikons and universities other than those attached to AHCs in training personnel more appropriate for the PHC approach, the
rationalising and streamlining of activities of universities, particularly those attached to AHCs is critical. This is especially relevant in provinces with a concentration of universities attached to AHCs, which has resulted in considerable duplication in the education and training activities amongst these institutions. Since these institutions absorb the majority of income available to institutions training health personnel, a process of identifying areas of duplication and under-utilisation of resources has the potential to generate substantial resources. These resources could then be utilised for expanding and improving health personnel education and training institutions in provinces which have been historically under-resourced.

5.3 FURTHER RESEARCH AREAS

- Nursing Colleges (Northern Cape, Northern Province and North West) which reported high levels of recurrent expenditure in relation to low levels of student registration require further investigation. It is necessary to identify the extent to which there might be poor resource utilisation, particularly that of personnel.

- One of the limitations of the study, was that it was not possible to compare the costs of training nurses at the nursing colleges with that of the universities, technikons and the in-service training at hospitals. Presently, there is considerable duplication between institutions engaged in the training and education of nurses. There are clearly benefits to be gained from reducing duplication amongst the training institutions, however such a process would require close co-operation between the Departments of Health and Education. This is clearly an area that requires further investigation, in view of the NCHE recommendation for a single co-ordinated system for the training of health personnel.

- An evaluation of the updated 1995, 1996 and 1997 financial and student output data for all tertiary level institutions is necessary. There should be close collaboration between the Departments of Education and Health in relation to the SAPSE system's database and subsequent subsidy allocations.

- An analysis of the current financial situation of the tertiary institutions in the former TBVC states is required. The funding arrangements between these institutions and their administrative structures differed from institutions in the 'former RSA'. Incorporation of these institutions into the SAPSE funding system has been difficulty.
The capacity of these institutions, in terms of the education and training of health personnel, has not been addressed and requires further attention.

- The funding arrangements between PDoH and AHCs is currently one of the more controversial areas within health human resources fora. The complexity of the arrangements between PDoH and academic hospital complexes, and the interrelationship between teaching, research and patient care in the education and training process, has made research into this area difficult. However, this is clearly an area which requires investigation into estimating the actual levels of expenditure by the provinces in support of joint agreements.

- There is a need to introduce a research initiative to document the cost of specific programmes. For example the costs associated with the training and education of specific health care and health science students (medical doctors, dentists, PHC nurses etc.) is necessary.
APPENDICES
### APPENDIX 1: NURSING COLLEGES INCLUDED IN STUDY:

<table>
<thead>
<tr>
<th>Nursing Colleges in South Africa: 1994/95</th>
<th>Colleges which responded to the survey (X)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WESTERN CAPE:</td>
<td></td>
</tr>
<tr>
<td>1. Carinus Nursing College</td>
<td>X</td>
</tr>
<tr>
<td>2. Otto du Plessis</td>
<td>X</td>
</tr>
<tr>
<td>3. Sarleh Dollie Nursing College</td>
<td>X</td>
</tr>
<tr>
<td>4. Nico Malan Nursing College</td>
<td>X</td>
</tr>
<tr>
<td>EASTERN CAPE:</td>
<td></td>
</tr>
<tr>
<td>5. Eastern Cape College of Nursing</td>
<td>X</td>
</tr>
<tr>
<td>6. Frere Nursing College</td>
<td>X</td>
</tr>
<tr>
<td>7. Ciskei Nursing College</td>
<td>X</td>
</tr>
<tr>
<td>8. Transkei Nursing College</td>
<td>X</td>
</tr>
<tr>
<td>NORTHERN CAPE:</td>
<td></td>
</tr>
<tr>
<td>9. Henrietta Stockdale Nursing College</td>
<td>X</td>
</tr>
<tr>
<td>GAUTENG:</td>
<td></td>
</tr>
<tr>
<td>10. Ann Latsky Nursing College</td>
<td>X</td>
</tr>
<tr>
<td>11. Baragwanath Nursing College</td>
<td>X</td>
</tr>
<tr>
<td>12. B.G Alexander Nursing College</td>
<td>X</td>
</tr>
<tr>
<td>13. Bonalesedi Nursing College</td>
<td>X</td>
</tr>
<tr>
<td>14. Coronation Nursing College</td>
<td>X</td>
</tr>
<tr>
<td>15. Ga-rankuwa Nursing College</td>
<td>X</td>
</tr>
<tr>
<td>16. Lebone Nursing College</td>
<td>X</td>
</tr>
<tr>
<td>17. SAMS Nursing College</td>
<td>X</td>
</tr>
<tr>
<td>18. S.G Lourens Nursing College</td>
<td>X</td>
</tr>
<tr>
<td>NORTHERN PROVINCE:</td>
<td></td>
</tr>
<tr>
<td>19. Gazankulu College of Nursing</td>
<td>X</td>
</tr>
<tr>
<td>20. Groothoek College of Nursing</td>
<td>X</td>
</tr>
<tr>
<td>21. Venda Nursing College</td>
<td>X</td>
</tr>
<tr>
<td>MPUMALANGA:</td>
<td></td>
</tr>
<tr>
<td>22. Kangwane Nursing College</td>
<td></td>
</tr>
<tr>
<td>NORTH WEST:</td>
<td></td>
</tr>
<tr>
<td>23. Bophuthatswana National Nursing College</td>
<td></td>
</tr>
<tr>
<td>24. Excelsius College of Nursing</td>
<td>X</td>
</tr>
<tr>
<td>KWAZULU NATAL:</td>
<td></td>
</tr>
<tr>
<td>25. Natal College of Nursing (7 campuses)</td>
<td>6 campuses responded</td>
</tr>
<tr>
<td>26. Edendale College of Nursing</td>
<td></td>
</tr>
<tr>
<td>27. Ngwelezana Nursing College</td>
<td></td>
</tr>
<tr>
<td>FREE STATE:</td>
<td></td>
</tr>
<tr>
<td>28. Mangaung College of the Free State</td>
<td>X</td>
</tr>
<tr>
<td>29. QwaQwa Nursing College</td>
<td></td>
</tr>
<tr>
<td>30. Nursing College of the Free State</td>
<td>X</td>
</tr>
</tbody>
</table>
### APPENDIX 2 UNIVERSITIES AND TECHNIKONS INCLUDED IN THE STUDY

#### UNIVERSITIES
1. University of the Witswatersand  
2. University of Cape Town  
3. University of Pretoria  
4. University of Stellenbosch  
5. University of the Free State  
6. University of Natal  
7. University of Port Elizabeth  
8. Rhodes University  
9. University of Potchefstroom  
10. University of the North  
11. Rand Afrikaans University  
12. University of South Africa  
13. University of Bophuthatswana/North West  
14. University of Transkei  
15. University of Fort Hare  
16. University of Venda  
17. Medical university of South Africa  
18. University of the Western Cape  
19. University of Durban-Westville  
20. University of QwaQwa

#### TECHNIKONS
1. Cape Technikon  
2. Northern Transvaal Technikon  
3. Mangosutho Technikon  
4. ML Sultan Technikon  
5. Natal Technikon  
6. Orange Free State Technikon  
7. Peninsula Technikon  
8. Port Elizabeth Technikon  
9. Pretoria Technikon  
10. Vaal Technikon  
11. Witswatersrand Technikon
APPENDIX 3: QUESTIONNAIRE TO NURSING COLLEGES
QUESTIONNAIRE SURVEY
ON FINANCING OF HEALTH CARE AND HEALTH SCIENCES
EDUCATION AND TRAINING
IN SOUTH AFRICA

CONDUCTED BY THE
HEALTH ECONOMICS UNIT
DEPARTMENT OF COMMUNITY HEALTH
UNIVERSITY OF CAPE TOWN

CONTACT PERSONS: Veloshnee Govender and Bipendra Makan
Phone: (021) 406 6576 / 6575 / 6558
Fax: (021) 406 6574

The questionnaire comprises the following sections:

Section A: Instructions on completing the questionnaire
Section B: Institutional Details
Section C: Nursing Programmes offered by Institution
Section D: Expenditure of Institution
Section E: Sources of Finance
Section F: General (Optional)

Please complete all the sections that are relevant to your institution and return completed questionnaire by the 25 October 1996.

REF: UCTQES1.DOC
<table>
<thead>
<tr>
<th>Basic Courses</th>
<th>Date</th>
<th>Enrolled Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nursing College</td>
<td>1994</td>
<td></td>
</tr>
<tr>
<td>Prescribed number of courses completed</td>
<td>1995</td>
<td></td>
</tr>
<tr>
<td>Actual number of courses completed</td>
<td>1995</td>
<td></td>
</tr>
<tr>
<td>Percentage of students who completed the program</td>
<td>1995</td>
<td></td>
</tr>
</tbody>
</table>

**TABLE 1: NURSING COURSES OFFERED BY NURSING COLLEGE**

<table>
<thead>
<tr>
<th>Year</th>
<th>Basic Courses</th>
<th>Date</th>
<th>Enrolled Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1994</td>
<td>123</td>
<td>1995</td>
<td>123</td>
</tr>
</tbody>
</table>

**Note:** The table above presents the number of basic courses offered by each nursing college in 1994 and 1995. The data includes the number of courses completed by students in each year.
<table>
<thead>
<tr>
<th>Year</th>
<th>Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1994</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1995</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TABLE 2: EXPENDITURE OF THE INSTITUTION**

- 2.1. Total expenditure on teaching staff.
- 2.2. Total expenditure on non-teaching staff.
- 2.3. Total expenditure on other activities.
- 2.4. Total expenditure on capital works.
- 2.5. Total expenditure on other categories.

**SECTION D:**

- D.1. Does the institution have a registration with the Department of Education?
- D.2. Does the institution have a license to operate?

**TABLE 1 (CONTINUED): COURSES OFFERED BY THE INSTITUTION**

<table>
<thead>
<tr>
<th>Year</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1994/95</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1995/96</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1996/97</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1997/98</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TABLE 3: EXPENDITURE OF THE INSTITUTION**

- 3.1. Total expenditure on teaching-related activities.
- 3.2. Total expenditure on non-teaching-related activities.
- 3.3. Total expenditure on other activities.

**SECTION E:**

- E.1. Does the institution have a registration with the Department of Education?
- E.2. Does the institution have a license to operate?
APPENDIX 4: QUESTIONNAIRE TO PROVINCIAL DEPARTMENTS OF HEALTH
QUESTIONSNAIRE SURVEY
ON FINANCING OF HEALTH CARE AND
HEALTH SCIENCES
EDUCATION AND TRAINING IN SOUTH AFRICA
TO PROVINCIAL DEPARTMENTS OF HEALTH

CONDUCTED BY THE

HEALTH ECONOMICS UNIT
DEPARTMENT OF COMMUNITY HEALTH
UNIVERSITY OF CAPE TOWN

CONTACT PERSONS: Veloshnee Govender, Bupendra Makan and Di McIntyre

Phone: (021) 406 6576 / 6575 / 6558
Fax: (021) 448 8152

The questionnaire comprises the following sections:

Section A: Instructions on completing the questionnaire.
Section B: Institutional Details.
Section C: Expenditure on Nursing Colleges in the 1994/95 financial year.
Section D: Contributions made to Tertiary Educational Institutions in terms of Joint Appointments / Agreements in the 1994/95 financial year.
Section E: Student Bursaries awarded by the Provincial Department of Health.
Section F: General

Please complete all the sections that are relevant to your institution and return completed questionnaire by the 25 November 1996. The completed copy of the questionnaire may be faxed to the HEU.

REF:PDQES3.DOC
CONDITIONS OF HOUSE : 

1. The house shall be furnished with all necessary equipment for the comfort of the patient.
2. The house shall be cleaned daily.
3. The patient shall be provided with all necessary supplies.
4. The patient shall be allowed to have visitors.
5. The patient shall be provided with all necessary medical care.

SECTION B: INFORMATION ON THE PATIENT

1. Name:
2. Address:
3. Telephone:
4. Date of Birth:
5. Medical History:
6. Allergies:
7. Medications:
8. Diet:
9. Special Needs:
10. Other:

SECTION C: INFORMAL CHALLENGES

1. Financial:
2. Emotional:
3. Physical:
4. Social:
5. Other:

SECTION D: DISCUSSION QUESTIONS

1. What challenges do you face as a patient?
2. How do you cope with these challenges?
3. What resources are available to you?
4. What are your goals for recovery?
5. What support do you need to achieve these goals?
SECTION C:

EXPENDITURE BY PROVINCIAL DEPARTMENTS OF HEALTH ON NURSING COLLEGES IN THE 1994/95 FINANCIAL YEAR

QUESTION 5:

In Table 1.1 below, list the Total Expenditure by the Provincial Department of Health for each of the Nursing Colleges in the province for the 1994/95 financial year:

5.1 List all nursing colleges which are funded by the Provincial Department of Health in the province (Column 1).
5.2 List the Total Expenditure per Nursing College (column 2).
5.3 List the expenditure on Overheads. Overheads include costs of stationery, postage, vehicle and building maintenance etc. (Column 3).
5.4 List the Expenditure on Personnel. Personnel includes academic, administrative and service staff (Column 4).
5.5 List the Expenditure on Student Salaries (Column 5).
5.6 List the Expenditure on Students Residence (Column 6).

<table>
<thead>
<tr>
<th>NURSING COLLEGES</th>
<th>TOTAL EXPENDITURE</th>
<th>OVERHEAD COSTS</th>
<th>PERSONNEL EXPENDITURE</th>
<th>STUDENTS' SALARIES</th>
<th>RESIDENCE COST</th>
</tr>
</thead>
<tbody>
<tr>
<td>Column 1</td>
<td>Column 2</td>
<td>Column 3</td>
<td>Column 4</td>
<td>Column 5</td>
<td>Column 6</td>
</tr>
</tbody>
</table>
TABLE 1.2: Nursing College Academic Staff Personnel Exp. by category and establishment per facility:

<table>
<thead>
<tr>
<th>Nursing College: Name</th>
<th>Category of Academic Staff</th>
<th>Number of Staff Per Category</th>
<th>Total PA Personnel Expenditure per Category (per annum)</th>
</tr>
</thead>
<tbody>
<tr>
<td>e.g. Carinus Nursing College</td>
<td>e.g. Senior Tutor</td>
<td>e.g. 5</td>
<td>e.g. R 100,000</td>
</tr>
</tbody>
</table>
SECTION D: CONTRIBUTIONS MADE TO TERTIARY EDUCATIONAL INSTITUTIONS IN TERMS OF JOINT STAFF FOR THE 1994/95 FINANCIAL YEAR

QUESTION 6:

In the following tables, list the size of the contributions (Rand value), made by the Provincial Department of Health to Universities and Technikons in terms of Joint Appointments / Agreements for the 1994/95 financial year. (Please photocopy the page in order to have a page per institution.)

6.1 List the name of the Tertiary Education Institution at the top of each table, in the space provided.

6.2 List all departments in the Tertiary Educational Institution, which have Joint appointment staff. (Column 1).

6.3 List the categories of staff that fall under joint appointments. (e.g. Chief Specialist, Registrar, Secretary etc.) (Column 2).

6.4 Indicate the number of staff within each category. (Column 3).

6.5 For each category of personnel listed in Column 1, indicate the Provincial Administration's (PA) contribution to the salary in terms of the relevant percentage. (Column 4).

6.6 Indicate whether these posts are on the conditions of service of the PA or the Tertiary Educational Institution (TEI). (Column 5). (Indicate with each acronym)

6.7 Indicate the total PA expenditure for joint staff in each category. (Column 6).

<table>
<thead>
<tr>
<th>NAME OF TERTIARY EDUCATION INSTITUTION</th>
<th>Department</th>
<th>Category of Staff</th>
<th>Number of Staff Per Category</th>
<th>PA's Contribution (%)</th>
<th>TEI or PA Conditions of Service</th>
<th>Total PA Expenditure for Joint Staff</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>e.g.</td>
<td>e.g.</td>
<td>e.g.</td>
<td>e.g.</td>
<td>e.g.</td>
<td>e.g.</td>
</tr>
<tr>
<td></td>
<td>Community</td>
<td>Registrar</td>
<td>5</td>
<td>100%</td>
<td>PA</td>
<td>R 10 000</td>
</tr>
<tr>
<td></td>
<td>Health</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### TABLE 2.1:
CONTRIBUTIONS MADE TO A TERTIARY EDUCATION INSTITUTION IN TERMS OF JOINT STAFF APPOINTMENTS:

**NAME OF TERTIARY EDUCATION INSTITUTION**

<table>
<thead>
<tr>
<th>Department</th>
<th>Category of Staff</th>
<th>Number of Staff Per Category</th>
<th>PA's Contribution (%)</th>
<th>TEl or PA Conditions of Service?</th>
<th>Total PA Expenditure for Joint Staff</th>
</tr>
</thead>
<tbody>
<tr>
<td>e.g. Community Health</td>
<td>e.g. Registrars</td>
<td>e.g. 5</td>
<td>e.g. 100%</td>
<td>e.g. PA</td>
<td>e.g. R 10 000</td>
</tr>
</tbody>
</table>

### TABLE 2.1:
CONTRIBUTIONS MADE TO A TERTIARY EDUCATION INSTITUTION IN TERMS OF JOINT STAFF APPOINTMENTS:

**NAME OF TERTIARY EDUCATION INSTITUTION**

<table>
<thead>
<tr>
<th>Department</th>
<th>Category of Staff</th>
<th>Number of Staff Per Category</th>
<th>PA's Contribution (%)</th>
<th>TEl or PA Conditions of Service?</th>
<th>Total PA Expenditure for Joint Staff</th>
</tr>
</thead>
<tbody>
<tr>
<td>e.g. Community Health</td>
<td>e.g. Registrars</td>
<td>e.g. 5</td>
<td>e.g. 100%</td>
<td>e.g. PA</td>
<td>e.g. R 10 000</td>
</tr>
</tbody>
</table>
**SECTION E: STUDENT BURSARIES AWARDED BY PROVINCIAL ADMINISTRATION**

**QUESTION 6:**

The information requested should be filled in on table 3.

The purpose of this section is to quantify the expenditure of the Provincial Department, in terms of financial assistance to students for studies undertaken in the health sciences and health care education programmes, for the 1994/1995 financial year.

6.1 List all categories of students (at both universities and technikons) whom are awarded bursaries by the Provincial Department. These categories may include students studying towards degrees / diplomas, for example in occupational therapy, radiography, physiotherapy etc. (column 1).

6.2 List the Total Number of Bursaries awarded to each category of students (column 2).

6.3 List the Total Value of Bursaries awarded (column 3).

6.4 List the Tertiary Educational Institutions, at which students have been awarded bursaries (column 4).

6.5 Describe the conditions attached to the bursary (column 5).

---

**TABLE 3: BURSARIES AWARDED BY THE PROVINCIAL DEPARTMENT FOR STUDIES IN HEALTH CARE AND HEALTH SCIENCE PROGRAMMES IN THE 1994/95 FINANCIAL YEAR**

| Categories of Students Awarded Bursaries | Total Number of Bursaries Awarded | Total Value of Bursaries Awarded | Institutional reference | Conditions of Bursary :
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>e.g. Occupational therapists</td>
<td>e.g. 50</td>
<td>e.g. R 70,000</td>
<td>e.g. UCT</td>
<td>Full bursary, 50% to be paid back after completion of programme.</td>
</tr>
</tbody>
</table>
TABLE 3: BURSARIES AWARDED BY THE PROVINCIAL DEPARTMENT FOR STUDIES IN HEALTH CARE AND HEALTH SCIENCE PROGRAMMES IN THE 1994/95 FINANCIAL YEAR:

<table>
<thead>
<tr>
<th>Categories of Students Awarded Bursaries</th>
<th>Total Number of Bursaries Awarded</th>
<th>Total Value of Bursaries Awarded</th>
<th>Institutional reference</th>
<th>Conditions of Bursary</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Quantitative survey on Financing of Health Care and Health Sciences Education and Training in South Africa.

1. Are there any other financial factors, which you consider important, that have been omitted from this questionnaire and if yes, what would these have been? 

6. If YES, how would you, on behalf of your institution, like to contribute to the process? 

8. If YES, how would you, on behalf of your institution, like to contribute to the process? 

10. General Comments

1. Would you like to receive a copy of the final report from the Health Economics Unit? 

3. Would you like to be further involved in the research project?
## APPENDIX 5: RESULTS FOR COLLEGES WHICH PROVIDED DIS-AGGREGATED DATA:

<table>
<thead>
<tr>
<th>Nursing Colleges (NC)</th>
<th>Academic Staff (Rands)</th>
<th>Administrative Staff (Rands)</th>
<th>Service Staff (Rands)</th>
<th>Student Salaries (Rands)</th>
<th>Total Personnel Costs (Rands)</th>
<th>Overheads (Rands)</th>
<th>TOTAL (Rands)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NC 1</td>
<td>2,324,407</td>
<td>329,302</td>
<td>134,985</td>
<td>10,285,917</td>
<td>13,074,611</td>
<td>162,688</td>
<td>13,237,299</td>
</tr>
<tr>
<td>NC 2</td>
<td>1,023,942</td>
<td>416,277</td>
<td>170,998</td>
<td>8,991,527</td>
<td>200,000</td>
<td>9,191,527</td>
<td>10,1%</td>
</tr>
<tr>
<td>NC 3</td>
<td>3,500,000</td>
<td>1,300,000</td>
<td>1,000,000</td>
<td>13,166,600</td>
<td>18,966,600</td>
<td>1,115,965</td>
<td>20,082,565</td>
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<td>NC 4</td>
<td>1,364,098</td>
<td>153,563</td>
<td>244,793</td>
<td>3,856,445</td>
<td>5,452,039</td>
<td>3,770,136</td>
<td>9,222,175</td>
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<tr>
<td>TOTAL</td>
<td>8,045,587</td>
<td>200,602</td>
<td>80,242</td>
<td>3,661,322</td>
<td>5,306,264</td>
<td>5,248,789</td>
<td>51,733,566</td>
</tr>
<tr>
<td>% share of Total Recurrent Costs</td>
<td>15.6%</td>
<td>4.3%</td>
<td>3.0%</td>
<td>67.1%</td>
<td>89.85%</td>
<td>10.1%</td>
<td>100%</td>
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</table>
## APPENDIX 6: SOURCES OF INCOME FOR NURSING COLLEGES - (1994/95)

<table>
<thead>
<tr>
<th>Provinces</th>
<th>Provincial Department of Health</th>
<th>Private gifts grants</th>
<th>Investment funds</th>
<th>Fees</th>
<th>College Council Fund</th>
<th>Fund Raising</th>
<th>TOTAL (Rands)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eastern Cape</td>
<td>25,631,636 (99.97%)</td>
<td>0 (0%)</td>
<td>6,690 (0.03%)</td>
<td>0</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>25,638,326 (12.7%)</td>
</tr>
<tr>
<td>Free State</td>
<td>29,535,272 (99.73%)</td>
<td>0 (0%)</td>
<td>80,997 (0.27%)</td>
<td>0</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>29,616,269 (14.7%)</td>
</tr>
<tr>
<td>Gauteng</td>
<td>31,289,779 (100%)</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>0</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>31,289,779 (15.5%)</td>
</tr>
<tr>
<td>KwaZulu Natal</td>
<td>31,482,000 (100%)</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>0</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>31,482,000 (31.2%)</td>
</tr>
<tr>
<td>Mpumalanga</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Northern Cape</td>
<td>4,100,000 (99.84%)</td>
<td>0 (0%)</td>
<td>6,717 (0.16%)</td>
<td>0</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>4,106,717 (2%)</td>
</tr>
<tr>
<td>Northern Province</td>
<td>20,691,165 (100%)</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>0</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>20,691,165 (5.8%)</td>
</tr>
<tr>
<td>North West</td>
<td>4,779,000 (99.98%)</td>
<td>1,000 (0.02%)</td>
<td>0 (0%)</td>
<td>0</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>4,780,000 (2.4%)</td>
</tr>
<tr>
<td>Western Cape</td>
<td>46,628,760 (99.06%)</td>
<td>0 (0%)</td>
<td>6,712 (0.01%)</td>
<td>64,881 (0.15%)</td>
<td>361,922 (0.77%)</td>
<td>8,557 (0.02%)</td>
<td>47,070,832 (15.8%)</td>
</tr>
<tr>
<td>TOTAL **</td>
<td>194,137,612 (99.72%)</td>
<td>1,000 (0.02%)</td>
<td>20,119 (0.01%)</td>
<td>145,878 (0.07%)</td>
<td>361,922 (0.19%)</td>
<td>8,557 (0)</td>
<td>194,675,088 (100%)</td>
</tr>
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</table>

**Notes:**
- **: This information only related to the 75% survey respondents within South Africa.
1. **Fees**: These include student registration, registration handling and class fees. Class fees are paid back to the PDoH.
APPENDIX 7: NURSING COLLEGES’ TOTAL RECURRENT EXPENDITURE (1994/95)

<table>
<thead>
<tr>
<th>PROVINCES</th>
<th>Personnel (Rands)</th>
<th>Overheads (Rands)</th>
<th>TOTAL RECURRENT EXPENDITURE (Rands)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eastern Cape</td>
<td>24,272,864 (95%)</td>
<td>1,359,372 (5%)</td>
<td>25,632,236</td>
</tr>
<tr>
<td>Free State</td>
<td>26,821,084 (89%)</td>
<td>3,175,770 (11%)</td>
<td>29,996,854</td>
</tr>
<tr>
<td>Gauteng</td>
<td>93,635,754 (97%)</td>
<td>3,161,760 (3%)</td>
<td>96,797,514</td>
</tr>
<tr>
<td>KwaZulu Natal</td>
<td>43,346,443 (99%)</td>
<td>488,000 (1%)</td>
<td>43,834,443</td>
</tr>
<tr>
<td>Mpumalanga</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Northern Cape</td>
<td>4,335,000 (94%)</td>
<td>300,000 (6%)</td>
<td>4,635,000</td>
</tr>
<tr>
<td>Northern Province</td>
<td>27,332,934 (94%)</td>
<td>1,645,779 (6%)</td>
<td>28,978,713</td>
</tr>
<tr>
<td>North West</td>
<td>12,605,581 (95%)</td>
<td>661,000 (4%)</td>
<td>13,266,581</td>
</tr>
<tr>
<td>Western Cape</td>
<td>44,507,042 (94%)</td>
<td>2,805,740 (6%)</td>
<td>47,312,782</td>
</tr>
<tr>
<td>TOTAL</td>
<td>276,856,702 (95%)</td>
<td>13,597,421 (5%)</td>
<td>290,454,123</td>
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</table>

(%) denotes the percentage of personnel or overheads expenditure in the total recurrent expenditure.
APPENDIX 8: DISAGGREGATED PERSONNEL EXPENDITURE OF NURSING COLLEGES 1994/95

<table>
<thead>
<tr>
<th>Provinces</th>
<th>Academic Staff (Rands)</th>
<th>Administrative Staff (Rands)</th>
<th>Service Staff (Rands)</th>
<th>Student Salaries (Rands)</th>
<th>TOTAL PERSONNEL EXPENDITURE (Rands)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eastern Cape</td>
<td>4,651,459 (19%)</td>
<td>1,628,988 (7%)</td>
<td>1,164,495 (5%)</td>
<td>16,827,922</td>
<td>24,272,864</td>
</tr>
<tr>
<td>Free State</td>
<td>7,494,044 (28%)</td>
<td>1,945,893 (7%)</td>
<td>899,905 (4%)</td>
<td>16,481,242</td>
<td>26,821,084</td>
</tr>
<tr>
<td>Gauteng</td>
<td>22,585,467 (24%)</td>
<td>5,874,599 (6%)</td>
<td>2,349,985 (3%)</td>
<td>62,825,703</td>
<td>93,635,754</td>
</tr>
<tr>
<td>KwaZulu Natal</td>
<td>10,274,200 (24%)</td>
<td>1,263,400 (3%)</td>
<td>1,315,015 (3%)</td>
<td>30,493,828</td>
<td>43,346,443</td>
</tr>
<tr>
<td>Mpumalanga</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Northern Cape</td>
<td>566,600 (13%)</td>
<td>174,000 (4%)</td>
<td>594,400 (14%)</td>
<td>3,000,000</td>
<td>4,335,000</td>
</tr>
<tr>
<td>Northern Province</td>
<td>6,862,458 (25%)</td>
<td>2,179,883 (8%)</td>
<td>887,623 (3%)</td>
<td>17,402,970</td>
<td>27,332,934</td>
</tr>
<tr>
<td>North West</td>
<td>2,699,835 (21%)</td>
<td>567,666 (5%)</td>
<td>715,494 (6%)</td>
<td>8,622,586</td>
<td>12,605,581</td>
</tr>
<tr>
<td>Western Cape</td>
<td>7,996,848 (18%)</td>
<td>2,009,870 (5%)</td>
<td>1,115,443 (2%)</td>
<td>33,384,881</td>
<td>44,507,042</td>
</tr>
<tr>
<td>TOTAL</td>
<td>63,130,911 (23%)</td>
<td>15,644,299 (6%)</td>
<td>9,042,360 (3%)</td>
<td>189,039,132</td>
<td>276,856,702</td>
</tr>
</tbody>
</table>
APPENDIX 9: COURSES OFFERED BY NURSING COLLEGES:

1. Auxilliary nursing course
2. Registered nursing course
3. Bridging course
4. 4 year basic diploma course
5. Basic supplementary courses:
   5.1 Midwifery;
   5.2 Psychiatry and
   5.3 Community
6. Post basic courses:
   6.1 Oncology nursing science;
   6.2 Operating theatre science;
   6.3 Critical care medicine and surgery
   6.4 Critical care trauma and emergency
   6.5 Orthopaedic nursing science
   6.6 Child nursing science
   6.7 Child nursing science, clinical diagnosis, treatment and care;
   6.8 Ophthalmology nursing science;
   6.9 Neurology nursing science and
   6.10 Paediatric nursing science.
7. Advanced courses:
   7.1 Advanced midwifery and neonatal nursing;
   7.2 Advanced psychiatric nursing science and
   7.3 Advanced child nursing science.
8. Short courses:
   8.1 Oncology nursing science;
   8.2 Primary health care in paediatrics;
   8.3 Certificate in critical nursing science, health assessment, treatment and care;
   8.4 Traumatology;
   8.5 Pharmacology;
   8.6 Family planning and
   8.7 Certificate PHC nursing facilitator.
# APPENDIX 10

## Nursing Colleges - Registration Per Course (1994 and 1995)

<table>
<thead>
<tr>
<th></th>
<th>Enrolled</th>
<th>Bridging</th>
<th>4 year basic diploma</th>
<th>Basic supplementary</th>
<th>Post basic</th>
<th>Advanced</th>
<th>Short courses</th>
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<td><strong>TOTAL</strong></td>
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<td><strong>10,580</strong></td>
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</table>

Note: These averages have been rounded off to the next higher number.

## Nursing Colleges – Average Registration Per Course (1994 and 1995)

<table>
<thead>
<tr>
<th></th>
<th>Enrolled</th>
<th>Bridging</th>
<th>4 year basic diploma</th>
<th>Basic supplementary</th>
<th>Post basic</th>
<th>Advanced</th>
<th>Short courses</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>E. Cape</td>
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<td>58</td>
<td>650</td>
<td>39</td>
<td>15</td>
<td>0</td>
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<td>66</td>
<td>86</td>
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<td>0</td>
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<td>238</td>
<td>289</td>
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<td>14</td>
<td>3,954*</td>
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<tr>
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<tr>
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<td><strong>82</strong></td>
<td><strong>71</strong></td>
<td><strong>10,324</strong></td>
</tr>
</tbody>
</table>

Note: * These averages have been rounded off to the next higher number.
APPENDIX 11: STANDARD SAPSE DEFINITIONS FOR DEPARTMENT OF EDUCATION’S INFORMATION SYSTEM

D.1 CESM (Classification of Educational Subject Matter):

Since each tertiary institution has its own organisational structure with regard to academic departments and the subjects that they offer, it is essential for purposes of comparison to provide a common frame of reference in respect of subject matter. CESM categories group together the various courses offered by universities according to the content or material offered in those courses (and not according to title or description). (Bunting and Hendries, Universities).

D.2 Fund Groups:

These are used to report all those institutional resources that are available for, or restricted to, the same purpose. Each fund group may include resources that are restricted to a particular purpose as well as those unrestricted resources that the institution decides to use for the same purpose. The fund group is the basic reporting entity in fund accounting - assets and liabilities and fund balances are reported by fund group and the movement between the various fund groups. There are 5 funding groups for the reporting of post-secondary financial data:

- Current funds
- Loan funds
- Endowment and similar funds
- Fixed Asset Funds
- Agency funds

Statement of Changes in Fund balances portrays the flow of funds for the entire institution. Since the flow of funds into the institution is characterised by many different sources of funding and by various types or degrees of restrictions as to use.

D.3 Fund Sources:

The fund sources are linked to the fund groups identified above and relate to:

- Tuition fees: Includes all student academic or tuition fees, registration fees and sporting club and society fees. Excludes residence fees.
- Government appropriation: funds, which are allocated from central government, under the subsidy formula (for both current and fixed asset expenditure). The central government's share of the interest and principal due on long term debts is also assigned to this fund. Grants received from provincial authorities (e.g. to assist in the running of a teaching hospital) are also reported under this fund.
- Government grants and contracts: includes contractual work undertaken on behalf of central or provincial government departments or government-sponsored agencies such as the Medical Research Council (MRC), Council for Scientific and Industrial Research or the Human Science Research Council.
- Private gifts and contracts: All private donations to universities and in particular to their public relations and development programmes are assigned to this fund. Endowed posts as well as amounts received for contractual work undertaken for private bodies are also assigned to this fund.
- Investment income: includes the amounts generated by universities’ long and short term investments, including the investments held in the name of their development trusts.
- Auxiliary enterprises: Includes student residence/hostel fees, amounts generated by canteens, cafeterias
### APPENDIX 12: PROGRAMMES OFFERED IN THE HEALTH CARE AND HEALTH SCIENCES BY UNIVERSITIES

<table>
<thead>
<tr>
<th>Universities</th>
<th>Medicine &amp; Surgery</th>
<th>Dentistry</th>
<th>Nursing</th>
<th>Veterinary Science</th>
<th>Pharmacy</th>
<th>Audiology &amp; Speech Pathology</th>
<th>Occupational Therapy</th>
<th>Physiotherapy</th>
<th>Radiology &amp; Radiotherapy</th>
<th>Hospital Admin.</th>
<th>Basic Health Care</th>
<th>Other</th>
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</tr>
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<td></td>
<td>X</td>
<td>X</td>
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<td>X</td>
<td></td>
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<td></td>
<td></td>
<td></td>
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</tr>
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<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
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<tr>
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<td></td>
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<td></td>
<td></td>
<td></td>
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</table>

Source: Bunting (1994)
APPENDIX 13: PROGRAMMES OFFERED IN THE HEALTH CARE AND HEALTH SCIENCES BY TECHNIKONS

<table>
<thead>
<tr>
<th>Technikon</th>
<th>Dentistry</th>
<th>Nursing</th>
<th>Radiology &amp; Radiotherapy</th>
<th>Hospital Administration</th>
<th>Basic Health Care</th>
<th>Other</th>
</tr>
</thead>
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<tr>
<td>Port Elizabeth</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Orange Free State</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pretoria</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vaal</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
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<tr>
<td>Witwatersrand</td>
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<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mangosutho</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>M.L. Sultan</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Natal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Northern Transvaal</td>
<td></td>
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</table>

Source: Bunting (1994)
### APPENDIX 14: University Weighted full-time Equivalent Enrolments (1992-1993)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Health Care and Health Sciences</td>
<td>Total</td>
<td>Health Care and Health Sciences</td>
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<td>Rhodes</td>
<td>208</td>
<td>4,496</td>
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<tr>
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<td>Total</td>
<td>429</td>
<td>9,678</td>
</tr>
<tr>
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<td>2,014</td>
<td>10,368</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>2,014</td>
<td>10,368</td>
</tr>
<tr>
<td>Gauteng</td>
<td>Medunsa</td>
<td>1,911</td>
<td>2,782</td>
</tr>
<tr>
<td></td>
<td>Pretoria</td>
<td>4,067</td>
<td>27,442</td>
</tr>
<tr>
<td></td>
<td>Rand Afrikaans</td>
<td>622</td>
<td>11,434</td>
</tr>
<tr>
<td></td>
<td>Witwatersrand</td>
<td>3,428</td>
<td>19,347</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>10,028</td>
<td>61,995</td>
</tr>
<tr>
<td>KwaZulu-Natal</td>
<td>Durban-Westville</td>
<td>478</td>
<td>11,314</td>
</tr>
<tr>
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<td>Natal</td>
<td>1,402</td>
<td>16,048</td>
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<tr>
<td></td>
<td>Zululand</td>
<td>193</td>
<td>4,703</td>
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<td>Total</td>
<td>2,073</td>
<td>32,065</td>
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<td>Mpumalanga</td>
<td>Potchefstroom</td>
<td>564</td>
<td>9,763</td>
</tr>
<tr>
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<td>Total</td>
<td>564</td>
<td>9,763</td>
</tr>
<tr>
<td>Northern province</td>
<td>The North²</td>
<td>361</td>
<td>16,794</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>361</td>
<td>16,794</td>
</tr>
<tr>
<td>Western Cape</td>
<td>Cape Town</td>
<td>2,059</td>
<td>15,997</td>
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<tr>
<td></td>
<td>Stellenbosch</td>
<td>2,140</td>
<td>15,344</td>
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<td></td>
<td>Western Cape</td>
<td>547</td>
<td>12,694</td>
</tr>
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<td>Total</td>
<td>4,746</td>
<td>44,035</td>
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<tr>
<td></td>
<td>Total (excluding UNISA)</td>
<td>20,215</td>
<td>184,698</td>
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<tr>
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<td>Average per university</td>
<td>1,347</td>
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<td>UNISA</td>
<td>1,994</td>
<td>64,268</td>
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<td></td>
<td>TOTAL (including UNISA)</td>
<td>22,209</td>
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<tr>
<td></td>
<td>Average per university</td>
<td>1,388</td>
<td>15,560</td>
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</table>

Source: SAPSE (1993) and Bunting (1996)

Notes: 1. These Weighted FTE student enrolment figures are not humanities' equivalents.
2. The university of the North had submitted identical student information for 1992 and 1993 to the Department of Education.
### APPENDIX 15: Universities: Sources of Income for Health Care programmes (Rand million) (1992 & 1993)

<table>
<thead>
<tr>
<th>Provinces</th>
<th>Universities</th>
<th>Tuition Fees</th>
<th>Other income</th>
<th>Department of Education Subsidy</th>
<th>Total Allocation to Health Care &amp; Health Sciences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eastern Cape</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Port Elizabeth</td>
<td>0.7</td>
<td>1.1</td>
<td>2.3</td>
<td>2.6</td>
<td>4</td>
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<tr>
<td>Rhodes</td>
<td>1.2</td>
<td>1.4</td>
<td>3.2</td>
<td>4.8</td>
<td>3.7</td>
</tr>
<tr>
<td>Total</td>
<td>1.9</td>
<td>2.5</td>
<td>5.5</td>
<td>7.4</td>
<td>7.7</td>
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<tr>
<td>Orange Free State</td>
<td>7.7</td>
<td>8.8</td>
<td>23.7</td>
<td>25.5</td>
<td>28.8</td>
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<tr>
<td>Total</td>
<td>7.7</td>
<td>8.8</td>
<td>23.7</td>
<td>25.5</td>
<td>28.8</td>
</tr>
<tr>
<td>Gauteng</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medunsa</td>
<td>5.9</td>
<td>8.2</td>
<td>20.4</td>
<td>23.9</td>
<td>49.9</td>
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<td>17.7</td>
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<td>9.2</td>
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<td>19.9</td>
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<tr>
<td>Total</td>
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<td>48.4</td>
<td>96.1</td>
<td>119.2</td>
<td>165.8</td>
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<tr>
<td>Durban-Westville</td>
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<td>1.7</td>
<td>3.6</td>
<td>4.3</td>
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<td>8.8</td>
<td>4.9</td>
<td>5.9</td>
<td>23.2</td>
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<td>12.8</td>
<td>7.6</td>
<td>11</td>
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<tr>
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<tr>
<td>Potchefstroom</td>
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<td>2.6</td>
<td>6.8</td>
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<td>10.3</td>
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<td>6.8</td>
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<td>1.5</td>
<td>2.4</td>
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<td>3.9</td>
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<tr>
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<td>13.6</td>
<td>37.1</td>
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<td>28.7</td>
</tr>
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<td>11</td>
<td>38.8</td>
<td>33.6</td>
<td>33.1</td>
</tr>
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<td>4.8</td>
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<td>6.9</td>
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<td>80.7</td>
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<td>5.1</td>
<td>5.6</td>
<td>15.4</td>
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<tr>
<td>Total</td>
<td>5</td>
<td>4.9</td>
<td>5.1</td>
<td>5.6</td>
<td>15.4</td>
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<tr>
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<td><strong>93.4</strong></td>
<td><strong>108.8</strong></td>
<td><strong>227.9</strong></td>
<td><strong>255.9</strong></td>
<td><strong>332.9</strong></td>
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Source: SAPSE (1993)
## APPENDIX 16: Universities: Allocation of Total Income Per Weighted FTE Enrolled Student

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</thead>
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<td>31,900</td>
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<td>20,747</td>
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<td>25,553</td>
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<tr>
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<td>Average</td>
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<td>20,747</td>
<td>50,000</td>
<td>25,553</td>
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<td>32,742</td>
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<td>16,934</td>
<td>30,253</td>
<td>20,856</td>
</tr>
<tr>
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<td>Rand Afrikaans</td>
<td>27,974</td>
<td>16,057</td>
<td>28,070</td>
<td>15,892</td>
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<td>31,534</td>
<td>22,996</td>
<td>36,104</td>
<td>24,916</td>
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<td>19,290</td>
<td>33,084</td>
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<td>Durban-Westville</td>
<td>16,109</td>
<td>10,323</td>
<td>23,590</td>
<td>13,900</td>
</tr>
<tr>
<td></td>
<td>Natal</td>
<td>25,678</td>
<td>17,298</td>
<td>29,032</td>
<td>19,580</td>
</tr>
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<td>Zululand</td>
<td>34,197</td>
<td>17,244</td>
<td>32,171</td>
<td>16,714</td>
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<td>14,829</td>
<td>27,986</td>
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<td>Potchefstroom</td>
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<td>20,813</td>
<td>38,676</td>
<td>23,663</td>
</tr>
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<td>Average</td>
<td>34,574</td>
<td>20,813</td>
<td>38,676</td>
<td>23,663</td>
</tr>
<tr>
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<td>The North</td>
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<td>11,897</td>
<td>21,607</td>
<td>11,897</td>
</tr>
<tr>
<td></td>
<td>Average</td>
<td>21,607</td>
<td>11,897</td>
<td>21,607</td>
<td>11,897</td>
</tr>
<tr>
<td>Western Cape</td>
<td>Cape Town</td>
<td>38,028</td>
<td>27,274</td>
<td>42,143</td>
<td>30,297</td>
</tr>
<tr>
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<td>Stellenbosch</td>
<td>37,890</td>
<td>23,990</td>
<td>36,007</td>
<td>25,294</td>
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<td>25,777</td>
<td>14,550</td>
<td>34,369</td>
<td>18,985</td>
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<td>36,557</td>
<td>15,095</td>
<td>38,435</td>
<td>25,431</td>
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<td></td>
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<td><strong>17,152</strong></td>
<td><strong>34,036</strong></td>
<td><strong>21,307</strong></td>
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<td>14,343</td>
<td>6,636</td>
<td>14,120</td>
<td>7,339</td>
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</table>

1. The university of the North had submitted identical financial information for both 1992 and 1993 to the Department of Education.
APPENDIX 17: Value and Number of Bursaries awarded by PDoH to students enrolled in health care programmes (1994)

<table>
<thead>
<tr>
<th>Health Care and Health Science Degrees</th>
<th>Free State (R)</th>
<th>KwaZulu Natal (R)</th>
<th>Northern Cape (R)</th>
<th>Western Cape (R)</th>
<th>TOTAL (R)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dental surgery</td>
<td>0</td>
<td>72,000 (4)</td>
<td>0</td>
<td>0</td>
<td>72,000 (4)</td>
</tr>
<tr>
<td>Dental therapy</td>
<td>0</td>
<td>36,000 (2)</td>
<td>0</td>
<td>0</td>
<td>36,000 (2)</td>
</tr>
<tr>
<td>Dietetics (Diploma)</td>
<td>61,210 (5)</td>
<td>0</td>
<td>5,460 (1)</td>
<td>25,000 (2)</td>
<td>91,670 (8)</td>
</tr>
<tr>
<td>MBChB</td>
<td>381,808 (28)</td>
<td>2,234,500 (107)</td>
<td>54,000 (4)</td>
<td>2,580,250 (459)</td>
<td>5,250,558 (598)</td>
</tr>
<tr>
<td>Nursing</td>
<td>0</td>
<td>216,500 (15)</td>
<td>88,838 (19)</td>
<td>0</td>
<td>305,338 (34)</td>
</tr>
<tr>
<td>Occupational therapy</td>
<td>62,030 (5)</td>
<td>18,000 (1)</td>
<td>0</td>
<td>98,000 (8)</td>
<td>178,030 (14)</td>
</tr>
<tr>
<td>Optometry</td>
<td>0</td>
<td>18,000 (1)</td>
<td>0</td>
<td>0</td>
<td>18,000 (1)</td>
</tr>
<tr>
<td>Pharmacy</td>
<td>58,250 (5)</td>
<td>72,000 (4)</td>
<td>0</td>
<td>112,500 (9)</td>
<td>242,750 (18)</td>
</tr>
<tr>
<td>Physiotherapy</td>
<td>60,490 (5)</td>
<td>36,000 (2)</td>
<td>0</td>
<td>162,500 (13)</td>
<td>258,990 (20)</td>
</tr>
<tr>
<td>Radiology (Diploma)</td>
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<td>20,000 (2)</td>
<td>0</td>
<td>0</td>
<td>20,000 (2)</td>
</tr>
<tr>
<td>Speech therapy</td>
<td>48,044 (4)</td>
<td>0</td>
<td>0</td>
<td>25,000 (2)</td>
<td>73,044 (6)</td>
</tr>
<tr>
<td>TOTAL</td>
<td>671,832 (52)</td>
<td>2,723,000 (138)</td>
<td>148,298 (24)</td>
<td>3,003,250 (493)</td>
<td>6,546,380 (707)</td>
</tr>
</tbody>
</table>
Appendix 18: Technikon Weighted full-time Equivalent Enrolments (1992 & 1993)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Health Care and Health Sciences</td>
<td>Total</td>
</tr>
<tr>
<td>Eastern Cape</td>
<td>Port Elizabeth</td>
<td>106</td>
<td>4,756</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>106</td>
<td>4,756</td>
</tr>
<tr>
<td>Free State</td>
<td>Orange Free State</td>
<td>192</td>
<td>3,318</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>192</td>
<td>3,318</td>
</tr>
<tr>
<td>Gauteng</td>
<td>Pretoria</td>
<td>465</td>
<td>10,863</td>
</tr>
<tr>
<td></td>
<td>Vaal</td>
<td>140</td>
<td>5,085</td>
</tr>
<tr>
<td></td>
<td>Witwatersrand</td>
<td>546</td>
<td>8,381</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>1,151</td>
<td>24,329</td>
</tr>
<tr>
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<td>Mangosutho</td>
<td>270</td>
<td>2,064</td>
</tr>
<tr>
<td></td>
<td>M.L.Sultan</td>
<td>266</td>
<td>4,572</td>
</tr>
<tr>
<td></td>
<td>Natal</td>
<td>440</td>
<td>5,396</td>
</tr>
<tr>
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<td></td>
<td>976</td>
<td>12,032</td>
</tr>
<tr>
<td>Northern province</td>
<td>Northern Transvaal</td>
<td>321</td>
<td>4118</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>321</td>
<td>4118</td>
</tr>
<tr>
<td>Western Cape</td>
<td>Cape</td>
<td>223</td>
<td>6,308</td>
</tr>
<tr>
<td></td>
<td>Peninsula</td>
<td>350</td>
<td>4,797</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>573</td>
<td>11,105</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>3,319</td>
<td>59,658</td>
</tr>
<tr>
<td>Average</td>
<td></td>
<td>302</td>
<td>5,423</td>
</tr>
<tr>
<td>Technikon South Africa</td>
<td></td>
<td>60</td>
<td>31,099</td>
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Source: SAPSE (1993) and Bunting (1996)
## Appendix 19: Technikons: Sources of Income for Health Care and Health Sciences (Rand Million) (1992 & 1993)

<table>
<thead>
<tr>
<th>Provinces</th>
<th>Technikons</th>
<th>Tuition Fees</th>
<th>Other Income</th>
<th>Department of Education Subsidy</th>
<th>Total Allocation to Health Care &amp; Health Sciences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eastern Cape</td>
<td>Port Elizabeth</td>
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<td>0.3</td>
<td>0.3</td>
<td>0.4</td>
</tr>
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<td>Total</td>
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<td>0.3</td>
<td>0.3</td>
<td>0.4</td>
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<td>Free State</td>
<td>Orange Free State</td>
<td>0.4</td>
<td>0.6</td>
<td>1.4</td>
<td>1.5</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>0.4</td>
<td>0.6</td>
<td>1.4</td>
<td>1.5</td>
</tr>
<tr>
<td>Gauteng</td>
<td>Pretoria</td>
<td>1.5</td>
<td>2.2</td>
<td>1.3</td>
<td>1.8</td>
</tr>
<tr>
<td></td>
<td>Vaal</td>
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<td>0.3</td>
<td>0.8</td>
<td>0.7</td>
</tr>
<tr>
<td></td>
<td>Witwatersrand</td>
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<td>2.2</td>
<td>1.7</td>
<td>2.6</td>
</tr>
<tr>
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<td>Total</td>
<td>3.8</td>
<td>4.7</td>
<td>3.8</td>
<td>5.1</td>
</tr>
<tr>
<td>KwaZulu-Natal</td>
<td>Mangosutho</td>
<td>0.8</td>
<td>0.7</td>
<td>0.6</td>
<td>0.7</td>
</tr>
<tr>
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<td>M.L.Sultan</td>
<td>0.7</td>
<td>0.7</td>
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<td>1.2</td>
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<tr>
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<td>2.9</td>
<td>2.1</td>
<td>4</td>
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<tr>
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<td>Total</td>
<td>3.4</td>
<td>4.3</td>
<td>4.2</td>
<td>5.9</td>
</tr>
<tr>
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<td>Northern</td>
<td>0.9</td>
<td>1.5</td>
<td>2</td>
<td>2.8</td>
</tr>
<tr>
<td></td>
<td>Total</td>
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<td>1.5</td>
<td>2</td>
<td>2.8</td>
</tr>
<tr>
<td>Western Cape</td>
<td>Cape</td>
<td>0.7</td>
<td>1</td>
<td>1.4</td>
<td>2.1</td>
</tr>
<tr>
<td></td>
<td>Peninsula</td>
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<td>0.9</td>
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<td>1.9</td>
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<tr>
<td></td>
<td>Total</td>
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<td>1.9</td>
<td>3.8</td>
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<tr>
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<td>Total</td>
<td>0.1</td>
<td>0.2</td>
<td>0.05</td>
<td>0.1</td>
</tr>
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<td>10.3</td>
<td>13.5</td>
<td>15.55</td>
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</table>

Source: SAPSE 1993
## Appendix 20: Technikons: Allocation of Total Income Per Weighted Enrolled Student (1992 & 1993)

<table>
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<tr>
<th>Provinces</th>
<th>TECHNIKONS</th>
<th>Total Allocation Per FTE (1992) (R)</th>
<th>Total Allocation Per FTE (1993) (R)</th>
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<td></td>
<td></td>
<td>Health Care &amp; Health Sciences</td>
<td>Total</td>
<td>Health Care &amp; Health Sciences</td>
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<td>Port Elizabeth</td>
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<td>12,826</td>
<td>18,447</td>
</tr>
<tr>
<td>Average</td>
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<td>17,925</td>
<td>12,826</td>
<td>18,447</td>
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<td>Orange Free State</td>
<td>23,438</td>
<td>15,853</td>
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<td>15,853</td>
<td>22,979</td>
</tr>
<tr>
<td>Gauteng</td>
<td>Pretoria</td>
<td>17,419</td>
<td>13,007</td>
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<tr>
<td></td>
<td>Vaal</td>
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<td>13,982</td>
<td>20,661</td>
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<td>Witwatersrand</td>
<td>17,766</td>
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<td>22,117</td>
</tr>
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<td>KwaZulu-Natal</td>
<td>Mangosutho</td>
<td>16,667</td>
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</tr>
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<td>25,494</td>
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<td>20,492</td>
<td>15,218</td>
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<td>Average</td>
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<td>12,360</td>
<td>23,855</td>
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<td>21,986</td>
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<tr>
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<td>3,399</td>
<td>7,447</td>
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</table>


Department of Education (1992) SAPSE Financial and Related Statements: Pretoria:


Mail and Guardian 16/08-22/08/96.


Sunday Independent 02/06/96.

Sunday Independent 25/08/96.

Sunday Independent 26/04/96.
