

**INPATIENT CATCHMENT POPULATIONS OF
PUBLIC SECTOR HOSPITALS IN NATAL/KWAZULU**

**Submitted in partial fulfilment of
the requirements for PART I of the M.Med
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DECLARATION

This dissertation is the candidate's original work and has not been submitted in any other form to another university.

The sources of data have been acknowledged in the text.

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ABBREVIATIONS

1. **MD** - Magisterial District
2. **HPSR** - Health Planning Sub Region
3. **CBF** - Cross Boundary Flow
4. **DHW(KZ)** - Department of Health and Welfare KwaZulu
5. **DNHPD** - Department of National Health and Population Development
6. **DHS(NPA)** - Department of Hospital Services - Natal Provincial Administration
7. **HSLC** - Health Service Liaison Committee.

SUMMARY

Knowledge of the catchment population of health facilities and the cross boundary flow characteristics of these are essential ingredients in the planning process. This present study was, therefore, undertaken to obtain this information in respect of inpatient services in Natal/KwaZulu Public Sector Hospitals.

For each inpatient in participating hospitals on one day in February 1987, (4 hospitals carried out the study in April 1987), the magisterial district of residence, source of referral, racial group and major clinical category were determined. From these data the catchment populations and cross boundary flow characteristics were determined according to HPSR for each health facility.

1. In Natal/KwaZulu there are now 2 major health authorities [DHS(NPA) and DHW(KZ)] supplying inpatient facilities. (Management of hospitals previously under the control of DNHPD is now under the control of DHS(NPA) with effect from 1st April 1988.) This situation leads to duplication of a) health service delivery and b) administrative functions particularly when associated with clinic services.

The HSLC can play an important role in co-ordinating the activities of health authorities and prevent unnecessary duplication.

2. Of the 59 hospitals involved in the study DHS(NPA), DHW(KZ) and DNHPD [now DHS(NPA)] were responsible for administering 24 (41%), 23 (39%) and 6 (10%) respectively.
3. DHS(NPA) hospitals serve 61,4% of the inpatient catchment population whereas DHW(KZ) serve 38,6% of the same population.
4. The region of residence of inpatients according to the health authority providing treatment was as follows:

DHS(NPA) - 66,7%, 26,4% 5,8% were residents of Natal, KwaZulu and Transkei respectively

DHW(KZ) - 73,0% and 25,9% were residents of KwaZulu and Natal respectively

DNHPD - 55,0%, 36,8%, 7,7% were residents of Natal, KwaZulu and Transkei respectively.

5. The population distribution (%) for Natal was 34,6% and for KwaZulu was 65,4% of the total.
6. Blacks comprise 79,7%, Asians 10,0%, Whites 9,1% and Coloureds 1,2% of the total population of Natal/KwaZulu.
7. Of the total of 19 877 inpatients (on the night of the study), 9 786 (49,2%) and 9 140 (46,0%) were residents of Natal and KwaZulu respectively.
8. DHS(NPA) hospitals admitted 9568 inpatients of whom 6386 (66,7%) were residents of Natal and 2529 (26,4%) were residents of KwaZulu.
9. DHW(KZ) hospitals admitted 7773 inpatients of whom 5679 (73%) were residents of KwaZulu and 2014 (25,9%) were residents of Natal.
10. Transkei residents accounted for 789 (4%) of inpatients in Natal/KwaZulu.
11. Over 70% of Whites, Asian and Coloured inpatients are resident in HPSRs G and H.
12. HPSRs G and H accounted for less than 50% of inpatients among Black patients.

13. Self-referral accounted for 48% of the total inpatient population whilst peripheral clinics accounted for 15,5% of referrals.
14. Self referrals were the largest individual source category in each HPSR except for HPSR-H (Durban) where 42,7% of inpatients were referred from other hospitals. This is accounted for by the major referral status of King Edward VIII/Clairwood and Wentwroth hospitals.
15. The relatively high percentage (26.3%) of "other" sources of referral for HPSR-A (Madadeni) is at least partly accounted for by Madadeni hospital which is partly a psychiatric hospital, receiving psychiatric patients by reception order (Magistrates).
16. For all HPSRs combined, Medicine, Paediatrics, Surgery, Obstetrics, Gynaecology and Psychiatry accounted for 32,3%; 24,9%; 21,5%; 12,7%; 3,2% and 5,5% of admissions respectively.
17. Catchment populations ranged from 243 909 (3,5%) for HPSR-B to 2 812 610 (40,9%) for HPSR-H.
18. Catchment populations per hospital ranged in size from 60977 in HPSR- B to 271047 in HPSR-H.
19. HPSRs G and H accounted for 55,6% of admissions. In these two HPSRs 20 (34%) of the hospitals in Natal/KwaZulu (excluding Private institutions) are located.
20. The majority of the catchment population in each HPSR resided in that HPSR, ranging from 65,4% in HPSR-G to 97,7% in HPSR-C.
21. The potential inflow to a particular HPSR from other HPSRs in Natal/KwaZulu ranged from 73409 (HPSR-F) to 770715 (HPSR-H). Cross boundary inflow of patients to an HPSR exceeded 15% of the total inpatients in HPSRs - A, B, G and H.

22. The potential outflow to other HPSRs ranged from 85727 (HPSR-H) to 373393 (HPSR-G). The cross boundary outflow from a HPSR exceeded 20% in all HPSRs except HPSRs H and D.
23. Net cross boundary flow was positive (inflow) in only two of the eight HPSRs, namely A and H. The large potential inflow to HPSR-H is not surprising as the 2 major referral hospitals (King Edward and Wentworth) are situated here.
24. Five hospitals (8,5%) had a greater than 50% cross boundary flow of patients.

INTRODUCTION

The Natal/KwaZulu Health Services Liaison Committee (HSLC) has been established to co-ordinate health care delivery in Natal and KwaZulu. This body has defined eight geographical Health Planning Sub-Regions (HPSRs) (Annexure E) of which each is a unit for planning and prioritising health service delivery in respect of its resident population.

The HSLC considered that a study of inpatient catchment populations of hospitals under the control of the statutory Health Authorities would provide information which was essential to the planning processes of those authorities. The Department of Community Health was requested by the HSLC to undertake this study. A previous study, co-ordinated by the Department of Community Health (September 1987), dealt with "Outpatient Catchment Populations of Hospitals and Clinics in Natal and KwaZulu" (E DADA). No previous similar study on inpatients has been undertaken in South Africa.

The expansion and improvement of basic services - particularly health care, water supply and basic education - should be perceived as essential elements in a strategy designed to enable all residents of a region to meet basic human needs and enjoy a minimum standard of living. Thus increased efforts have to be made to utilise health care resources effectively and efficiently and to plan future facilities carefully with regard to accessibility and appropriateness. This will require careful and objective management by all Authorities responsible for delivering health care to the people of Natal and KwaZulu.

Accurately predicting the utilisation of hospital inpatient facilities is critical to efficient resource allocation in Health Services management. Catchment population studies and cross boundary flow characteristics provide valuable information on the utilisation of available facilities.

This information is of value in the development of existing health services and the planning of additional health facilities with regard to size, situation and service type.

Studies in other areas on utilisation of health service facilities, suggest that distance strongly influences hospital choice in both rural and metropolitan areas (Inquiry 1984 21(1) : 84-95) and this could explain some of the findings of this study with regard to cross boundary flow between Magisterial districts and HPSRs. For the efficient planning of resources, particularly with regard to situation and size, knowledge of the population size and demographic composition are important, as is a knowledge of the profile of disease in a community. The objectives of this study are directed to making available this information to each of the health authorities responsible for health care delivery and thus, to facilitate the management process.

OBJECTIVES

1. To identify all hospitals in Natal/KwaZulu operated by Statutory Health Authorities.
2. To identify in respect of each identified hospital the:-
 - (i) Statutory Health Authority under whose jurisdiction it operates.
 - (ii) Geographical location in which it is situated.
3. To ascertain in respect of each MD and HPSR its population size according to racial group.
4. To determine the use of hospital inpatient facilities according to:-
 - (i) HPSR of residence of users
 - (ii) source of referral
 - (iii) major clinical category.
5. To determine, in respect of each hospital and each HPSR, the:-
 - (i) catchment population.
 - (ii) cross-boundary flow characteristics of the user population.
6. Submit recommendations, where appropriate, in respect of future planning of health facilities.

DEFINITIONS

1. **Catchment Populations:** The size of the population served by the hospital irrespective of its district of residence.
2. **Inpatient:** Any patient in hospital on the night of the study - excluding overnight boarder patients.
3. **KwaZulu:** The geographical area administered by the KwaZulu Government.
4. **Natal:** The geographical area administered by the Natal Provincial Administration.
5. **Health Authorities:**
 - a) Department of National Health and Population Development. (DNHPD)
 - b) Department of Health and Welfare of KwaZulu. (KZ HEALTH)
 - c) Department of Hospital Services of the Natal Provincial Administration. (DHS(NPA))
6. **Public Sector Hospital:** Hospitals operated by the statutory health authorities excluding special care institutions.
7. **Health Planning Sub Region (HPSR):** A geographically defined area by the KwaZulu/Natal Health Services Liaison Committee which constitutes an operational unit for the planning, co-ordination, delivery and management of health services in Natal and KwaZulu.

REDUCTION OF BIAS

1. **SAMPLE**: All inpatients on the night of the study in all public hospitals in Natal/KwaZulu were included.

For the purpose of this study, no control group was necessary.

2. **INTERVIEWS**: Standard collation sheets (Annexure C) were utilized to collect data in respect of racial group, magisterial district of residence, source of referral of inpatients and major clinical category. Interviewers were nursing staff of the hospitals who had been briefed by senior nursing personnel in the hospital concerned.

METHOD OF DATA COLLECTION

OBJECTIVE 1:- Identification of hospitals

Each Statutory Health Authority in Natal and KwaZulu was requested by the HSLC to submit a list of all hospitals controlled by that Health Authority to the Department of Community Health.

OBJECTIVE 2:- Identification of health authority and geographical location

Using maps and a report submitted on Outpatient Catchment Populations for hospitals and clinics in Natal and KwaZulu (Dr E. Data 1987). Each hospital was identified with respect to the Administering Health Authority and the Magisterial District and Health Planning Sub-Region in which it is situated. (Annexures E and F)

OBJECTIVE 3:- Population size and racial group

The size and racial composition of each HPSR in Natal and KwaZulu was obtained from the 1985 RSA Census (includes HSRC adjusted figures).

OBJECTIVE 4:- Utilisation characteristics

Authority to conduct the study was granted by each of the Directors of the Health Authorities involved.

In order to obtain the information required to fulfil this objective, a single collation sheet was designed by the Department of Community Health. Each hospital Medical Superintendent was provided with collation sheets purpose- designed for that specific hospital (Annexures B and C). On these sheets the Magisterial Districts relevant to that hospital were included. Completion of the sheets required the entry of a tick

in each of the 5 columns, for each inpatient (see annexure C). Each hospital received an instruction sheet.

It was decided that the nursing staff on night duty in each hospital would be the most appropriate staff members to collect the data. Those involved in the data collection were briefed by senior management prior to the evening on which the study was carried out.

All inpatients in hospital at midnight on the night of the study were included. Time did not permit more than 1 night to be used to collect the data. The study was conducted initially on the 19th February 1987. Non-responding hospitals were required to conduct the study on the 15th April 1987. These dates were selected as they fell in the middle of the month and on a Wednesday when it was felt that bias as a result of weekend and month-end accidents and assaults would be minimised. The night duty nursing staff were selected as it was felt that in most hospital wards nursing activity is less at that time and therefore more time would be available for the careful completion of collation sheets.

For the purpose of this study in order to reduce the bias caused by temporary stay nearby the hospital, Magisterial District of Normal Residence was defined as the district in which the person resided for the greater portion of the year.

Paediatric patients were regarded as any patient including normal neonates, under the age of 12 years at the time of the study.

Completed collation sheets were gathered by the Matrons of the hospitals and submitted to the Medical Superintendent who, in turn, ensured that all data was posted to the Department of Community Health.

OBJECTIVE 5:- Catchment population and cross boundary flow

Catchment populations, cross-boundary flow characteristics and other descriptive information was derived by the application of statistical technique to the composite data set.

LIMITATIONS OF THE STUDY

Time of Data Collection: The study was conducted over a 24 hour period on the 19th February 1987 for 53 out of the 59 hospitals. For several reasons, including not receiving the questionnaires in time by post or the unavailability of necessary administrative staff, the remaining 6 hospitals carried out the study on the 15th April 1987. This lack of uniformity in respect of 10% of hospitals is a potential source of bias in this study.

Conducting a survey over the short period of 24 hours may introduce bias as this does not take account of seasonal variations including the annual migration of urban workers to rural homes. This may affect cross-boundary flow characteristics, however, it is considered likely that seasonal variations in morbidity are likely to have proportionately, a minimal effect on choice of facility except where severity of illness varies also with season.

Briefing: Two questions were directed to each inpatient. These were in respect of magisterial district of normal residence and source of referral. The other information obtained in the study, the patient number, race and major clinical category was collected from hospital records. This limited number of data items is likely to have reduced both interviewee bias and hospital record bias. Instructions were issued to the Medical Superintendent of each hospital (by post), who then liaised with the administration staff and nursing management of the hospital. The matrons and senior nursing staff then directed and briefed the nurses on duty (on the night of the study) as to the procedures involved.

Nursing staff were chosen to conduct the survey at each hospital as it was felt that there would be greater uniformity in the quality of data collection by utilising one category of health worker. However, this does not mean that the transmission of instructions by senior nurses to ward staff prevented deterioration in briefing quality or the absence of errors in completing the forms. Omission of source of referral and

region of residence occurred in 107 and 41 cases respectively, representing 0,7% of records.

Accuracy of Data Recorded: A potential source of error is the supply of incorrect information by patients or the misunderstanding by nurses of supplied information. Misunderstanding of the meaning of "normal area of residence" by migrant labourers is a potential source of error. It is not considered, however, due to the short period of time during a year in which migrant workers return from the mines (a major employer) that this source of bias will have important implications in respect to the planning of health services.

The number of inpatients on the night of the study recorded, was checked by the senior nursing staff against routinely collected data. The accuracy of submitted patient numbers is therefore likely to be of a high order.

Exclusions from Catchment Population Calculations: Of the 19788 inpatients in respect of whom data was obtained, 954 (4,8%) were excluded from catchment population calculations as they came from areas outside Natal and KwaZulu (Transkei 779, Others/Unknown 174). However, these inpatients were included in calculations with respect to source of referral, clinical category and region of residence.

Co-operation at all levels was experienced in all hospitals and by all health authorities. It is commended that this attitude contributed appreciably to the relatively small number of data errors.



RESULTS

OBJECTIVES 1 AND 2

PUBLIC SECTOR HOSPITALS WITH INPATIENT FACILITIES IN NATAL/KWAZULU WHICH WERE INCLUDED IN THE STUDY

1. The total number of hospitals administered/subsidised by the Authorities which were included in the study was 59 (Table 1 Annexure F).
2. Of the total inpatient catchment population of 6 899 123 served by these hospitals - DHS(NPA) serves 48,7% (3 353 264), DHW(KZ) serves 38,6% (2 659 637) and DNHPD serves 12,7% (876 223) [FIGURE I].
3. The number of hospitals under the jurisdiction of DHS(NPA), DHW(KZ), and DNHPD and those subsidised by DHS(NPA) are 24 (41%), 23 (39%) and 6 (10,1%) respectively. A further 6 (10,1%) hospitals are subsidised by DHS(NPA) (FIGURE 1).

CATCHMENT POPULATIONS OF NATAL/KWAZULU HOSPITALS ACCORDING TO ADMINISTERING HEALTH AUTHORITY

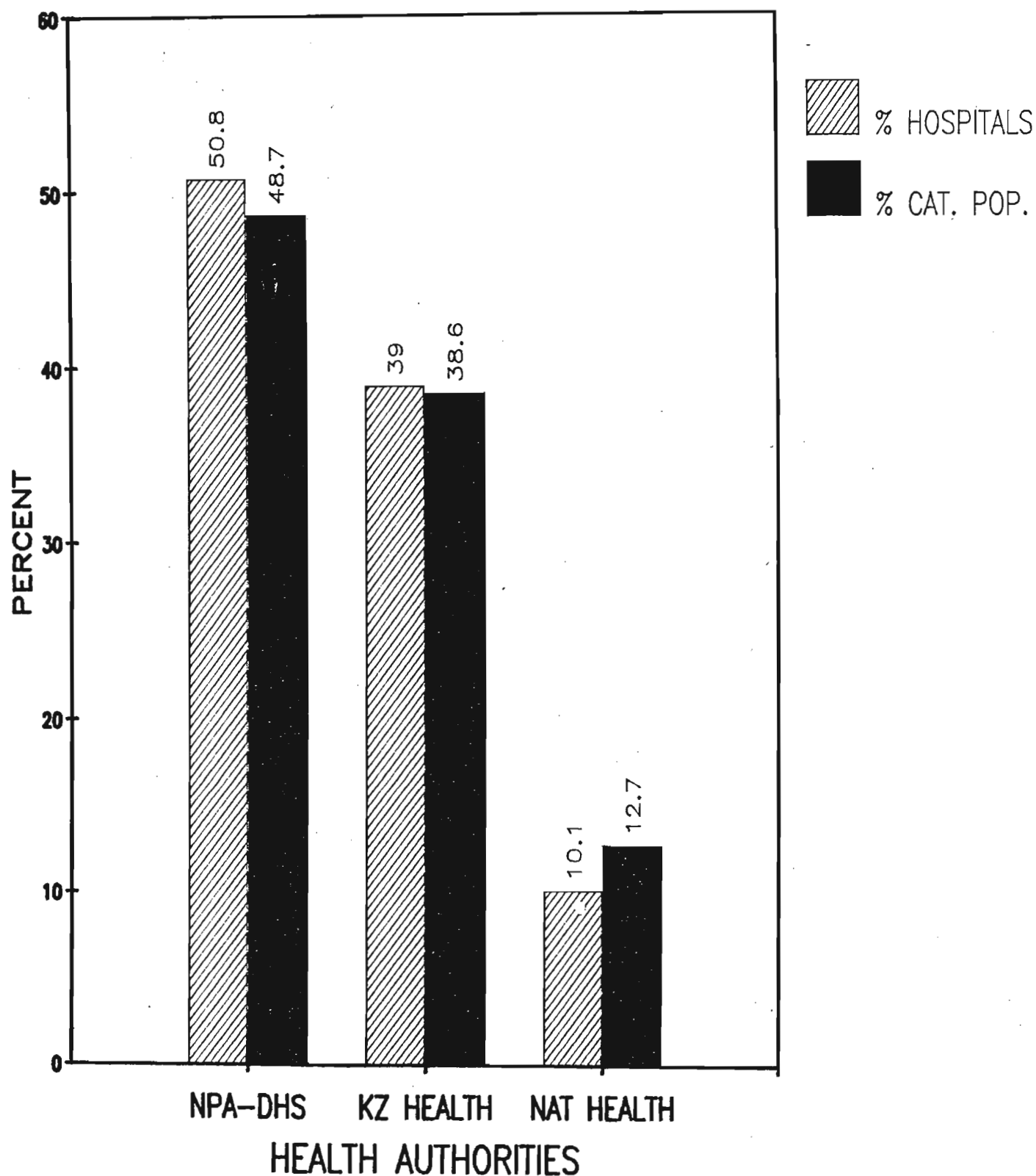


FIGURE 1

NO. OF HOSPITALS: DNHPD=6, DHS(NPA)=30, DHW (KZ)=23

OBJECTIVE 3

THE POPULATION ACCORDING TO HPSRs AND MAGISTERIAL DISTRICTS IN NATAL/KWAZULU (TABLES 2 AND 3)

The figures given are derived from the 1985 Census and have been adjusted in accordance with the HSRC estimate of undercounting for each racegroup i.e. White 7,6%, Black 20,4%, Coloured 1% and Asian 4,6%.

Blacks comprise 79,7%, Whites 9,1%, Asians 10,0% and Coloureds 1,2% of the total population of Natal/KwaZulu.

The population of Natal/KwaZulu was 6899163 of which 4509545 (65,4%) lived in KwaZulu (Figure 2).

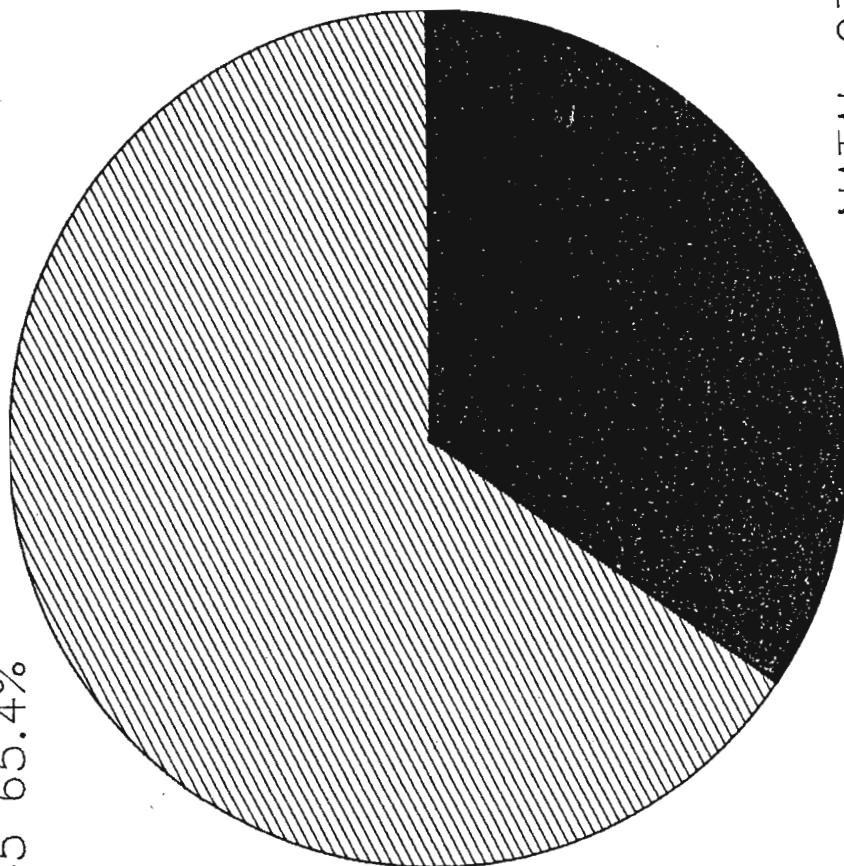
KwaZulu contained 81,8% of the Black population of KwaZulu/Natal, Natal contained 99,7% of Whites, 96,8% of Coloureds and 99,5% of Asians (Figure 3).

The largest population in a Magisterial district was 482308 for Durban (HPSR-H) and the smallest was 4997 for Polela (HPSR-G).

A total of 18 (27%) Magisterial Districts had populations greater than 150000 (Table 3).

POPULATION OF NATAL/KWAZULU
NUMBER AND PERCENT (%)

KWAZULU 4509545 65.4%



NATAL 2389618 34.6%

POPULATION OF NATAL/KWAZULU ACCORDING TO RACIAL GROUP

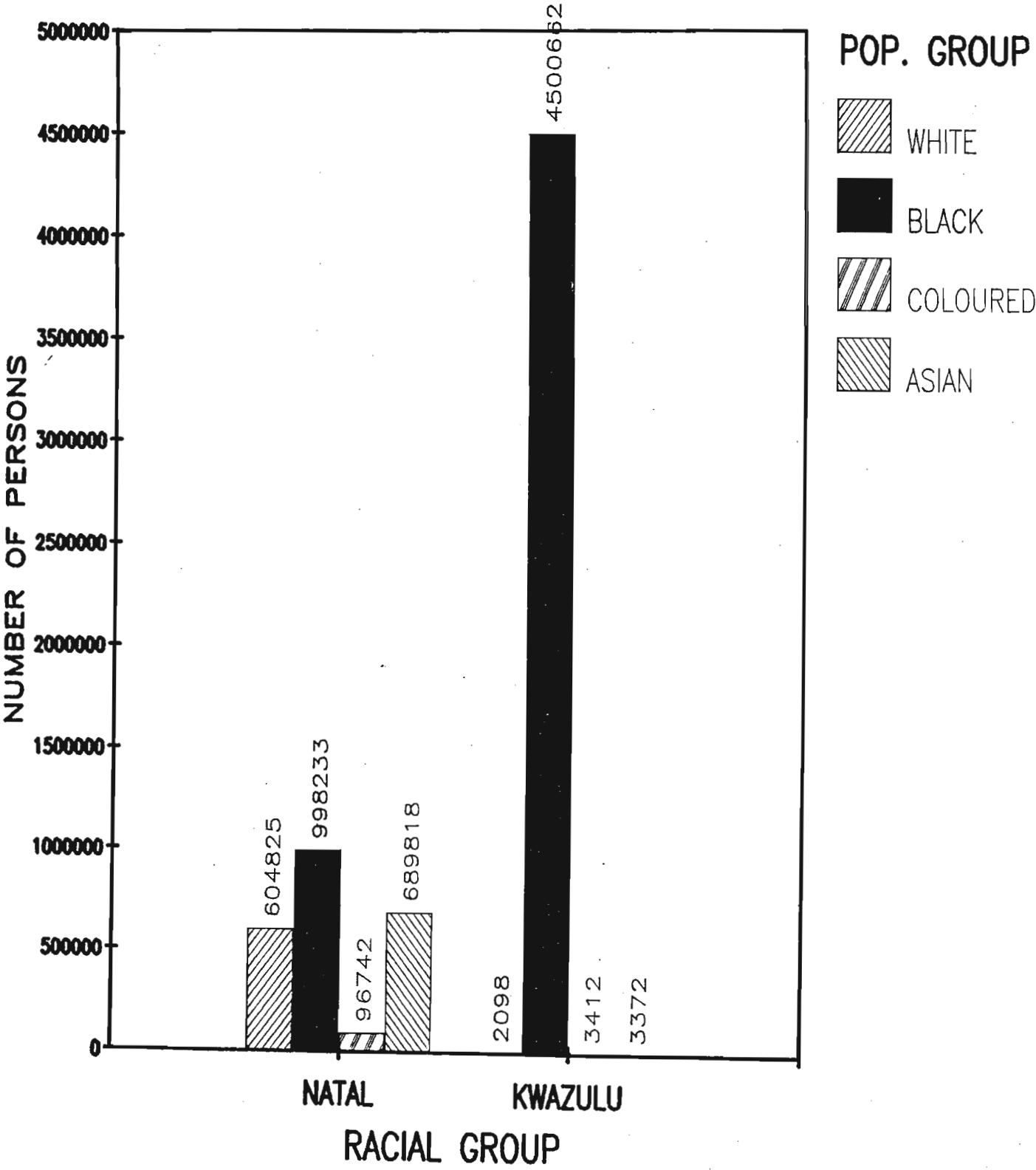


FIGURE 3

OBJECTIVE 4

REGION OF RESIDENCE OF INPATIENTS

Of the total of 19 877 inpatients, 9 786 (49,2%) were Natal residents and 9 140 (46,0%) were KwaZulu residents. In addition 779 (3,9%) were Transkei residents and 128 (0,6%) were residents of other areas. The residential area of 46 (< 1%) was unknown.

The 9786 and 9140 inpatients, who were residents of Natal and KwaZulu respectively, represent 0,4% and 0,2% of the population of those territories (FIGURE 4).

Of 19877 inpatients the number admitted to each HPSR was as follows:

7 462 (38%) - HPSR-H

3 204 (16,1%) - HPSR-F

2 720 (13,7%) - HPSR-G

1 760 (8,9%) - HPSR-A

1 522 (7,7%) - HPSR-I

1 473 (7,4%) - HPSR-C

941 (4,7%) - HPSR-D

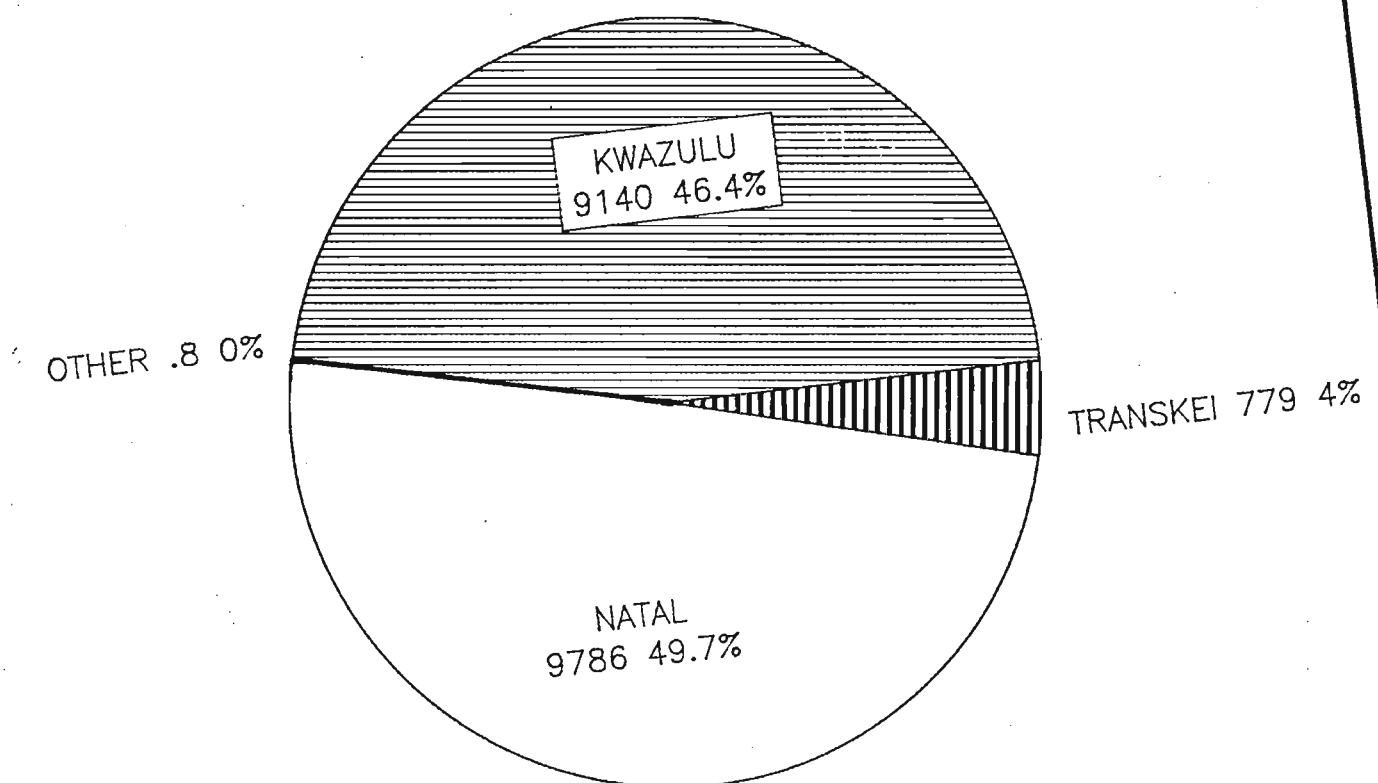
795 (4,0%) - HPSR-B. (TABLE 4)

Region of Residence of Inpatients according to HPSR (Tables 5(a)-(h))

Overall, 9786 (49,1%) patients were residents of Natal and 9140 (46,0%) were residents of KwaZulu. Transkeians accounted for 799 (3,9%) of admitted patients.

For HPSRs A-I (excluding E) the percentages of inpatients who were residents of KwaZulu were 48,1; 61,8; 95,5; 31,0; 63,7; 34,7 and 34,7 respectively. In the case of HPSRs H and I respectively, Transkeians accounted for 4,5% and 26,6% of admissions. The remainder of inpatients in all HPSRs were residents of Natal with the exception of 174 (0,8%) patients who were from other areas or whose residence was unknown. Detailed information on individual health facilities within an HPSR are shown in Tables 5(a)-(h).

NATAL/KWAZULU INPATIENTS ACCORDING
TO REGION OF RESIDENCE
NUMBER AND PERCENT (%)



DISTRIBUTION OF INPATIENTS

FIGURE 4

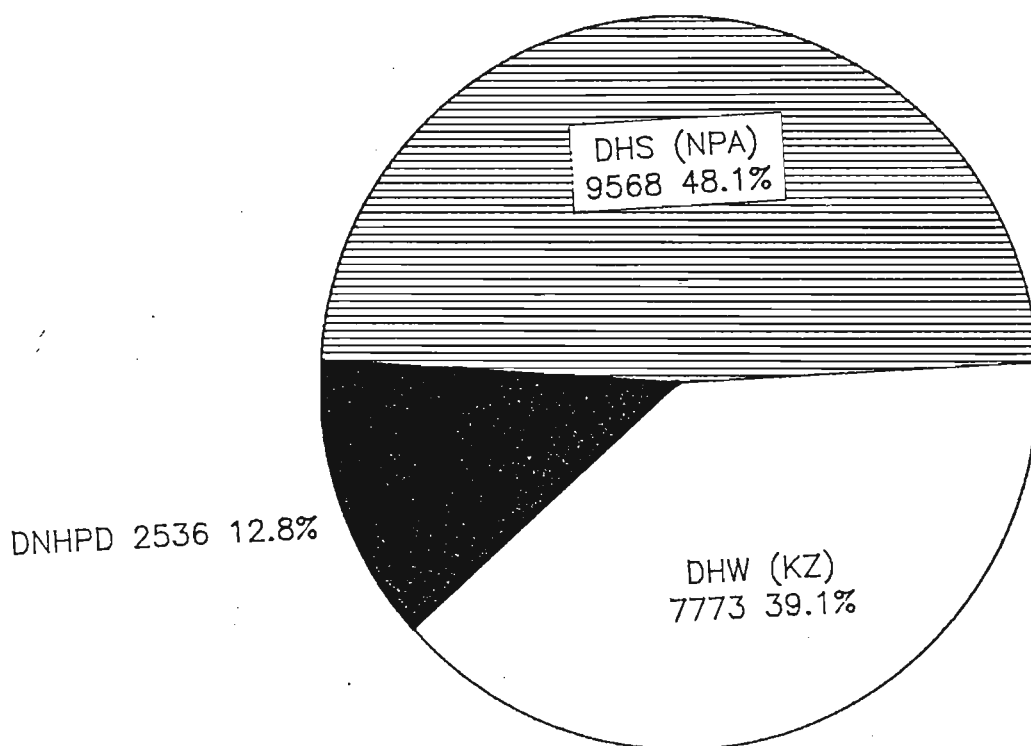
Contributions to Inpatient care of the Health Authorities

The Region of Residence of inpatients was determined for each Health Authority.

The number and percent (%) of inpatients cared for was 9568 (48,1), 7773 (39,1) and 2536 (12,8) respectively for DHS(NPA), DHW(KZ) and DNHPD.

* Note that from April 1988 hospitals formerly under control of DNHPD would be directed by DHS(NPA).

INPATIENTS ACCORDING TO HEALTH AUTHORITIES



DISTRIBUTION OF INPATIENTS

Region of Residence of inpatients according to Health Authority

For each of the 3 Health Authorities the Region of Residence of inpatients was determined. (See Table 6)

Of 9568 inpatients in DHS(NPA) hospitals: 6386 (66,7%), 2529 (26,4%) and 554 (5,8%) were residents of Natal, KwaZulu and Transkei respectively.

Of 7773 inpatients in DHW(KZ) hospitals: 5679 (73%), 2014 (25,9%) and 40 (0,5%) were residents of KwaZulu, Natal and Transkei respectively.

Of 2536 inpatients in DNHPD [now DHS(NPA)] hospitals: 1396 (55,0%), 932 (36,8%) and 195 (7,7%) were residents of Natal, KwaZulu and Transkei respectively.

Those regions accounting for the place of residence of more than 5% of inpatients are indicated in Figure 6 below.

The majority of Transkei patients admitted to hospitals in Natal/KwaZulu were admitted into DHS(NPA) hospitals (554 or 70%), the remainder being admitted to DNHPD hospitals (195 or 25%).

REGION OF RESIDENCE OF INPATIENTS ACCORDING TO HEALTH AUTHORITY

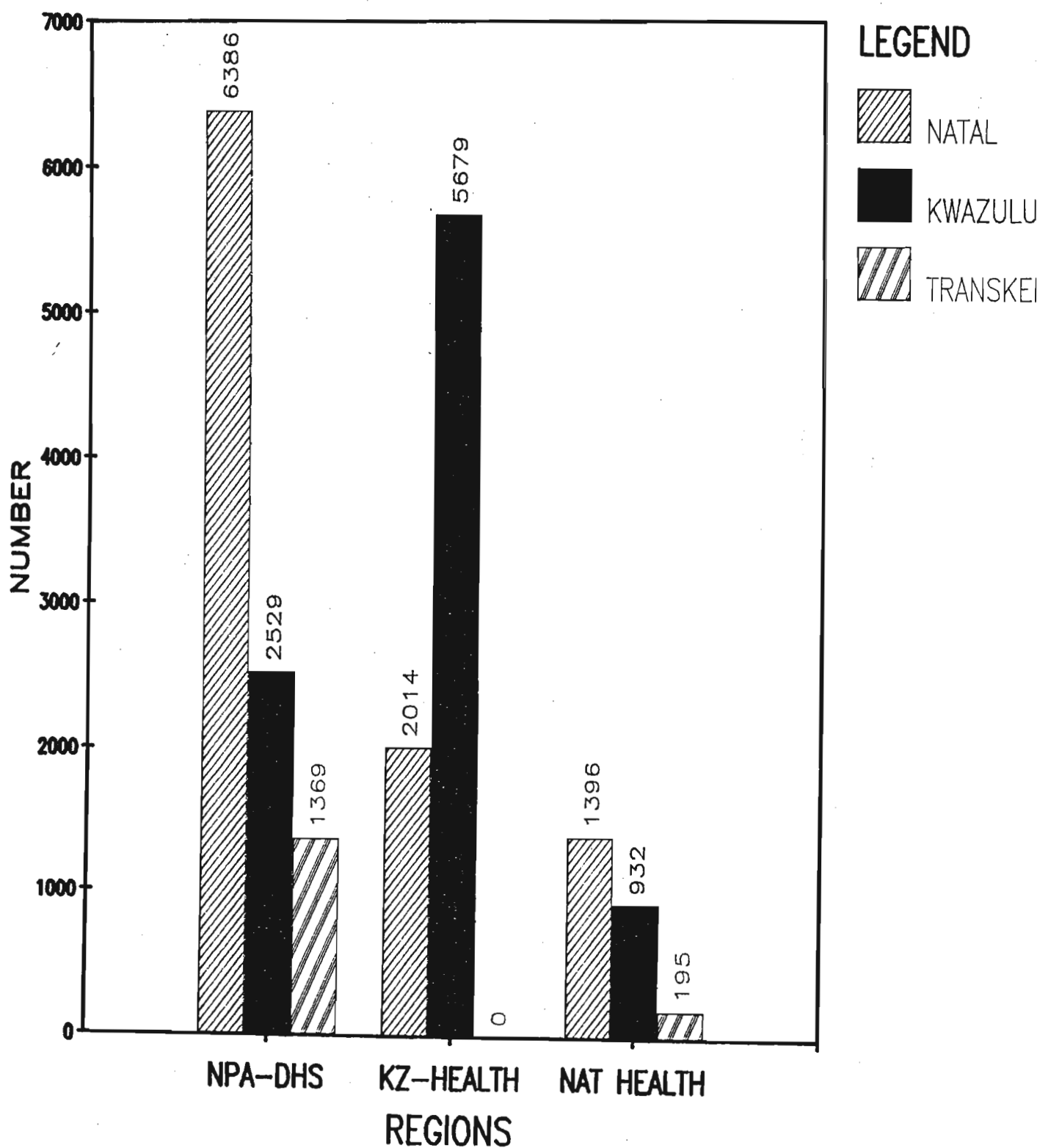


FIGURE 6

Race of Inpatients

The number and percent of inpatients according to Race shows that over 70% of Whites, Asians and Coloureds were inpatients in HPSRs G and H. The individual figures are:- 1 046 (74,4%) of Whites, 301 (85,7%) of Coloureds and 1 060 (91,4%) of Asians were inpatients in HPSRs G and H (Pietermaritzburg and Durban) respectively.

For the Black population, 9 132 (53,5%) of the total inpatients were inpatients outside HPSRs G and H (Pietermaritzburg and Durban). They were admitted to hospitals in rural and smaller urban areas.

Of the 19918 inpatients on the night of the study, 17 001 (85,4%) were Blacks, 1 406 (7,1%) were Whites, 1 106 (5,8) were Asians and 351 (1,8%) were Coloured. (Figure 5)

NATAL/KWAZULU INPATIENTS ACCORDING TO RACIAL GROUPS NUMBER AND PERCENT (%)

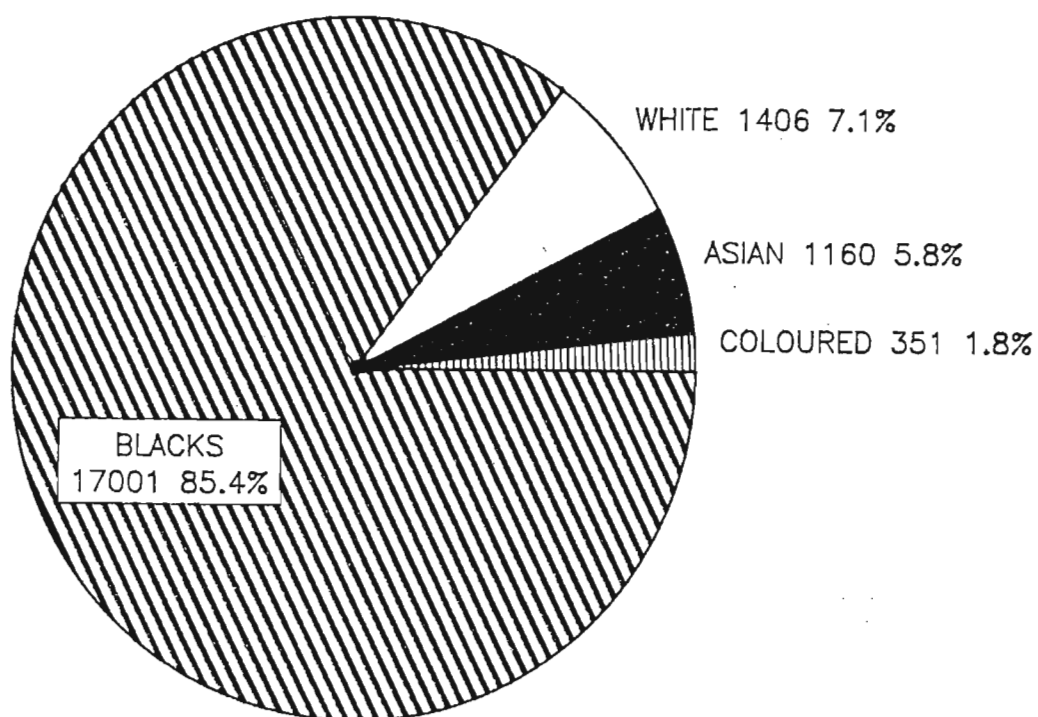


FIGURE 7

Source of Referral according to HPSR of admission

The rate of self referral was appreciable in all HPSRs and ranged from 31,6% in HPSR-H to 72,8% in HPSR-F (FIGURE 8).

In HPSR-H 3183 inpatients (42,7%) were referred from other hospitals. This reflects the presence of Tertiary referral centres (King Edward and Wentworth Hospitals) in that HPSR.

Tables 9a-h indicate for each HPSR the source of referral for individual hospitals. The tables should be interpreted as for Table 8.

The source of referral of inpatients is shown in Table 8.

Note: "Other" as a source of referral was relatively high in HPSR- A. This is due to many psychiatric patients at Madadeni Hospital being admitted via a Magistrate's order.

SOURCE OF REFERRAL OF INPATIENTS FOR NATAL/KWAZULU NUMBER AND PERCENT (%)

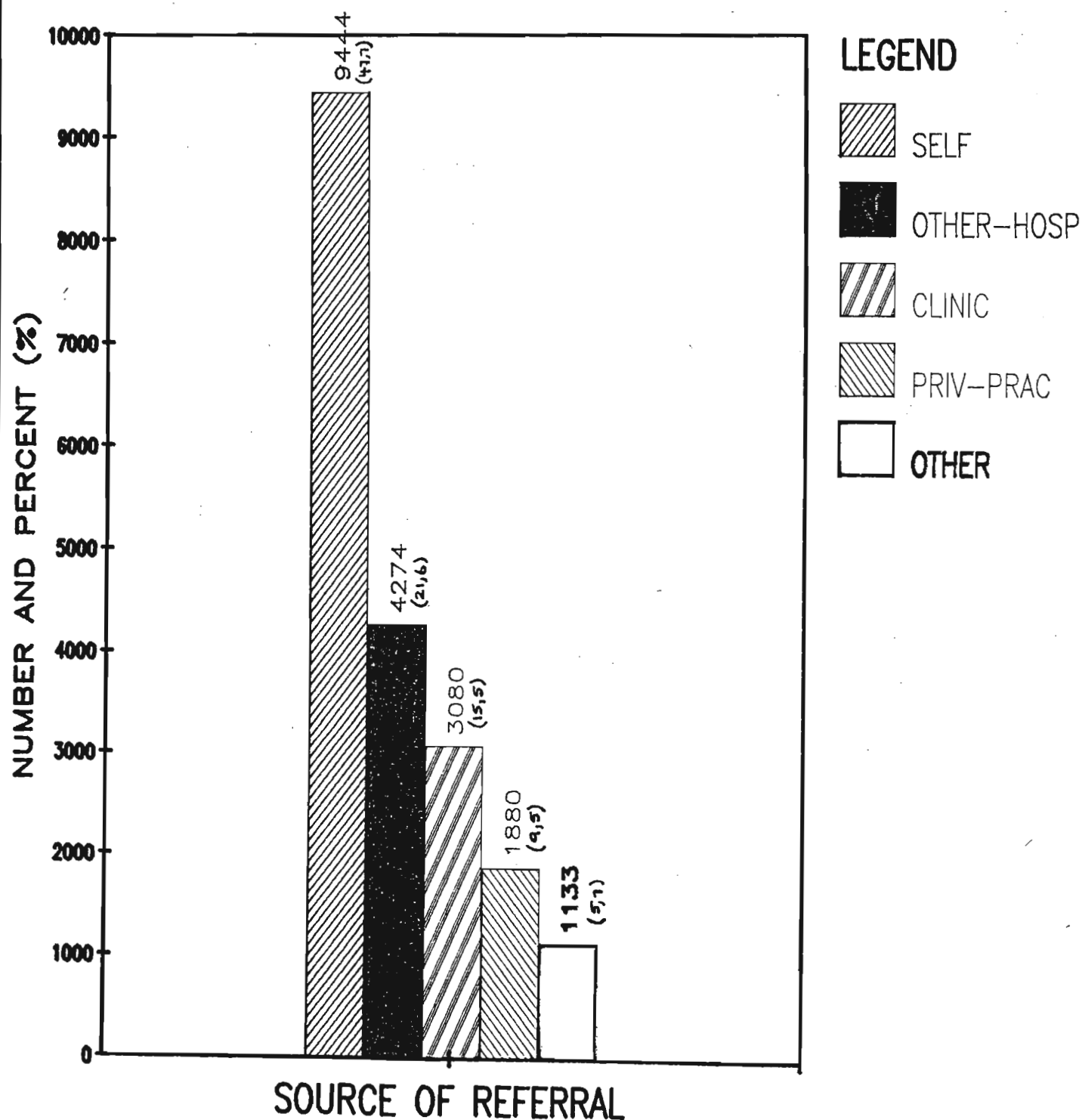


FIGURE 8

Major Clinical Category of Inpatients

For all HPSRs combined, Medicine, Paediatrics, Surgery, Obstetrics, Gynaecology and Psychiatry accounted for 32,3%, 24,9%, 21,5%, 12,7%, 3,2% and 5,5% of admissions respectively (Figure 9 and Table 10).

Medicine accounted for 21,0; 29,2; 35,8; 30,3; 29,2; 31,5; 36,1 and 33,6 percent of inpatients in HPSRs A-I respectively.

Surgery accounted for 11,9; 14,9; 13,7; 21,3; 18,6; 30,0; 24,0 and 22,1 percent of inpatients in HPSRs A-I respectively.

Paediatrics (< 12 years) accounted for 16,3; 23,3; 31,7; 28,4; 32,1; 20,4; 23,1 and 29,0 percent of inpatients for HPSRs A-I respectively.

The above 3 disciplines together accounted for 78,7% of the total number of inpatients (See Table 10).

The relatively larger proportion of Psychiatric patients in HPSR- A (which accounted for 69,2% of all Psychiatric inpatients in all the HPSRs) is due to the large Psychiatric section of Madadeni Hospital.

(Fort Napier hospital in Pietermaritzburg, was excluded from the study as it does not also admit general general medical patients.)

NATAL/KWAZULU INPATIENTS ACCORDING TO MAJOR CLINICAL CATEGORY NUMBER

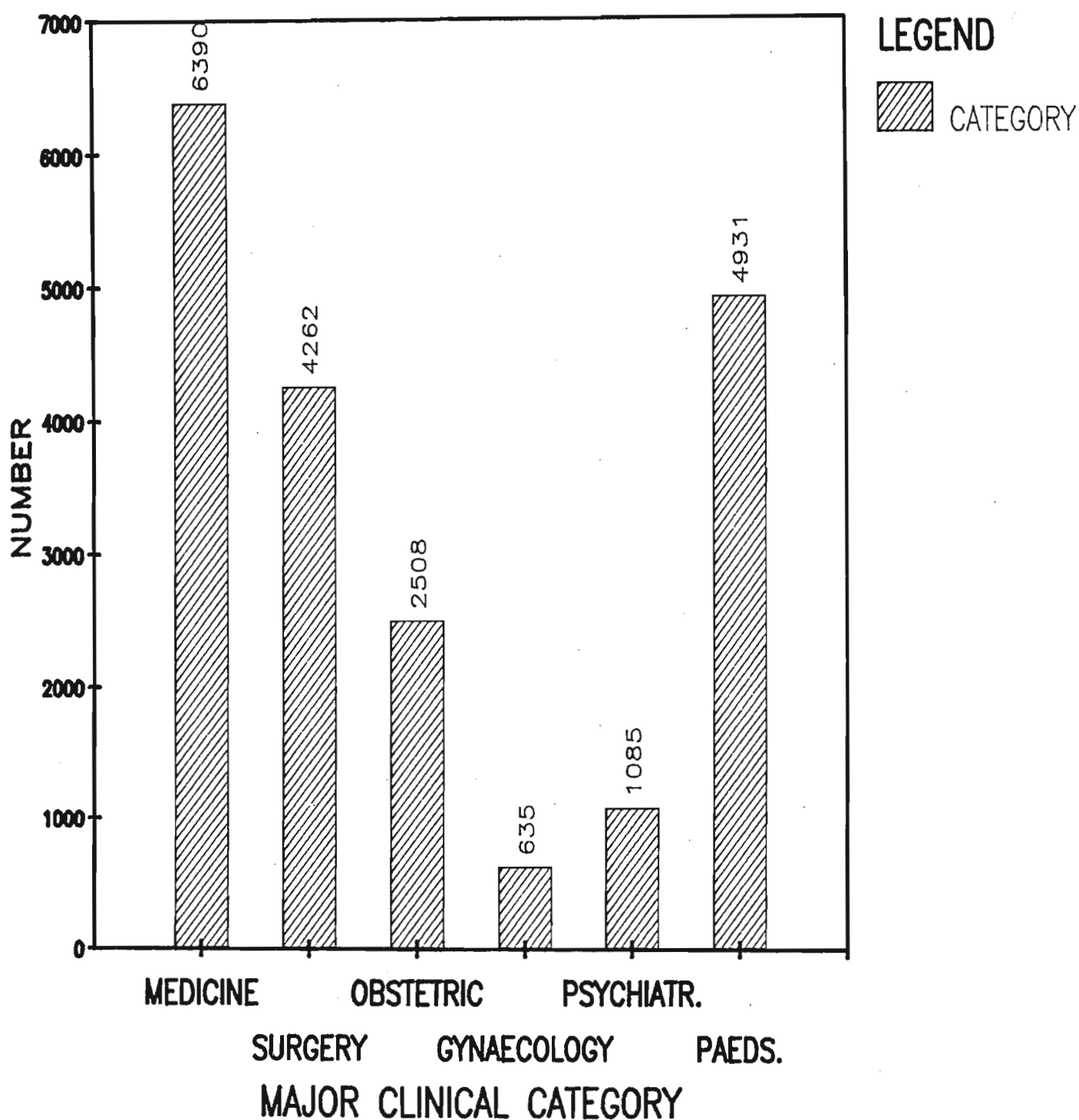


FIGURE 9

Inpatient Catchment Populations According to HPSR

The catchment population (see definitions, p. 10) for each of the HPSRs A-I (excluding E) was calculated.

Catchment populations ranged from 243 909 (3,5%) for HPSR-B to 2 812 610 (40,9%) for HPSR-H. (FIGURE 10)

The calculated catchment populations were as follows :- (number and percent (%))

HPSR-A -	550 894 (8,0%)
HPSR-B -	243 909 (3,5%)
HPSR-C -	485 181 (7,0%)
HPSR-D -	417 411 (6,1%)
HPSR-F -	928 571 (13,5%)
HPSR-G -	1 015 874 (14,7%)
HPSR-H -	2 821 610 (40,9%)
HPSR-I -	435 674 (6,3%)

TOTAL -	6 899 124 (100%)
---------	------------------

The above figure does not take account of the small number of errors (< 0,6%) which were encountered in the completed returns and also excludes the contributions of the populations of Transkei and other areas outside of the region.

HPSRs G and H accounted for 55,6% of admissions and therefore may be considered to provide inpatient care for an equivalent percentage of the catchment population (6899163) of Natal/KwaZulu.

These two HPSRs (G and H) contain 20 (34%) of hospitals in Natal/KwaZulu.

The majority of the catchment population for each HPSR resided in that HPSR. The "home" catchment population ranged from 473 859 (97,7%) in HPSR-C to 663 882 (65,4%) in HPSR-G. (TABLES 12 and 13)



Use of Health Facilities According to HPSR of Residence

The catchment population for each hospital in each HPSR was calculated (Tables 12 and 13). The majority of the catchment population for each hospital was located in the same HPSR as the hospital.

Five (8,5%) hospitals out of the total of 59 hospitals studied had catchment populations larger than that of the HPSR in which they were situated. These were:-

- a) Siloah Mission Hospital in HPSR-B where 16 291 or 61,6% of its catchment population was from HPSR-C.
- b) Christ the King Hospital in HPSR-G where 117 442 or 95,3% of its catchment population was from HPSR-I.
- c) Untunjambili Hospital in HPSR-G where 29 644 or 51,8% of its catchment population was from HPSR-F.
- d) Don McKenzie Centre in HPSR-G where 50 287 or 85,3% of its catchment population was from HPSR-H.
- e) St Mary's Hospital (Marianhill) in HPSR-H where 114 026 or 77,2% of its catchment population was from HPSR-G.

The figures for the above five hospitals thus indicate a greater than 50% cross boundary flow of potential patients for the hospitals concerned.

It is noteworthy that even for the 3 major referral hospitals for Natal/KwaZulu the majority of the catchment population used hospitals in their HPSR of residence, ie King Edward Hospital (HPSR-H) - 73% of catchment population was from HPSR-H, Wentworth Hospital (HPSR-H) - 59,3% of catchment population was from HPSR-H, Edendale Hospital (HPSR-G) - 88,5% from HPSR-G.

The major areas of residence ($\geq 5\%$) of the catchment population of HPSRs are summarised below.

<u>HPSR</u>	<u>OWN HPSR</u>	<u>OTHER HPSRs</u>
A	400 250 (72,7%)	D - 53 059 (9,6%)
B	203 580 (83,5%)	C - 28 842 (11,8%)
C	473 859 (97,7%)	-
D	398 187 (95,4%)	-
F	855 162 (92,1%)	-
G	662 882 (65,4%)	H - 56 528 I - 123 195 (12,1%)
H	2 050 895 (72,7%)	F - 202 272 (7,2%) G - 350 850 (12,4%)
I	416 247 (95,5%)	-

NOTE: Transkei patients are excluded from Catchment Population figures. The majority of Transkei inpatients were inpatients in HPSR-I (405 patients) and HPSR-H (332 patients).

NATAL/KWAZULU CATCHMENT POPULATION ACCORDING TO HPSR

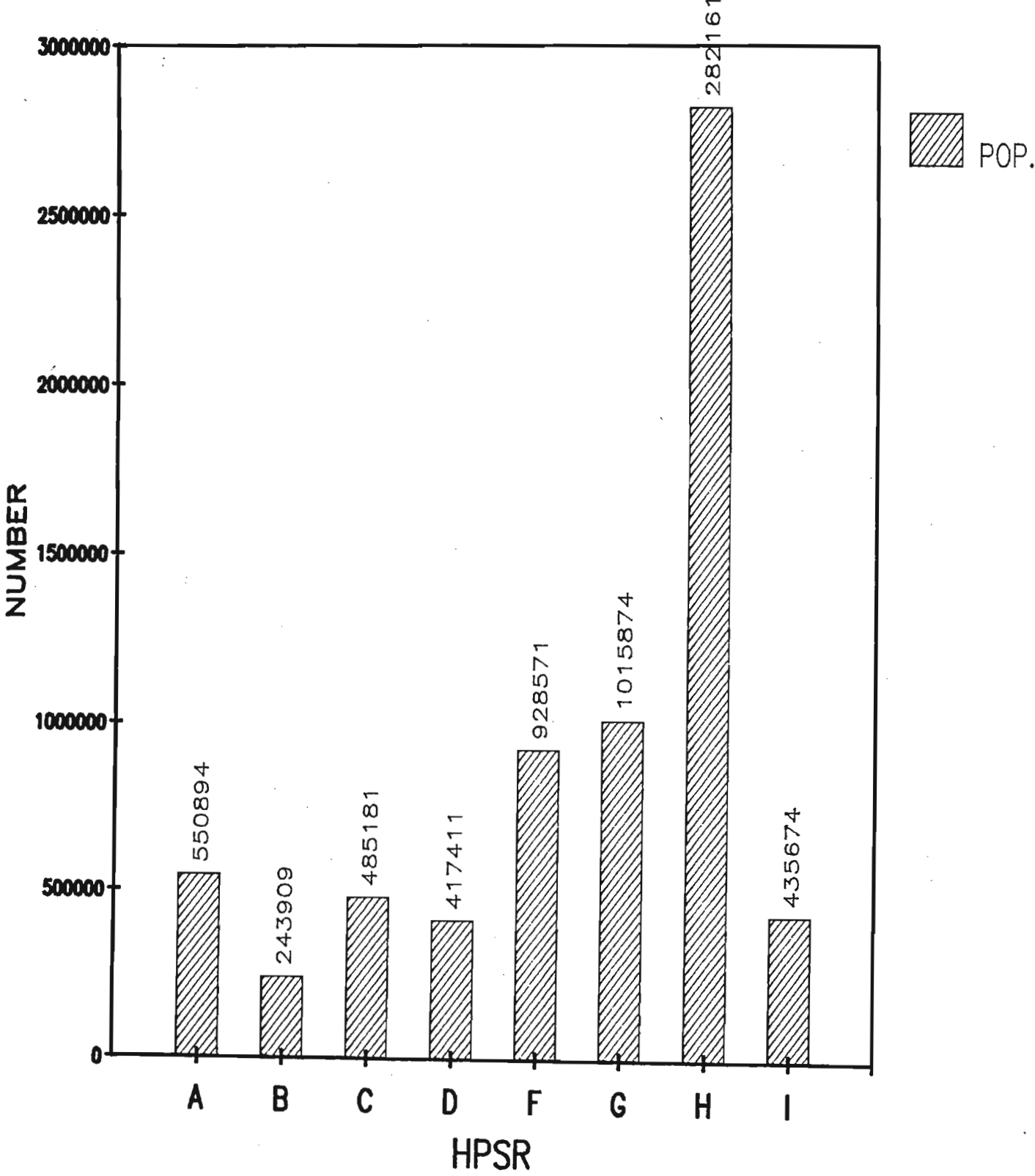


FIGURE 10

OBJECTIVE 5

INPATIENT CATCHMENT POPULATION of HOSPITALS - ACCORDING TO HPSR (SEE TABLES 14(a)-(h))

The catchment population for each hospital (in the study) was determined. (This number excludes Transkei patients (789), Transvaal patients (93) and those whose residential area is unknown (59).) The percentage of the catchment population of individual hospitals to the catchment population of the HPSR as a whole are shown. (Tables 14(a)-(h))

A summary of the Total Inpatient Catchment population for each HPSR is illustrated in Figure 10.

Information in respect of individual hospitals is shown in Tables 14(a)-(h).

The "total" column for each row indicates the catchment population of an individual hospital and the percentage (%) of the total catchment population of that HPSR which is provided for by that hospital.

Potential inflow of patients from other HPSRs (cross boundary flow)

The potential inflow of inpatients into an HPSR from other HPSRs ranged from 73 409 in the case of HPSR-F to 770 715 into HPSR-H, where 2 major referral hospitals are situated (King Edward VIII and Wentworth hospital). (See Figures 11 and 12).

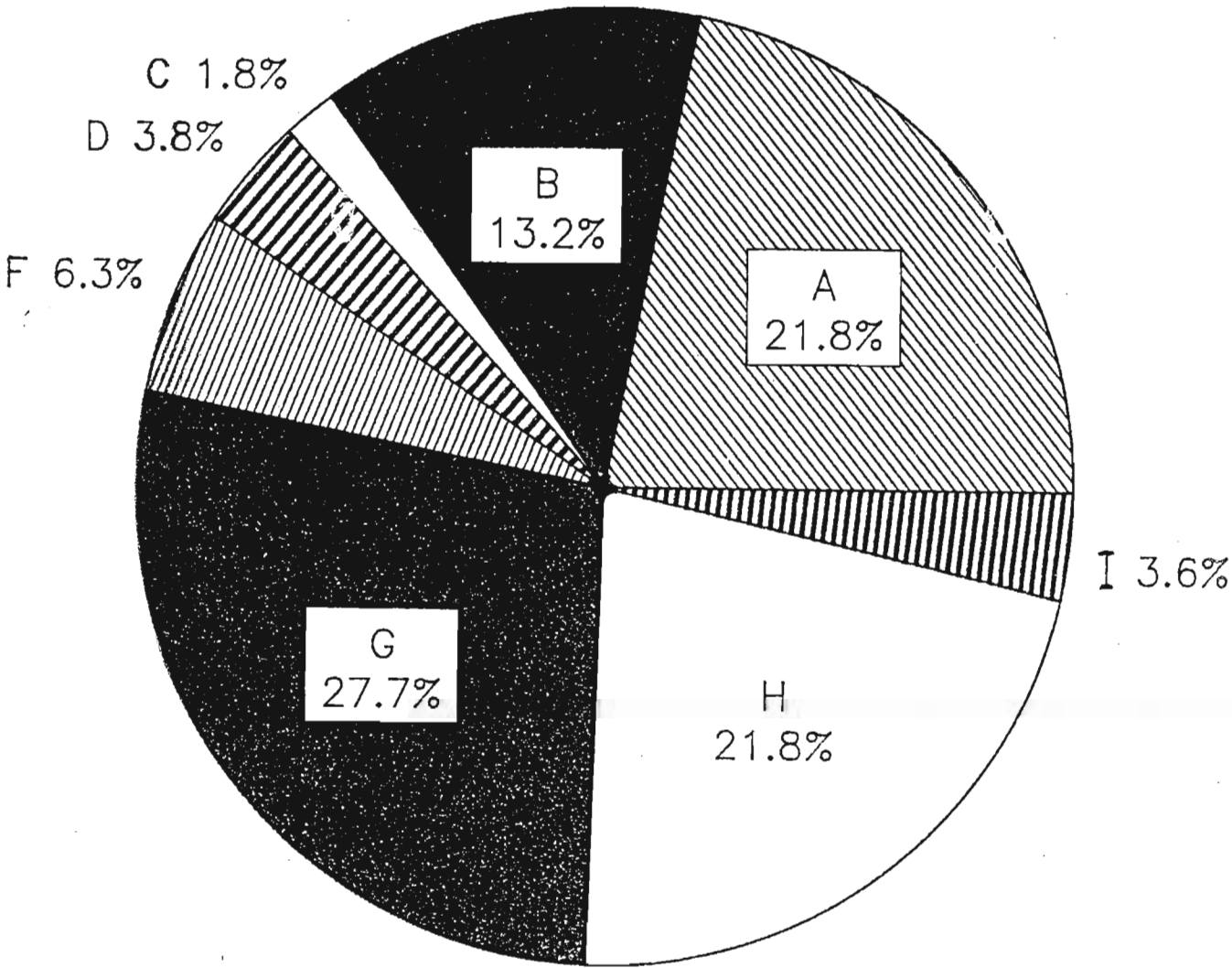
The figures given below exclude Transkei and neighbouring territory populations.

The potential inflow of patients into HPSRs and the percent of the total catchment population this represents, excluding areas outside of Natal/KwaZulu are as follows:

HPSR-A	-	150 644	(27,3%)
HPSR-B	-	40 329	(16,5%)
HPSR-C	-	11 322	(2,3%)
HPSR-D	-	19 244	(4,7%)
HPSR-F	-	73 409	(7,9%)
HPSR-G	-	351 992	(34,6%)
HPSR-H	-	770 715	(27,3%)
HPSR-I	-	19 427	(4,5%)

The above represent the potential cross boundary flow of patients into the various HPSRs (CROSS BOUNDARY INFLOW).

CROSS. BOUNDARY FLOW
OF INPATIENTS ACCORDING TO HPSR
(POTENTIAL INFLOW)



POTENTIAL INFLOW AS A PERCENT OF CATCHMENT POPULATION

FIGURE 11

CROSS BOUNDARY FLOW OF INPATIENTS ACCORDING TO HPSR (POTENTIAL INFLOW)

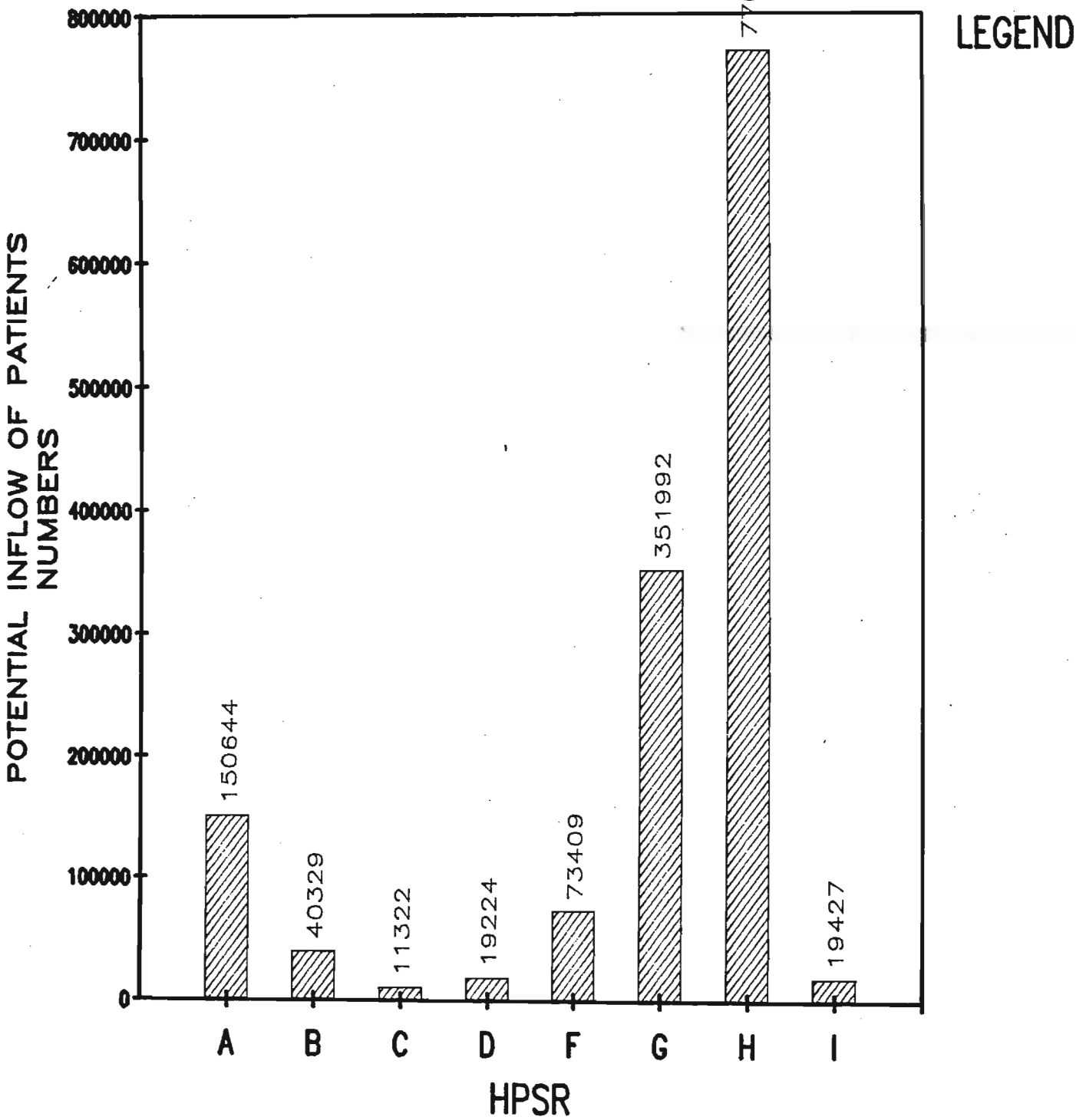


FIGURE 12

Potential outflow of patients from an HPSR (cross boundary flow

The potential outflow of patients to adjacent HPSRs from a particular HPSR ranged from 85 727 for HPSR-H to 373 393 for HPSR-G. These figures represented 3,9% and 36% respectively, of the particular HPSR total catchment population (Figure 12).

The potential outflow of patients from a HPSR is as follows:-

HPSR-A -	131 698 (24,8%)
HPSR-B -	88 161 (30,2%)
HPSR-C -	152 022 (24,3%)
HPSR-D -	88 565 (18,2%)
HPSR-F -	276 271 (24,4%)
HPSR-G -	373 393 (36,0%)
HPSR-H -	85 272 (3,9%)
HPSR-I -	241 680 (36,7%)

The above represent the potential outflow of patients from the given HPSR into adjacent HPSRs (CROSS BOUNDARY OUTFLOW).

NATAL/KWAZULU: CROSS BOUNDARY FLOW OF INPATIENTS ACCORDING TO HPSR (POTENTIAL OUTFLOW)

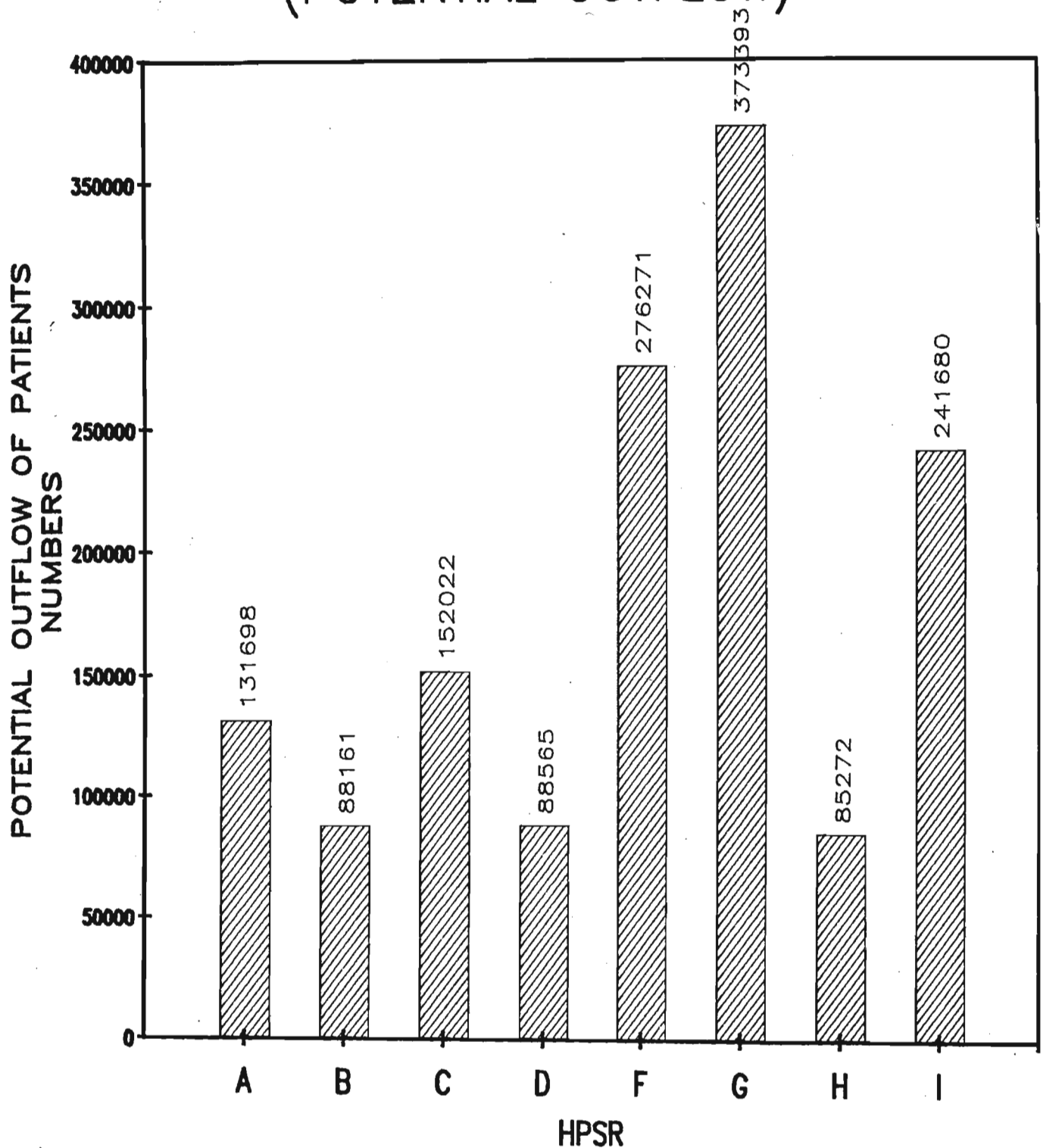
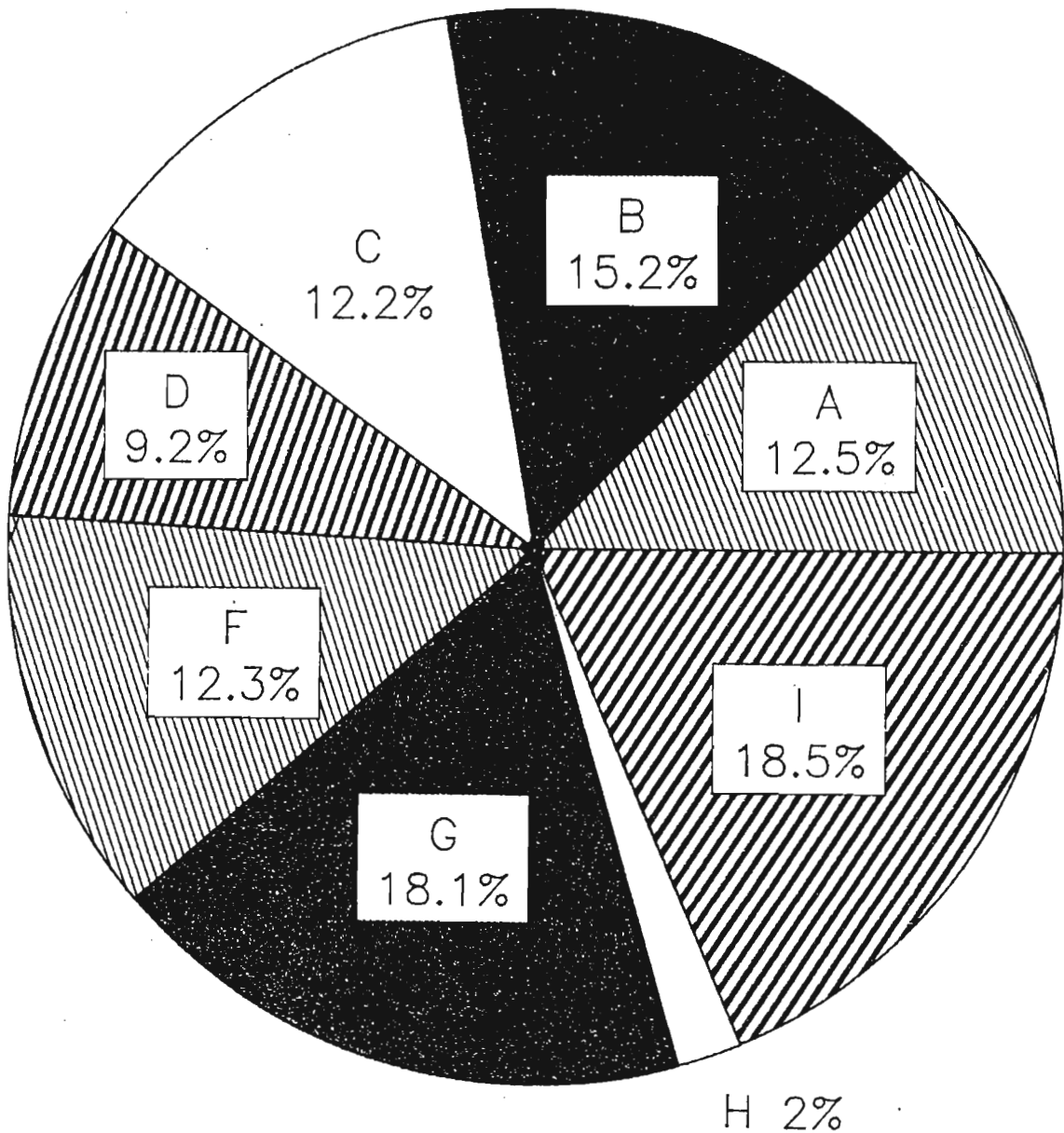


FIGURE 13

CROSS BOUNDARY FLOW
OF INPATIENTS ACCORDING TO HPSR
(POTENTIAL OUTFLOW)



POTENTIAL OUTFLOW AS A PERCENT OF CATCHMENT POPULATION

FIGURE 14

NET CROSS BOUNDARY FLOW OF POTENTIAL INPATIENTS ACCORDING TO HPSR

The net cross boundary flow of potential patients for each HPSR is estimated by calculating the difference between outflow and inflow (Figures 11 and 12).

The net flow varied from a net outflow ("-") of 222 253 patients from HPSR-I to a net inflow ("+") of 685 443 patients into HPSR- H. This large potential inflow to HPSR-H is unsurprising as 2 large tertiary referral hospitals (King Edward VII and Wentworth Hospitals) are situated in HPSR-H. These results exclude patients from areas outside Natal and KwaZulu.

The Net Cross Boundary Flow (NCBF) for each HPSR is listed below.

RESULTS (FIGURE 13)

<u>HPSR</u>	<u>NCBF</u>
HPSR-A	(+) 18 946
HPSR-B	(-) 47 832
HPSR-C	(-) 140 700
HPSR-D	(-) 69 341
HPSR-F	(-) 202 862
HPSR-G	(-) 21 401
HPSR-H	(+) 685 443
HPSR-I	(-) 222 253

NOTE (-) = outflow, (+) = inflow.

It is relevant that in only HPSRs A and H is there a net inflow of patients.

NATAL/KWAZULU : NET FLOW OF PATIENTS ACCORDING TO HPSR

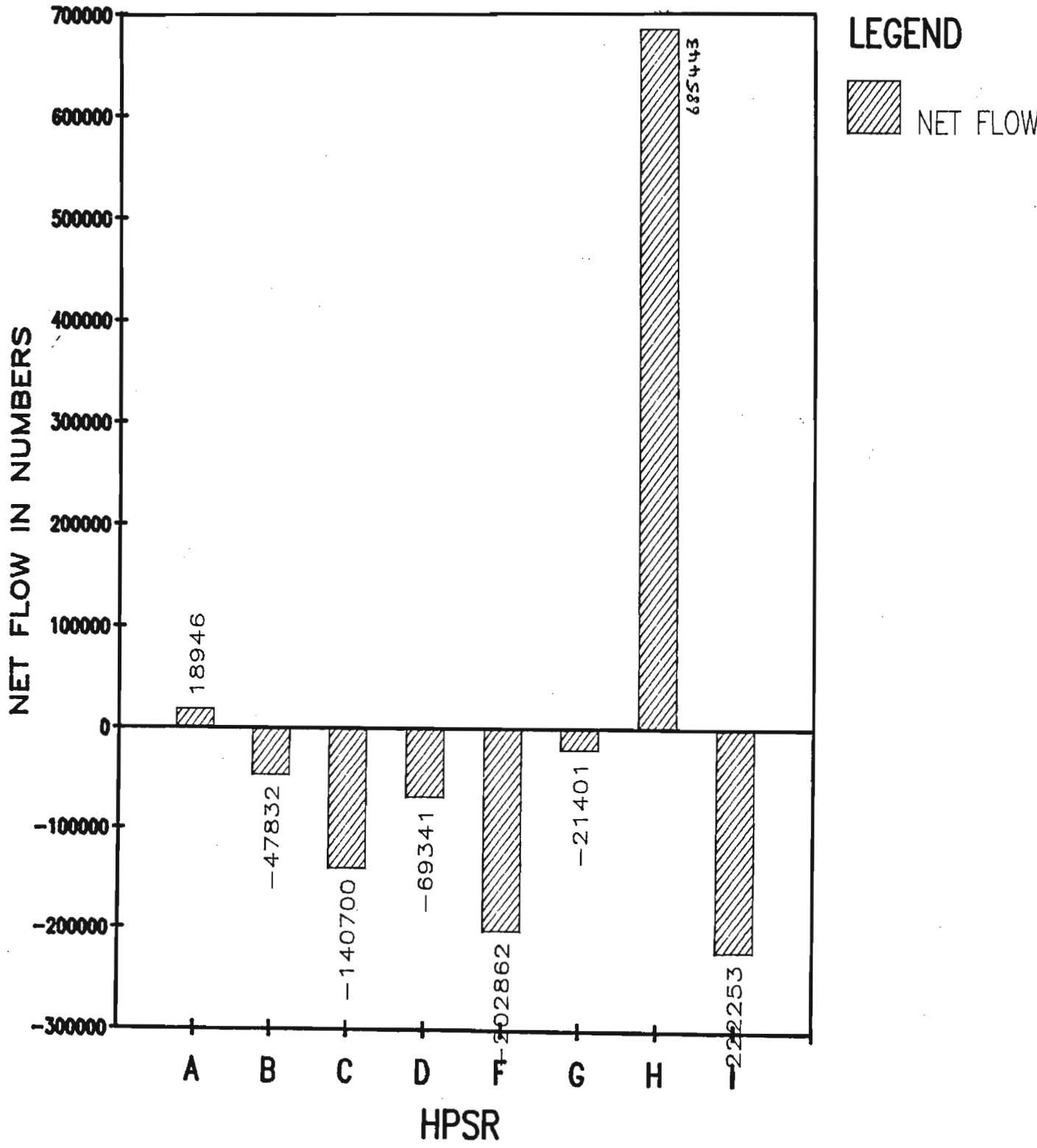


FIGURE 15

DISCUSSION

The catchment population of a health facility is the size of population which that health facility serves. The term "catchment population" is derived from "catchment area", a term used in geography to define the part of a land surface from which rain- water is collected and flows into a river or lake.

During the last decade health care managers and government officials have stressed the need to make health care delivery more responsive to local needs and health care resources more effective in fulfilling those needs.⁽¹⁾ One method of achieving the above objectives is to regionalize or decentralise health policies, plans and programmes in response to the characteristics and needs of each region. This would entail a central authority adapting its own plans accordingly. Another method is to allow regions, individually, to identify their own needs and adapt the policies, plans and programmes of the higher body to their own requirements as is the case in Canada.⁽²⁾

Health care in Natal/KwaZulu is provided by a number of health authorities, each up to the present, using its own geographical divisions to determine its area of responsibility for the delivery of health care. The co-ordination and planning of these different health delivery systems is desirable, to attain the primary objective of all health care delivery namely - the provision of good quality health care to all the peoples of the region. With this in mind the Department of Community Health of the University of Natal was requested by the Natal/KwaZulu Health Services Liaison committee (HSLC), to undertake a study directed to the identification of systems of sub-regionalisation currently used by the health authorities and to make recommendations in respect of a common system of sub-regions for consideration and possible adoption by all authorities "so that services may be provided on a co-ordinated sub-regional basis".⁽³⁾ Sub-regions within Natal and KwaZulu which were currently used by Health authorities therefore had to be identified.

Following upon the above study,⁽³⁾ the HSLC established a 3 tier structure to help plan, co-ordinate and deliver comprehensive health services at the sub-regional level. One of the recommendations which followed from the HSLC formation, was that studies of catchment populations for hospitals and clinics in Natal/KwaZulu be undertaken. (Commissioned in 1986)

A major objective of a decentralisation/sub-regionalisation programme is to make more effective, the functions of planning, organising, co-ordinating and evaluating health service delivery programmes in a given region. One of the major decision-making variables in a health service is the target population.⁽²⁾ Thus a knowledge of the catchment population (target population) of a health facility is necessary in order to manage health care delivery both efficiently and effectively.

For managers of health services to operate optimally the characteristics of the population to which the services will be delivered must be known. These characteristics include population size, areas of residence, population disease profiles and referral practice.

These aspects are dealt with in this study (see RESULTS), the findings of which are intended to be a source of information to health service managers responsible for assessing the current status of the health care delivery system and its future planning.

The formula used to determine catchment populations is shown in Annexure D.

THE VALUE TO HEALTH MANAGERS OF KNOWLEDGE ABOUT INPATIENT CATCHMENT POPULATIONS

A need exists for epidemiological research methods to be employed in all aspects and levels of health care so that objective information can be used as the basis for health planning and allocation of resources.⁽¹⁷⁾

Before the functions and roles of existing health care delivery systems can be assessed and before forward planning about the provision of accessible, affordable, acceptable and relevant future facilities can be made a detailed study of the user population (catchment population) should be made.

Population size, cross-boundary flow and utilization characteristics and disease profiles are valuable information for the planning of health services for a region.⁽⁵⁾ The extent of cross-boundary flow can be ascertained and the results used, to improve existing facilities in respect of service and size or to site new facilities in appropriate areas. Data on major clinical categories and racial grouping enable planners to provide manpower and resources appropriate to the local needs and circumstances. Information on referral practices will help objective planning in respect to provision of resources and services. It is also of value in assessing the potential contribution of private practitioners to health care delivery in hospitals.

In this study 70% of White, Asian, and Coloured inpatients were resident in HPSRs G and H (Pietermaritzburg and Durban). Under the present constitutional arrangements where "own affairs" plays an important role in health service delivery this information can be used in the process of planning facilities and services for these population groups. In contrast, 53,5% of Black inpatients were outside HPSRs G and H, enabling the responsible health authority to determine priorities as to allocation of resources to various HPSRs. The figures for Black inpatients suggest that the majority of the Black population is still resident in rural areas despite the urbanisation process.

Eighty-five percent of inpatients in Natal/KwaZulu were Black and this should indicate to responsible health authorities the direction of future allocation of resources ie. health workers, hospitals and proportionate financing.

STUDY TYPE

The study was descriptive (observational) and cross-sectional in nature and included each public sector hospital in Natal and KwaZulu. The survey was carried out over a period of 24 hours.

Descriptive studies may be used to quantify the extent of a health problem in a population in terms of time, place and person.⁽⁶⁾ In this study the issues of concern were:

- a) the catchment populations of Health Planning Sub-regions (HPSR) and hospitals,
- b) the cross-boundary flow of patients in relation to HPSRs and individual hospitals,
- c) the major clinical category of inpatients in HPSRs and hospitals, and
- d) the source of referral of inpatients.

The results obtained in descriptive-type studies provide data which may serve as a baseline to conduct further intervention (experimental) studies, (eg. a large outflow of patients from one area may be due to a number of factors which can only be determined using a form of intervention (experimental) study⁽⁷⁾.)

Before health priorities can be determined and health resources eg. hospitals or facilities for Paediatric inpatient care, deployed to the best advantage, it is necessary to know the details about the target (catchment) population. This would be based on data obtained from epidemiological studies such as the one carried out for inpatient catchment populations.

In describing the results and drawing conclusions from the findings in a descriptive study, new ideas or hypotheses are often generated regarding possible explanations for the problems described.⁽¹⁶⁾

SAMPLING TECHNIQUE USED IN THE STUDY

The present study included all hospitals under the control of public health authorities in Natal and KwaZulu and used every inpatient (100%) in the hospital on the night of the study. A limiting factor is that the results of the study are based on one 24 hour period only.

A sample (in an epidemiological study) can be defined as a sub- group of individuals from the study population about whom one wishes to gather information. In selecting a sample it is assumed (should the selection process be appropriate) that the results are representative of and generalizable to, the whole study population. Careless sampling results in bias and/or lack of precision in measurement. In this study sampling error was reduced by the inclusion of all patients admitted to hospital on the night of the study.

A major limitation of the study was the duration of the study. However, it was considered impractical to collect the data over a longer period as this would have meant committing more manpower and thus previous time at often grossly understaffed institutions, to the detriment of patient care and staff morale. The selection of a 24 hour period in the middle of a week (Wednesday) in the middle of a month was selected as being the most representative of the "normal" situation in hospitals.

RESPONSE RATE

The response rate refers to the percentage of hospitals included in the study sample which participated in the study. In this study the response rate was 100%.

Non-response may lead to bias in measuring results in epidemiological studies and may invalidate result. The response rate should, if possible be above 90%.⁽⁸⁾ In selecting a sample, bias may be introduced. If the response rate for the sample is poor, the representativeness of the results may be further compromised due to the differences which may exist in "responders" and "non-responders".

GEOGRAPHICAL LOCATION OF HEALTH FACILITIES

The uneven geographical distribution of medical care in developing countries has been discussed by several researchers.^{(9) (10)} Every country has limitations of resources which will strongly influence the supply and therefore the distribution of health services. As a result of these limitations, it must be decided who should receive health care within a country - this may seem to have an easy solution, in that everyone should receive health care. However, for various reasons, including political, socio-economic and cultural, this is seldom attained. The decision of where hospitals should be sited is difficult. The areas of greatest need are often distant and rural, but socio-political pressures often favour urban areas.

An effort to provide a certain level of health service to all people in a country, regardless of where or how they live may spread resources so thinly that benefit is minimal. However, rational planning of the siting of hospitals and other health facilities must be carried out, bearing in mind the constraints mentioned above. Hospital buildings are an expensive asset since the construction and commissioning of the buildings represents a considerable capital investment. In addition recurrent operating costs may incur an annual expenditure of approximately a third of the initial construction cost.⁽¹¹⁾ Before building a new hospital, it is therefore necessary to study the specific demands due to disease profile and demographic structure in respect of the population to be served. These studies will help determine priorities in respect of development of new hospitals, the renovation of existing buildings or the modification of existing buildings and services to suit local needs.

In a study in Botswana,⁽¹²⁾ the rate of hospitalization was studied, in relation to distance to be travelled to reach the nearest clinic. It was found that people who lived less than 10 miles from a hospital had an admission rate of about 119 per 1 000 and those living more than 25 miles from hospital, a rate of 12 per 1 000. Thus there was a 10 times greater chance of hospital admission for those who lived less than 10

miles from a hospital as compared to those living 25 miles away and further.

Planning the geographical location of a hospital should thus take into account population characteristics obtained from Census figures and sample surveys. The inpatient catchment population study for Natal/KwaZulu provides information which can be used to make informed decisions over the planning of future health service developments in the region. With regard to planning the location of hospitals, medical geography, using techniques such as spatial analysis should be incorporated into the planning process of any Health Authority.⁽¹³⁾

The results of this study show a nett outflow of patients for each HPSR excluding (A and H). This, being one measure of utilization of health facilities, would indicate that further study should be undertaken by the managers of the health authorities concerned to determine the causes of this outflow. If it is found that poor siting of facilities is the reason then steps can be taken to correct this in future planning. Medical geography could be utilised to plan sitings of hospitals. Where access is poor or terrain prohibits building structures, Mobile Clinics may be an appropriate method of supplying primary care or improving existing communication systems may be an appropriate response. (See discussion on cross boundary flows.)

REGIONALISATION OF HEALTH SERVICES

The formation of the Health Services Liaison Committee (HSLC), was a result of health service managers realising the need to make health care delivery more appropriate and responsive to local needs and to rationalise the distribution of health care resources to try and meet the local needs. If such co-operation, as was envisaged in the formation of the HSLC for Natal/KwaZulu was not implemented, it is likely that maldistribution of resources, overlapping and duplication of health care delivery would continue, resulting in a situation where evaluation of the services, for good management purposes, could not be performed.

In addition to the three public sector Health Authorities operating in Natal/KwaZulu, there are also private hospital services and various voluntary agencies providing health care. The potential for mismanagement through individual authorities planning independently of one another therefore is great. This problem should be emphatically addressed as not only is public money wasted in this way, but people to whom the services may be made available will suffer due to poor planning and the resultant arbitrary resource allocation.

The introduction of regionalisation to the conceptualisation and practice of health service administration is a complex process that is not easy to achieve. Ideally in a regionalisation programme the health region should take account of the habits and needs of the resident population and of the normal pattern of movement of the people. An economic and social region is characterised by the existence of a community of interests with regard to the production, distribution and marketing of goods. This is a natural phenomenon which has brought about the concentration of human beings into population centres. This same phenomenon is applicable to health needs, because where people concentrate and maintain social and economic ties they also desire to have available to them, health services.

Apart from economic and social considerations the advantage of a health region having the same pattern as the political and administrative units is that it may provide a stimulus to co-ordinate health programmes with other activities in the social sector such as education, social welfare, housing development, water purification and sewage disposal. The HSLC may well be called upon to co-ordinate eg. a school feeding programme for the undernourished school children of Natal/KwaZulu involving co-operation of health and education authorities.

The WHO has stated that the optimum population size for a region (social, economic and health) may lie between 100 000 and 1 500 000,⁽¹¹⁾ What really matters is not so much population size, however, as the distance between the homes of the population and the site of the health facilities - including hospitals. The HSLC of Natal/KwaZulu has divided the region into 8 subregions, based on the existing Magisterial districts. Each subregion has a population in excess of 250 000 with only one Health Planning Sub Region (HPSR) having a population greater than the WHO recommendation of 1 500 000, namely HPSR-H (Durban) with a population of over 2 000 000.

One of the main purposes of regionalisation of health services is to improve appropriate utilisation of existing services and increase their productivity. To achieve this objective a good system of communication between the public and health service personnel and facilities is essential and this communication system involves roads (Annexure G), transport services, ambulance services and telephone/media networks. The importance of taking these characteristics into account when planning health services and of achieving co-operation between different health authorities and other authorities responsible for the provision and maintenance of the above communication systems cannot be overemphasised.

Further requirement for the region is that it should be self-sufficient. Health services should therefore be available within the region and should be adequate to provide preventive, curative and rehabilitative

care services up to the level of a Regional hospital. In tertiary care⁽¹⁴⁾ the referral system, including the communication characteristic referred to above are of commendable importance.⁽¹¹⁾

Rural areas in all HPSRs experience a certain degree of communication problem both with respect to transport and telephone/radio links with major institutions. The existing system of referral of patients for specialist care from outlying areas to King Edward VIII and Wentworth hospitals is noteworthy, but the authorities should study the existing service with a view to improving further, for all rural hospitals, access to tertiary institutions. This will mean co-operation across health authority boundaries.

The HSLC should look at each HPSR individually and assess the availability of health services, up to Regional hospital level, within that HPSR and plan accordingly to make each HPSR self sufficient up to this level of care. This will also result in a decrease of cross boundary flow patterns.

The existing referral system between primary and secondary care hospitals and tertiary care institutions (King Edward, Wentworth and Edendale hospitals) needs to be studied by the HSLC and improved where this is found to be necessary.

DECENTRALISATION OF HEALTH SERVICES

In Canada ⁽¹⁵⁾ policy was initially aimed at decentralising the management of services by creating regional bodies within which interested parties would participate in establishing priorities, elaborating programmes, allocating resources and assessing programme efficiency and effectiveness. The close similarity of the Canadian and Natal/KwaZulu systems is both remarkable and evident. (Decentralising means delegating authority to make decisions to those who are accountable for implementing those decisions, cf regionalisation where a region may identify its own needs and adapt policies, plans, and programmes of the higher authority, eg. Provincial Administration, ie. Regionalisation is really a bottom-up process resulting in some degree of centralisation at a regional level, eg. HSLC). In Quebec, decentralisation has not achieved the objectives of universal coverage, comprehensive benefits, public administration and accountability. The results rather have been that, at hospital level, "patients" needs and services offered continue to be defined in the organisations' own terms and from its own perspectives. No one can count on common agreement on which speciality areas should be developed and how shrinking resources should be "allocated" is difficult to achieve.⁽¹⁵⁾ Clearly decentralisation of health services will not necessarily achieve the objectives listed above and careful planning must accompany decisions to implement a decentralisation policy in Natal and KwaZulu.

In the knowledge of difficulties already experienced in a similar plan to the HSLC it would be appropriate if the health managers concerned became aware of the problems experienced before deciding on future allocation of "shrinking" resources. Continuous monitoring and evaluation must be performed once decisions have been taken by the HSLC to assess problem areas.

ESTIMATIONS OF POPULATION SIZE

Examination of the size of populations is a function of demography which seeks a mathematical and statistical description of human populations. Ideally, the study of demography (including population size) requires extensive and accurate statistics. The collection of relevant data is expensive but the cost may be justified if the results are used for administrative, social and economic planning purposes.

Population statistics are derived mainly from the following sources:

- a) periodic censuses
- b) sample surveys or enquiries
- c) vital event registration systems and
- d) population registers.

The census is the main source of demographic statistics in many countries and is defined by the UNITED NATIONS (1965) as "The total process of collecting, compiling and publishing demographic, economic and social data pertaining at a specified time or times to all persons in a country". The census thus provides a satisfactory method of recording size, distribution and other characteristics of the population at fixed intervals. However, a census is a massive undertaking requiring careful planning, adequate resources (money, manpower and materials), effective control and training of large numbers of enumerators.

The limitations of a census include:⁽¹⁸⁾

- a) only a limited number of questions can be asked because the reaction of the public who is required to answer the questionnaire must be considered.
- b) A census can only be carried out at intervals of five or ten years because the operation is too expensive to be carried out at shorter intervals. These intervals are too long to satisfy the data requirements of the developing countries whose populations are growing and changing rapidly.

- c) The time needed for processing an entire census is too long to satisfy urgent requirements for information.

In this study, the 1985 RSA census figures were utilized. This census was a *de facto* population count, ie. a count of persons physically present at a specified place on census night (cf *de jure* count where the enumeration is of persons who usually reside in a given place). A *de facto* count is simple and unambiguous,⁽¹⁸⁾ but one of the problems encountered in *de facto* counts is that of enumerating the "floating" population.

Two main types of error are common in census data:

- a) errors of under-enumeration or over-enumeration, and
- b) errors of content.

Errors of under-enumeration may occur if areas or groups of people are not counted at all or, if for political or economic reasons (eg. tax evasion) people are not prepared to be counted. In the 1985 RSA census, the HSRC calculated an under estimate for each racial group. Over-enumeration occurs when households may complete 2 questionnaires for different enumerators, due to overlap. Errors of content are mainly found in developing countries where the age errors may be considerable.⁽¹⁸⁾

Sampling errors are not usually a major problem in census figures, except where the response rate is low. The 1985 RSA census results were available in 1987 - in time for use in this study.

It must be stated that as the census figures were for 1985, the situation has changed since then. Urbanisation has progressed rapidly in both HPSR G and H (Pietermaritzburg and Durban) and the economic recession has meant that areas such as HPSR-A (Newcastle) have experienced unemployment with the resultant migration of workers back to rural home areas or to HPSRs G and H. Note must also be made of the "incentives" offered to industry to decentralise to areas such as Port

Shepstone (HPSR-I) and Empangeni (HPSR-F). This will affect population size in these areas which must be taken into account in future planning by health authorities.

It is important that the health authorities through the HSLC, are aware that Demography is not static and ways of updating data and monitoring changes should be sought.

USE OF HOSPITAL INPATIENT FACILITIES ACCORDING TO CLINICAL CATEGORY

A knowledge of the clinical categories of inpatients in a hospital is of importance in three areas of planning, namely:

- a) to estimate the costs of running a particular hospital based upon numbers and known costs of treating different types of patient,
- b) to assess the relative proportions of different specialities (or skills) to be represented on the health worker establishment for a given institution, and
- c) to enable planners to evaluate a health programme on the basis of studies of need and utilisation of various specialities (clinical categories).

The relative cost of different clinical categories (specialities) is important in a number of planning activities eg. in projecting hospital service costs to allow for demographic changes, one would need to know the relative cost per case of Obstetric services, Paediatric services or Psychiatric service. Methods of estimating speciality costs are described.⁽¹⁹⁾ A knowledge of floor area per bed, occupancy and length of stay for each speciality (clinical category) is required to utilize the model outlined. This study was not intended to supply the necessary data for estimating speciality costs.

Health planners spend much time in assessing the manpower needed to provide adequate medical care in particular regions. One component of medical care assessment is the projection of the number of physicians that will be needed for the future. A methodology developed in Ohio (USA) considers three variables as important indicators of change in manpower levels for physicians within a community:

- a) expected changes in physician workloads,
- b) expected retirement of physicians, and
- c) projected population changes.⁽²⁰⁾

Thus, changes in the demand and needs for different types of medical service eg. different clinical categories, should be considered when determining future needs for physicians. A growing population will provide an increased demand for health care in a region and the structure changes of the population eg. increasing newborns, or increasing geriatrics, will determine the type of speciality (skill) required.

Evaluation is an essential part of health planning and management and relates results to objectives. Two activities of health programme which need evaluation are the utilization of existing services eg. Paediatric services or Obstetric services and the health needs of a community.

Utilization of a hospital service may be expressed in terms of the population in its catchment area, but this may vary for different specialities (clinical category) within a single hospital.⁽²¹⁾

This study has revealed the relative number of inpatients in the Major Clinical Categories within each hospital and each HPSR.

In HPSR-A 43% of inpatients were Psychiatric inpatients due to the Psychiatric unit of Madadeni hospital being located here. Health authorities should be aware of this to enable the appropriate allocation of resources (money, manpower and materials) to HPSR-A to cater for Psychiatric inpatients.

HPSR-H accounts for 42%, 42%, 31%, 44% and 35% of the total number of Medicine, Surgery, Obstetrics, Gynaecology and Paediatrics respectively, for Natal/KwaZulu and a proportionate allocation of funds for each category would be appropriate.

Within HPSR-H, King Edward hospital admitted 23% of the total inpatients of HPSR-H and planning by authorities should take this into account with regard to resource allocation.

The relative number for each individual hospital is given (Tables 11 a-h) and management of a hospital should be encouraged to note the relative numbers and plan accordingly.

Note, however, that in order to allocate resources appropriately to each clinical category the relative costs must be known. This would imply a knowledge of numbers, but other factors need to be considered which are beyond the scope of this study.

CROSS BOUNDARY FLOW AND CATCHMENT AREAS

Cross boundary flows exist because administrative boundaries defining hospital catchment populations (areas) often do not correspond to the actual pattern of use of hospital service by patients. These flows arise not only from emergency cases and tertiary referrals but also from patient convenience, ease of access, patient attitudes towards quality of health care at individual hospitals and links between source of referral and hospitals.⁽²²⁾

Inhabitants of rural areas are relatively deprived of access to health care resources with the majority of services concentrated in urban sectors and among groups with a higher socioeconomic level.⁽²³⁾ The availability of medical services, including the types of care provided, the number of health care personnel available, the location of a hospital, hours of services and the existence of financial and other barriers to usage, all affect access of users.⁽²⁴⁾

Distance from a patient's home to a hospital is an important influence on utilization of that hospital⁽²⁵⁾⁽²⁶⁾ for illnesses of all categories. Distance may serve as a measure for several things: the physical distance and geographical terrain to be negotiated, time and money costs of travel, and availability of transport. Distance may also be associated with rising information costs which in turn would reduce access by limiting the patient's awareness of health services availability. Disparities in utilization rates for groups of the population living at different distances from health facilities was demonstrated in Botswana⁽¹²⁾ and led the researchers to comment, "This type of information is essential if informed decisions over the planning of future health service developments is to occur".

The hours that health care is available also determine utilization and if patients can obtain care at a more convenient time to them at one hospital they will utilize this hospital's facilities in preference to a hospital where care is determined by the providers only. Cross boundary flow

may be the result. Comprehensiveness of health services offered also affects access (and hence utilization) to a hospital. In studying urban neighbourhood health clinics, Reynolds ⁽²⁷⁾ found that the less comprehensive the services available in a clinic, the less it was utilized by its service population.

Patient satisfaction is important because quality of health care can be assessed by its effectiveness in achieving or producing health and satisfaction. Before utilizing a service, a patient must decide which service to enter, based on his own perceptions of a particular service, eg. hospital. Patients have been shown to be more satisfied and thus more inclined to utilise services when providers:

- a) give more information,
- b) were happier and had a favourable attitude towards the patient, and
- c) spent more time with the patient.⁽²⁸⁾

The present study did not attempt to determine causes of the cross boundary flow patterns encountered but having established that cross boundary flow exists, it is important that health planners determine the causes and establish solutions to this problem. Thus, in the knowledge that a considerable degree of cross boundary flow exists, as evidenced from the study, it is the responsibility of the health managers to evaluate the reasons for this in Natal and KwaZulu using the results and discussion of the problem as a possible basis for starting. Areas where large net outflow of patients were experienced must be studied to seek solutions to the possible causes of this phenomenon eg. lack of facilities, lack of access, lack of personnel, quality and comprehensiveness of patient care at local health facilities (as discussed above).

The catchment population ranged from 243 909 to 2 821 610 for HPSR-B and H respectively. Cross boundary flow patterns (Tables 13 and 14 (a-h)) demonstrated a nett inflow in only two HPSRs [A (Newcastle) and H (Durban)].

The causes of cross boundary flow in general have been discussed and it is beyond the scope of this study to determine these. However, the location within HPSR-H of two major tertiary-care institutions (King Edward and Wentworth) would account for a proportion of this cross boundary flow.

A particularly large outflow of patients from HPSRs C, F and I was experienced (see Figures 11-15). The health authorities through the HSLC would be advised to look at these regions specifically to determine possible causes for this phenomenon and to address the problems in the light of the discussion above.

SOURCE OF REFERRAL OF INPATIENTS

The source of referral of patients to hospitals is one indicator of the availability and utilization of primary care services.

Where private practitioners are available and utilized inpatients will be referred from this source, similarly for peripheral clinics. Conversely where primary care facilities do not exist or are unacceptable or unaccessible it is to be expected that self-referrals will constitute a high proportion of entry to the hospital system.

The high percentage of "other" referrals for HPSR-A is due mainly to Psychiatric patients at Madadeni being admitted by "court- order".

Forty-eight percent of inpatients referred themselves to hospital, in Natal/KwaZulu. This figure would seem to be inappropriately high for a system that if operating according to the National Health Services Facilities Plan will be primary care orientated. The HSLC should give urgent attention to developing the peripheral clinic (primary care) system - especially in rural areas - and thus decreasing the "direct" workload on hospital outpatient departments. Only 16% of inpatients were referred from peripheral clinics to hospitals. In the urban areas of HPSRs G and H (Pietermaritzburg and Durban), 44% and 32% respectively of inpatients were self-referrals. This is an unacceptably high percentage for urban areas but compares favourably with the 71% and 73% self referral rates of the HPSRs B and F.

Private practitioners were the source of referral of less than 15% of inpatients in all HPSRs with the exception of HPSRs G (Pietermaritzburg) and I (Port Shepstone). This relatively high rate of private referral could be due to private practitioners acting at a primary care level and then referring to hospitals where they will themselves look after the inpatients as would seem to be the case in eg. Greys hospital, and Taylor Bequest (Kokstad) hospitals. The implications of this could be that in areas where perhaps few peripheral "public sector" clinics exist private

practitioners are being utilised as primary care contacts and this may mean unnecessary expense to a population who really cannot afford the cost of the private medicine.

CONCLUSIONS

The formation of the HSLC for Natal/KwaZulu could be the foundation for co-operation between the responsible health authorities and thus serve as a useful forum to discuss problems and allocate resources appropriately.

KwaZulu with 65% of the population is at present responsible for administering 40% of hospitals in the region. A more equitable allocation of resources (manpower, money and materials) would correct this imbalance.

The cross boundary flow patterns show evidence of the inequality of health service available in different regions and this matter needs urgent attention.

The rate of referral from peripheral clinics and GPs accounted for only 25% of patients. If a health care delivery system based on primary care is to be effective, reasons for this low relative percentage should be addressed.

RECOMMENDATIONS

1. The HSLC (at all 3 tiers) continue to function as forum for the discussion of matters of mutual concern to different health authorities and to co-ordinate the allocation of appropriate resources.
2. A more equitable system be sought to ensure that the majority of people in Natal/KwaZulu (Blacks - 85%) are allocated a proportionate amount of public money in health matters eg. in capital expenditure on hospitals and equipment and in manpower.
3. The cross boundary flow patterns suggest that urgent attention be paid towards studying possible reasons for these findings (in the light of the discussion above) and that actions be taken to correct the patient outflow, in particular, in HPSRs C, F and I.
4. Primary care facilities/services should be increased and planned effectively (for site, access and facilities offered) and an effective care levels of health service delivery be established. The high level of self referral of inpatients directly into the hospitals in every HPSR is unacceptable and this matter requires urgent attention.
5. The tertiary care system in Natal/KwaZulu needs to be studied with a view to decreasing the workload of patients seen at tertiary care institutions who really need only primary or secondary care (ie. the Health Act of 1977 (No. 63) should be implemented).
6. The allocation of resources, (material, manpower and money) be appropriate with respect to the different clinical categories in hospitals and proportionate to the number of patient attendances.
7. An information system based on hospital utilization rates of hospitals be initiated which will gather routine data from hospitals on an ongoing basis to enable continuous evaluation and effective management.

8. The functions of the HSLC be broadened to include co- operation at levels of basic sanitation, hygiene and education which are the foundation for health as indicated at ALMA ATA.⁽²⁹⁾
9. The HLSC be given more legislative authority with respect to health services in Natal/KwaZulu so as to facilitate the regionalisation of services without fragmentation. The legal difficulties associated with the step are appreciated, but might be instigated by the establishing of the Natal/KwaZulu Joint Executive.

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TABLE 1

PUBLIC SECTOR HOSPITALS IN NATAL/KWAZULU

ACCORDING TO HEALTH AUTHORITY,

MAGISTERIAL DISTRICT AND HPSR

AUTHORITY	HOSPITAL	MAG. DIST.	HPSR
DHW(KZ)	1. APPLESBOSCH/MONTEBELLO	NDWEDWE	F
	2. ASSISI	ENZUMBE	I
	3. BENEDICTINE	NONGOMA	C
	4. BETHESDA	UBOMBO	C
	5. CATHERINE BOOTH	INKANYEZI	F
	6. CEZA/TULASIZWE	MAHLAMBATINI	F
	7. CHARLES JOHNSON	NQUTU	B
	8. CHURCH OF SCOTLAND	INKANYEZI	F
	9. EDENDALE	VULINDLELA	G
	10. EKOMBE	KWAMAPHUMULO	F
	11. HLABISA	HLABISA	C
	12. MADADENI	MADADENI	A
	13. MANGUZI	INGWAVUMA	C
	14. MBOGOLWANE	LOWER TUGELA	F
	15. MOSVOLD	INGWAVUMA	C
	16. MSELENI	INGWAVUMA	C
	17. NGWELEZANA/LUWAMBA	ENSELENI	F
	18. NKANDLA	NKANDLA	F
	19. NKONJENI	MAHLABATINI	F
	20. PRINCE MSHIYENI	UMLAZI	H
	21. ST FRANCIS	MAHLABATINI	F
	22. UMPUMULO	KWAMAPHUMULO	F
	23. UNTUMJAMBILI/EHLANZENI	KRANSKOP	G
NPA (DHS)	1. ADDINGTON	DURBAN	H
	2. CLAIRWOOD	DURBAN	H
	3. CHRIST THE KING	IXOPO	G
	4. DUNDEE	DUNDEE	A
	5. EMPANGENI LOWER	UMFLOZI	F
	6. ESHOWE	ESHOWE	F
	7. ESTCOURT	ESTCOURT	D
	8. G.J. CROOKES	UMZINTO	I
	9. GREYS	PMB	G
	10. GREYTOWN	UMVOTI	G
	11. HILLCREST	PINETOWN	H
	12. KING EDWARD VII	DURBAN	H

AUTHORITY	HOPSITAL	MAG. DIST.	HPSR
	13. LADYSMITH	KLIP RIVER	D
	14. NEWCASTLE	NEWCASTLE	A
	15. NIEMEYER MEMORIAL	UTRICHT	A
	16. PORT SHEPSTONE	PORT SHEPSTONE	I
	17. R K KAHN	DURBAN	H
	18. STANGER	LOWER TUGELA	F
	19. ST ANDREWS	ALFRED	I
	20. ST ANNES	PMB	G
	21. TAYLER BEQUEST	MOUNT CURRIE	I
	22. USHER MEMORIAL	MOUNT CURRIE	I
	23. VRYHEID	VRYHEID	B
	24. WENTWORTH	DURBAN	H
DNHPD	1. KING GEORGE V	DURBAN	H
	2. OSINDISWENI	INANDA	H
	3. ST APPOLLINARIS	POLELA	G
	4. EMMAUS	ESTCOURT	D
	5. ITSHELEJUBA	SIMLAND-GENTSHA	C
	6. MURCHISON	PORT SHEPSTONE	I
DHS(NPA) SUB-SIDIZED	1. DON McKENZIE	CAMPERDOWN	G
	2. McCORD ZULU	DURBAN	H
	3. MOUNTAIN VIEW	VRYHEID	B
	4. SILOAH MISSION	VRYHEID	B
	5. ST MARYS (MARRIANHILL)	PINETOWN	H
	6. ST MARYS (MELMOTH)	MTONJANENI	F

TABLE 2

POPULATION ACCORDING TO TERRITORY AND RACIAL GROUP:
Numbers and Percent (%)

TERRITORY	WHITE	BLACK	COLOURED	ASIAN	TOTAL
KWAZULU	2098 (0,3) (0,1)	4500662 (81,8) (99,7)	3412 (3,2) (0,1)	3373 (0,5) (0,1)	4509545 (65,4) (100)
NATAL	604825 (99,7) (26,3)	998233 (18,2) (40,7)	96742 (96,8) (3,8)	689819 (99,5) (29,2)	2389618 (34,6) (100)
TOTAL	606923 (100) (9,1)	5498895 (100) (79,7)	100154 (100) (1,2)	693191 (100) (10,0)	6899163 (100) (100)

Note: All figures in the above and following tables are derived from 1985 census and adjusted to account for the HSRC estimate of undercounting for each race group. ie, White 7,6%, Black 20,4%, Coloured 1%, Asian 4,6%.

TABLE 3

HEALTH PLANNING SUB-REGIONS IN NATAL AND KWAZULU:
POPULATION ACCORDING TO MAGISTERIAL DISTRICT (1985):
Numbers

HEALTH PLANNING SUB REGION A: NEWCASTLE (MADADENI HOSPITAL)

TERRITORY	DISTRICT	WHITE	BLACK	COLOURED	ASIAN	TOTAL
KwaZulu	Masinga	7	113628	19	2	113656
	Madadeni	73	262934	148	23	263178
Natal	Dundee	5807	22300	1011	2929	32046
	Newcastle	26916	17124	1435	9740	55216
	Glencoe	3630	10680	96	2612	17019
	Utrecht	2909	29809	484	9	33211
	Danhauser	2094	13004	104	2421	17623
TOTAL		41436	469479	3298	17736	531949

HEALTH PLANNING SUB-REGION B: VRYHEID (VRYHEID HOSPITAL)

TERRITORY	DISTRICT	WHITE	BLACK	COLOURED	ASIAN	TOTAL
KwaZulu	Nqutu	49	181500	60	2	181611
Natal	Vryheid	15392	63680	499	353	78924
	Paulpietersburg	1683	18141	77	12	19913
	Babanango	205	11079	8	0	11292
TOTAL		17329	273400	644	367	291740

HEALTH PLANNING SUB-REGION C: BETHESDA (BETHESDA HOSPITAL)

TERRITORY	DISTRICT	WHITE	BLACK	COLOURED	ASIAN	TOTAL
KwaZulu	Ingwavuma	84	111086	15	1	111186
	Ubombo	956	86061	101	32	87150
	Nongoma	146	141460	88	0	141694
	Simlangentsha	90	101220	68	5	101383
	Hlabisa	11	139708	43	0	139761
Natal	Ubombo					
	(Natal)	35	201	52	0	288
	Ngotshe	1004	26895	38	1	27938
	Hlabisa	3672	12373	304	133	16482
TOTAL		5998	619004	708	172	625882

HEALTH PLANNING SUB-REGION D: LADYSMITH (LADYSMITH HOSPITAL)

TERRITORY	DISTRICT	WHITE	BLACK	COLOURED	ASIAN	TOTAL
KwaZulu	Emnambithi	38	166587	76	5	166706
	Okhahlamba	33	149851	104	5	149993
Natal	Bergville	1515	23420	73	181	25189
	Klip River	13765	41109	1290	8741	64905
	Estcourt	7233	30863	984	5782	44862
	Weenen	526	10767	61	322	11676
	Mooi River	2535	20029	178	675	23417
TOTAL		25645	442626	2766	15711	486748

HEALTH PLANNING SUB-REGION F: NGWELEZANA
(NGWELEZANA HOSPITAL)

TERRITORY	DISTRICT	WHITE	BLACK	COLOURED	ASIAN	TOTAL
KwaZulu	Ongoye	7	129974	107	5	130093
	Inkanyezi	31	149211	104	2	149348
	Nkandla	40	116626	11	1	116678
	Mahlabatini	20	111995	65	9	112089
	Enseleni	11	202597	246	13	202867
	KwaMaphu- mulo	25	176533	77	26	176661
Natal	Lower					
	Umfolozi	24579	37185	250	2256	64270
	Mtunzini	5608	11535	745	1620	19508
	Eshowe	3928	8971	1187	499	14585
	Mtonjaneni	1514	10811	78	37	24040
	Lower Tugela	8837	86725	1429	35907	132898
	Mahlabatini	Part of Umfolozi Game Reserve				
TOTAL		44600	1042163	4299	40375	1131437

HEALTH PLANNING SUB-REGION G: PIETERMARITZBURG
(EDENDALE HOSPITAL)

TERRITORY	DISTRICT	WHITE	BLACK	COLOURED	ASIAN	TOTAL
KwaZulu	Hlanganani	26	137312	121	10	137469
	Vulindlela	54	222328	346	48	222776
	Empumalanga	46	228220	164	35	228465
Natal	Umvoti	3596	33401	256	2966	40219
	Kranskop	605	6549	48	192	7394
	New Hanover	2986	32952	85	2261	38284
	Pietermaritz- burg	64733	73774	13908	59628	212043
	Camperdown	8581	23435	195	2136	34347
	Richmond	2189	20257	278	1262	23986
	Ixopo	2194	26800	1506	188	30688
	Polela	420	4527	43	7	4887
	Lions River	10511	26955	689	3323	41483
	Impendle	417	4695	77	29	5218
	Underberg	1277	8559	68	3	9907
TOTAL		97635	869764	17784	72093	1037276

HEALTH PLANNING SUB-REGION H: DURBAN (KING GEORGE V HOSPITAL)

TERRITORY	DISTRICT	WHITE	BLACK	COLOURED	ASIAN	TOTAL
KwaZulu	Mlazi	29	246095	166	9	246299
	Ntuzuma	242	394747	677	2961	398627
	Embumbulu	69	277359	260	12	277700
	Ndwedwe	11	159686	19	4	159820
Natal	Durban	231710	79423	40146	131029	482308
	Pinetown*	82735	5326	4166	18184	110411
	Inanda	16613	22506	15579	173741	228439
	Chatsworth	273	41273	632	190489	232667
TOTAL		331682	1226415	61645	516429	2136171

* Note: Chatsworth separated from Pinetown magisterial district.

HEALTH PLANNING SUB-REGION I: PORT SHEPSTONE (MURCHISON HOSPITAL)

TERRITORY	DISTRICT	WHITE	BLACK	COLOURED	ASIAN	TOTAL
KwaZulu	Vulamehlo	3	107618	23	6	107650
	Emzumbi	38	192559	186	4	192787
	Ezingolweni	15	193767	119	24	193925
Natal	Mount Currie	5020	30669	4882	35	40606
	Alfred	898	7854	1419	330	10501
	Port Shepstone	26193	20891	1321	10805	59210
	Umzinto	10433	22641	1060	19113	53247
TOTAL		42600	575999	9010	30317	657926

EXPLANATION OF TABLE 4

- a) **Columns (vertical) :** Column 1 identifies the HPSR while columns 2 - 6 indicate the Region of Residence of the inpatients - numbers and percent (%) as a proportion of the total number of inpatients from the particular Region eg Column 1 HPSR B, Column 3 (NATAL) tells us that HPSR-B had 297 inpatients who were residents of Natal and that this number represented 3,0% of all Residents of Natal who were inpatients on the night of the study.
- b) **Rows (horizontal):** Row 1 identifies the Region of Residence of inpatients. Rows 2 - 8 indicate the relative number of inpatients in a particular HPSR who were residents of one of the regions, eg HPSR-B (Row 3) indicates that 297 patients in HPSR-B were residents of NATAL and this number represents 37,4% of the total inpatients of HPSR-B.
- c) **Totals:** COLUMN - Identifies the total number of inpatients for each HPSR and indicates the percentage (%) of the total inpatient population, eg HPSR-B - TOTAL COLUMN - 795 inpatients representing 4,0% of total inpatients
 TOTAL ROW - Identifies the total number of residents of a particular region and indicates the percent (%) of the total, eg NATAL, 9 786 (49,2%) of total inpatients.

TABLE 4

REGION OF RESIDENCE OF INPATIENTS ACCORDING TO HPSR
Number and Percent (%)

HPSR	KWAZULU	NATAL	TRANSKEI	OTHER	UNKNOWN	TOTAL
A	847 (9,3) (48,1)	897 (9,2) (51,0)	3 (0,4) (0,2)	8 (6,3) (0,5)	5 (10,9) (0,3)	1760 (8,9) (100)
B	491 (5,4) (61,8)	297 (3,0) (37,4)	2 (0,3) (0,3)	2 (1,6) (0,3)	3 (6,5) (0,4)	795 (4,0) (100)
C	1406 (15,4) (95,5)	55 (0,6) (3,7)	0 (0) (0)	12 (9,4) (0,8)	0 (0) (0)	1473 (7,4) (100)
D	292 (3,2) (31,0)	645 (6,6) (68,5)	0 (0) (0)	6 (4,7) (0,6)	0 (0) (0)	941 (4,7) (100)
F	2040 (22,3) (63,7)	1125 (11,5) (35,1)	8 (1,0) (0,3)	31 (24,2) (1,0)	0 (0) (0)	3204 (16,1) (100)
G	945 (10,3) (34,7)	1711 (17,5) (62,9)	29 (3,7) (1,1)	30 (23,4) (1,1)	5 (10,0) (0,2)	2720 (13,7) (100)
H	2591 (28,3) (34,7)	4491 (45,9) (60,2)	332 (42,6) (4,5)	23 (18,0) (0,3)	25 (54,3) (0,3)	7462 (37,5) (100)
I	528 (5,8) (34,7)	565 (5,8) (37,1)	405 (52,0) (26,6)	16 (12,5) (1,1)	8 (17,4) (0,5)	1522 (7,7) (100)
TOTAL	9140 (100) (46,0)	9786 (100) (49,1)	779 (100) (3,9)	128 (100) (0,6)	46 (100) (0,2)	19877 (100) (100)

NOTE: Region of Residence of 41 inpatients was not recorded.

TABLE 5(a)

REGION OF RESIDENCE OF USERS OF HEALTH FACILITIES:
NEWCASTLE (HPSR-A)
Number and Percent (%)

HEALTH FACILITIES IN HPSR-A	REGION OF RESIDENCE					TOTAL
	KWAZULU	NATAL	TRANSKEI	OTHER	UNKNOWN	
NEWCASTLE PROVINCIAL	0	122	0	2	0	124
UTRECHT	15	24	0	0	1	40
DUNDEE	99	197	0	1	0	273
SUB TOTAL DHS(NPA)	114 (13,5) (26,1)	319 (35,6) (73,0)	0 (0) (0)	3 (37,5) (0,7)	1 (20,0) (0,2)	437 (24,8) (100)
MADADENI	733	578	3	5	4	1323
SUB TOTAL DHW(K-Z)	733 (86,5) (55,4)	578 (64,4) (43,7)	3 (100) (0,2)	5 (62,5) (0,4)	4 (80,0) (0,3)	1323 (75,2) (100)
TOTAL	847 (100) (48,1)	897 (100) (51,0)	3 (100) (0,2)	8 (100) (0,5)	5 (100) (0,3)	1760 (100) (100)

TABLE 5(b)
REGION OF RESIDENCE OF USERS OF HEALTH FACILITIES :
VRYHEID (HPSR-B)
Number and Percent (%)

HEALTH FACILITIES IN HPSR-B	KWAZULU	NATAL	TRANSKEI	OTHER	UNKNOWN	TOTAL
VRYHEID HOPSITAL	53	161	0	2	0	216 (100)
SUB TOTAL DHS(NPA)	53 (10,8) (24,5)	161 (54,2) (74,5)	0 (0) (0)	2 (100) (1,0)	0 (0) (0)	216 (27,2) (100)
CHARLES JOHNSON	399	54	2	0	3	458
SUB TOTAL DHW(KZ)	399 (91,3) (87.1)	54 (18,2) (11,8)	2 (100) (0,4)	0 (0) (0)	3 (100) (0,7) (100)	458 (57,6)
SILOAH	22	57	0	0	0	79
MOUNTAIN VIEW	17	25	0	0	0	42
SUB TOTAL DHS(NPA)SUBS	39 (7,9) (32,2)	82 (27,6) (67,8)	0 (0) (0)	0 (0) (0)	0 (0) (0)	121 (15,2) (100)
TOTAL	491 (100) (61,8)	297 (100) (37,4)	2 (100) (0,2)	2 (100) (0,2)	3 (100) (0,4)	795 (100) (100)

TABLE 5(c)

REGION OF RESIDENCE OF USERS OF HEALTH FACILITIES:
BETHESDA (HPSR-C)
Number and Percent (%)

HEALTH FACILITIES IN HPSR-C	KWAZULU	NATAL	TRANSKEI	OTHER	UNKNOWN	TOTAL
BETHESDA	187	2	0	0	0	189 (100)
MANGOZI	248	2	0	8	0	256 (100)
MSELENI	174	0	0	0	0	184
HLABISA	297	15	0	0	0	312
BENEDICTINE	314	36	0	4	0	354
MOSVOLD	164	0	0	0	0	164
SUB TOTAL DHW(KZ)	1396 (99,3) (95,4)	55 (100) (3,8)	0 (0) (0)	12 (100) (0,8)	0 (0) (0)	1463 (99,3) (100)
ITSHELEJUBA	10	0	0	0	0	10
SUB TOTAL DNHPD	10 (0,7) (100)	0 (0) (0)	0 (0) (0)	0 (0) (0)	0 (0) (0)	10 (0,7) (100)
TOTAL	1406 (100) (95,5)	55 (100) (3,7)	0 (0) (0)	12 (100) (0,8)	0 (0) (0)	1473 (100) (100)

TABLE 5(d)

REGION OF RESIDENCE OF USERS OF HEALTH FACILITIES:
LADYSMITH (HPSR-D)
Number and Percent (%)

HEALTH FACILITIES IN HPSR-D	KWAZULU	NATAL	TRANSKEI	OTHER	UNKNOWN	TOTAL
LADYSMITH	218	250	0	6	0	474
ESCOURT	62	163	0	0	0	225
SUB TOTAL DHS(NPA)	280 (95,9) (40,0)	413 (64,0) (59,0)	0 (0) (0)	6 (100) (0,9)	0 (0) (0)	699 (74,3) (100)
EMMAUS	12	232	0	0	0	244
SUB TOTAL DNHPD	12 (4,1) (5,0)	232 (36,0) (95,5)	0 (0) (0)	0 (0) (0)	0 (0)	244 (25,7) (100)
TOTAL	292 (100) (31,0)	645 (100) (68,5)	0 (100) (0)	6 (100) (0,5)	0 (100) (0)	941 (100) (100)

TABLE 5(e)

REGION OF RESIDENCE OF USERS OF HEALTH FACILITIES:
NGWELEZANA (HPSR-F)

Number and Percent (%)

HEALTH FACILITIES IN HPSR-F	KWAZULU	NATAL	TRANSKEI	OTHER	UNKNOWN	TOTAL
STANGER	76	359	0	3	0	438
EMPANGENI	5	66	0	3	0	74
ESHOWE	190	201	0	4	0	395
SUB TOTAL (NPA)	271 (13,3) (29,9)	626 (55,6) (69,0)	0 (0) (0)	10 (32,3) (1,1)	0 (0) (0)	907 (28,3) (100)
ST MARY'S (MELMOTH)	9	78	0	0	0	87
SUB TOTAL DHS(NPA)	9 (0,4) (10,3)	78 (6,9) (89,7)	0 (0) (0)	0 (0) (0)	0 (0) (0)	87 (2,7) (100)
UMPHUMULO	100	2	0	1	0	103
NKANDLA	292	18	0	3	0	313
CATHERINE BOOTH	26	59	0	0	0	85
MBONGOLWANI	121	5	0	0	0	126
EKOMBE	123	1	0	0	0	124
NKONJENI	163	10	0	2	0	175
CEZA	148	68	0	5	0	221
CHURCH OF SCOTLAND	216	0	0	0	0	216
ST FRANCIS	65	2	0	0	0	67
NGWELEZANA	476	256	8	1	0	741
SUB TOTAL DHW(KZ)	1760 (86,3) (79,6)	421 (37,4) (19,0)	8 (100) (0,4)	21 (67,7) (1,0)	0 (0) (0)	2210 (69,0) (100)
TOTAL	2040 (100) (63,7)	1125 (100) (35,1)	8 (100) (0,3)	31 (100) (1,0)	0 (100) (0)	3204 (100) (100)

TABLE 5(f)

REGION OF RESIDENCE OF USERS OF HEALTH FACILITIES:
PIETERMARITZBURG (HPSR-G)
Number and Percent (%)

HEALTH FACILITIES IN HPSR-G	KWAZULU	NATAL	TRANSKEI	OTHER	UNKNOWN	TOTAL
NORTHDALE	0	248	0	7	0	255 (100)
GREYS	1	352	4	9	0	366 (100)
GREYTOWN	60	105	0	3	0	168 (100)
CHRIST THE KING	111	37	8	0	3	159 (100)
SUB TOTAL DHS(NPA)	172 (16,6) (18,1)	742 (43,0) (78,3)	12 (15,2) (1,3)	19 (52,8) (2,0)	3 (60,0) (0,3)	948 (32,9) (100)
DON McKENZIE	104	138	0	0	0	242 (100)
SUB TOTAL DHS(NPA) SUBS	104 (10,0) (43,0)	138 (8,0) (57,0)	0 (0) (0)	0 (0) (0)	0 (0) (0)	242 (8,4) (100)
EDENDALE	557	807	17	11	2	1394
UNTUNJAMBILI	112	24	0	0	0	136
SUB TOTAL DHW(KZ)	669 (64,6) (43,7)	831 (48,2) (54,3)	17 (21,5) (1,1)	11 (30,6) (0,7)	2 (40,0) (0,1)	1530 (53,2) (100)
ST APPOLLINARIS	90	12	50	6	0	158
SUB TOTAL DHNPD	90 (8,7) (57,0)	12 (0,7) (7,6)	50 (63,3) (31,6)	6 (16,6) (3,8)	0 (0) (0)	158 (5,5) (100)
TOTAL	1035 (100) (36,0)	1723 (100) (59,9)	79 (100) (2,7)	36 (100) (131)	5 (100) (0,2)	2878 (100) (100)

TABLE 5(g)

REGION OF RESIDENCE OF USERS OF HEALTH FACILITIES:
DURBAN (HPSR-H)
Number and Percent (%)

HEALTH FACILITIES IN HPSR-H	KWAZULU	NATAL	TRANSKEI	OTHER	UNKNOWN	TOTAL
KING EDWARD	436	1174	90	3	8	1711
WENTWORTH	55	162	13	6	4	240
R.K. KHAN	7	398	0	0	0	405
ADDINGTON	7	251	0	4	4	536
CLAIRWOOD	536	564	60	0	2	1162
HILLCREST	0	192	0	0	0	192
SUB TOTAL	1041 (41,6) (24,5)	3011 (67,2) (70,9)	163 (57,8) (3,8)	13 (56,5) (0,3)	18 (72,0) (0,4)	4246 (58,1) (100)
McCORD ZULU	64	179	3	0	0	246
ST MARY'S (MARRIANHILL)	152	133	6	0	0	291
SUB TOTAL DHS(NPA)	216 (8,3) (40,2)	312 (7,0) (58,1)	9 (3,2) (1,7)	0 (0) (0)	0 (0) (0)	537 (7,4) (100)
KING GEORGE	431	828	93	0	7	1359
OSINDISWENI	203	263	17	0	0	483
SUB TOTAL DNHPD	634 (28,9) (34,4)	1091 (24,4) (59,2)	110 (39,0) (6,0)	0 (0) (0)	7 (28,0) (0,4)	1842 (25,2) (100)
PRINCE MSHIYENI	330	25	0	3	0	358
MONTEBELLO	280	40	0	1	0	321
SUB TOTAL DHW (KZ)	610 (24,4) (89,8)	65 (1,5) (9,6)	0 (0) (0)	4 (17,4) (0,6)	0 (0) (0)	679 (9,1) (100)
TOTAL	2501 (100) (34,2)	4479 (100) (61,3)	282 (100) (3,9)	17 (100) (0,2)	25 (100) (023)	7304 (100) (100)

TABLE 5(h)

REGION OF RESIDENCE OF USERS OF HEALTH FACILITIES:PORT
SHEPSTONE (HPSR-I)
Number and Percent (%)

HEALTH FACILITIES IN HPSR-I	KWAZULU	NATAL	TRANSKEI	OTHER	UNKNOWN	TOTAL
USHER MEMORIAL	0	59	76	4	0	139 (100)
ST ANDREWS	0	156	40	1	0	197 (100)
TAYLOR BEQUEST	0	17	231	3	6	257 (100)
PORT SHEPSTONE	169	85	23	8	2	287 (100)
G.J. CROOKES	61	187	0	0	0	248 (100)
SUB TOTAL DHS(NPA)	230 (43,6) (20,4)	504 (89,2) (44,7)	370 (91,4) (32,8)	16 (100) (1,4)	8 (100) (0,7)	1128 (74,1) (100)
MURCHISON	186	61	35	0	0	282 (100)
SUB TOTAL DNHPD	186 (35,2) (66,0)	61 (10,8) (21,6)	35 (8,6) (12,4)	0 (0) (0)	0 (0) (0)	282 (18,5) (100)
ASSISSI	112	0	0	0	0 (0)	112 (100)
SUB TOTAL DHS(KZ)	112 (21,2) (100)	0 (0) (0)	0 (0) (0)	0 (0) (0)	0 (0) (0)	112 (7,4) (100)
TOTAL	528 (100) (34,7)	565 (100) (37,1)	405 (100) (26,6)	16 (100) (1,0)	8 (100) (0,5)	1522 (100) (100)

TABLE 6

REGION OF RESIDENCE OF INPATIENTS ACCORDING TO
ADMINISTERING HEALTH AUTHORITY
Number and Percent (%)

HEALTH AUTHORITY	REGION OF RESIDENCE				TOTAL
	NATAL	KWAZULU	TRANSKEI	OTHER/ UNKNOWN	
DHS(NPA)	6386 (65,2) (66,7)	2529 (27,7) (26,4)	554 (70,2) (5,8)	99 (65,1) (1,1)	9568 (48,1) (100)
DHW(KZ)	2014 (20,6) (25,9)	5679 (62,1) (73,0)	40 (24,7) (0,5)	40 (26,3) (0,5)	7773 (39,1) (100)
DNHPD	1396 (14,2) (55,0)	932 (10,2) (36,8)	195 (5,1) (7,7)	13 (8,6) (0,5)	2536 (12,8) (100)
TOTAL	9796 (100) (49,3)	9140 (100) (46,0)	789 (100) (3,9)	152 (100) (0,8)	19877 (100) (100)

***NOTE:** Region of Residence of 41 inpatients was not recorded

Explanation of Table 7:

Columns (vertical):- 1 = HPSR of the facilities
2-5 = Race of inpatients.

The columns indicate the number of inpatients of each Race group in a HPSR and the percentage of the total inpatients of that particular Race group, eg HPSR-D, column 5 indicates that 49 White patients representing 3,5% of the total White patients were inpatients in HPSR-D.

Rows (horizontal):- Give the number of inpatients of a particular Race group in a HPSR and the relative proportion of this Racial group in relation to the other race groups, eg HPSR-D indicates 49 Whites or 5.2% of the total inpatients from HPSR-D were White.

Totals Column:- Indicates the total number of inpatients for a particular HPSR and the percentage of the total who were from the particular HPSR, eg HPSR-G - Column Total = 2 721 (13,7%), ie 2 721 inpatients were in HPSR-G which represented 13,7% of total number of inpatients.

Totals Row:- This indicates the number of patients in each Racial group and the percentage of the Total, eg Indian - 1 160 (5,8%), ie 1 160 patients were Indian and this represented 5,8% of total number of patients of all Racial groups.

TABLE 7

**RACE OF INPATIENTS ACCORDING TO HEALTH PLANNING SUB-
REGION**

Number and Percent (%)

HPSR	AFRICAN	COLOURED	INDIAN	WHITE	TOTAL
A	1592 (9,4) (90,8)	9 (2,6) (0,5)	27 (2,3) (1,5)	125 (8,9) (7,1)	1753 (8,8) (100)
B	760 (4,5) (96,1)	4 (1,1) (0,5)	0 (0) (0)	27 (1,9) (3,4)	791 (4,0) (100)
C	1460 (8,6) (99,9)	1 (0,3) (0,1)	0 (0) (0)	0 (0) (0)	1461 (7,3) (100)
D	873 (5,1) (93,1)	4 (1,1) (0,4)	12 (1,0) (1,3)	49 (3,5) (5,2)	938 (4,7) (100)
F	3030 (17,8) (95,7)	14 (4,0) (0,4)	48 (4,1) (1,5)	75 (5,3) (2,3)	3166 (15,9) (100)
G	2084 (12,3) (76,6)	64 (18,2) (2,4)	194 (16,7) (7,1)	379 (27,0) (13,9)	2721 (13,7) (100)
H	5785 (34,0) (76,6)	237 (67,5) (3,1)	866 (74,7) (11,5)	667 (47,4) (8,8)	7555 (37,9) (100)
I	1417 (8,3) (92,4)	18 (5,1) (1,2)	13 (1,1) (0,8)	85 (6,0) (5,5)	1533 (7,7) (100)
TOTAL	17001 (100) (85,4)	351 (100) (1,8)	1160 (100) (5,8)	1406 (100) (7,1)	19918 (100) (100)

Explanation of Table 8:

Columns (vertical):- Indicate HPSR (column 1) and source of referral (columns 2-5) - numbers and percent (%), eg for HPSR-D Column 3 (Source of referral = other hospital) indicates 51 (1,2%) of HPSR-Ds patients were referred from other hospitals and this represented 1,2% of the total of 4 274 (100%) patients who were referred from other hospitals in all HPSRs.

Rows (horizontal):- Indicate the individual results for each HPSR, eg Row 5 column 3, ie HPSR-D - other hospital referral indicates that in HPSR-D 51 inpatients were referred from clinics and this number represented 5,4% of all patients of HPSR-D on the night of the study. (SEE TABLE 15)

TABLE 8

SOURCE OF REFERRAL OF INPATIENTS ACCORDING TO HPSR
Number and Percent (%)

SOURCE OF REFERRAL						
HPSR	SELF	OTHER HOSPITAL	CLINIC	PRIVATE PRACTI- TIONER	OTHER	TOTAL
A	603 (6,4) (34,4)	252 (5,8) (14,4)	201 (6,5) (11,5)	235 (12,5) (13,4)	462 (40,8) (26,3)	1753 (8,8) (100)
B	563 (6,0) (71,2)	54 (1,3) (6,8)	107 (3,5) (13,5)	49 (2,6) (6,2)	18 (1,6) (2,3)	791 (4,0) (100)
C	961 (10,1) (65,8)	22 (0,5) (1,5)	363 (11,8) (24,8)	42 (2,2) (2,9)	73 (6,4) (5,0)	1461 (7,4) (100)
D	616 (6,5) (65,8)	51 (1,2) (5,4)	141 (4,6) (15,0)	97 (5,2) (10,4)	32 (2,8) (3,4)	937 (4,7) (100)
F	2304 (24,4) (72,8)	321 (7,5) (10,1)	294 (9,5) (9,3)	179 (9,5) (5,7)	67 (5,9) (2,1)	3165 (16,0) (100)
G	1185 (12,5) (43,6)	350 (8,2) (12,9)	478 (15,5) (17,6)	627 (33,4) (23,0)	80 (7,2) (2,9)	2720 (13,7) (100)
H	2358 (25,0) (31,6)	3183 (74,5) (42,7)	1300 (42,2) (17,4)	328 (17,4) (4,4)	294 (25,9) (3,9)	7462 (37,7) (100)
I	855 (9,1) (56,2)	41 (1,0) (2,7)	196 (6,4) (12,9)	323 (17,2) (21,2)	107 (9,4) (7,0)	1522 (7,7) (100)
TOTAL	9444 (100) (47,7)	4274 (100) (21,6)	3080 (100) (15,5)	1880 (100) (9,5)	1133 (100) (5,7)	19811 (100) (100)

***NOTE:** Source of Referral of 107 inpatients was not recorded

TABLE 9(a)

**SOURCE OF REFERRAL OF INPATIENTS ACCORDING TO HEALTH
FACILITY IN HPSR-A (NEWCASTLE)**
Number and Percent (%)

SOURCE OF REFERRAL						
HEALTH FACILITY	SELF	OTHER HOSPITAL	CLINIC	PRIVATE PRACTI- TIONER	OTHER	TOTAL
MADADENI HOSPITAL	340 (56,4) (25,8)	248 (98,4) (18,8)	196 (97,5) (14,9)	95 (40,4) (7,2)	438 (94,8) (33,3)	1317 (75,1) (100)
NEWCASTLE HOSPITAL	3 (0,5) (2,4)	1 (0,4) (0,8)	0 (0) (0)	109 (46,4) (87,9)	11 (2,4) (8,9)	124 (7,1) (100)
UTRECHT HOSPITAL	36 (6,0) (90,0)	1 (0,4) (2,5)	0 (0) (0)	2 (0,9) (5,0)	1 (0,2) (2,5)	40 (2,3) (100)
DUNDEE HOSPITAL	224 (37,1) (82,4)	2 (0,8) (0,7)	5 (2,5) (1,8)	29 (12,3) (10,7)	12 (2,6) (4,4)	272 (15,5) (100)
TOTAL	603 (100) (34,4)	252 (100) (14,4)	201 (100) (11,5)	235 (100) (13,4)	462 (100) (26,3)	1753 (100) (100)

TABLE 9(b)

SOURCE OF REFERRAL OF INPATIENTS ACCORDING TO HEALTH FACILITY IN HPSR-B (VRYHEID)
Number and Percent (%)

SOURCE OF REFERRAL						
HEALTH FACILITIES	SELF	OTHER HOSPITAL	CLINIC	PRIVATE PRACTITIONER	OTHER	TOTAL
SILOAH MISSION HOSPITAL	45 (8,0) (56,3)	32 (59,3) (40,0)	2 (1,9) (2,5)	0 (0) (0)	1 (5,5) (1,2)	80 (10,1) (100)
VRYHEID HOSPITAL	160 (28,4) (74,8)	4 (7,4) (1,9)	0 (0) (0)	43 (87,8) (20,0)	7 (38,9) (3,3)	214 (27,1) (100)
MOUNTAINVIEW HOSPITAL	23 (4,1) (54,8)	16 (29,6) (38,1)	2 (1,9) (4,8)	1 (2,0) (2,3)	0 (0) (0)	42 (5,3) (100)
CHARLES JOHNSON HOSPITAL	335 (59,5) (73,7)	2 (3,7) (0,4)	103 (96,2) (22,6)	5 (10,2) (1,1)	10 (55,6) (2,2)	445 (57,5) (100)
TOTAL	563 (100) (71,2)	54 (100) (6,8)	107 (100) (13,5)	49 (100) (6,2)	18 (100) (2,3)	791 (100) (100)

TABLE 9(c)

SOURCE OF REFERRAL OF INPATIENTS ACCORDING TO HEALTH FACILITY IN HPSR-C (BETHESDA)
Number and Percent (%)

SOURCE OF REFERRAL						
HEALTH FACILITIES	SELF	OTHER HOSPITAL	CLINIC	PRIVATE PRACTITIONER	OTHER	TOTAL
MANGUZI HOSPITAL	109 (11,3) (42,4)	1 (4,5) (0,4)	85 (23,4) (33,1)	0 (0) (0)	62 (84,9) (24,1)	257 (17,6) (100)
ITSHELEJUBA HOSPITAL	5 (0,5) (45,5)	0 (0) (0)	0 (0) (0)	2 (4,8) (18,1)	4 (5,5) (36,4)	11 (0,8) (100)
MSELENI HOSPITAL	66 (6,9) (37,9)	1 (4,5) (0,6)	107 (29,5) (61,5)	0 (0) (0)	0 (0) (0)	174 (11,9) (100)
BETHESDA HOSPITAL	120 (12,5) (63,5)	0 (0) (0)	61 (16,8) (32,2)	3 (7,1) (1,6)	5 (6,8) (2,6)	189 (12,9) (100)
MOSVOLD HOSPITAL	118 (12,3) (72,0)	2 (9,1) (1,2)	41 (11,3) (25,0)	1 (2,4) (0,6)	2 (2,8) (1,2)	164 (11,2) (100)
BENEDICTINE HOSPITAL	251 (26,1) (70,9)	17 (77,3) (4,8)	50 (13,8) (14,1)	36 (85,7) (10,2)	0 (0) (0)	354 (24,2) (100)
HLABISA HOSPITAL	292 (30,4) (93,6)	1 (4,5) (0,3)	19 (5,2) (6,1)	0 (0) (0)	0 (0) (0)	312 (21,4) (100)
TOTAL	961 (100) (65,8)	22 (100) (1,5)	363 (100) (24,8)	42 (100) (2,9)	73 (100) (5,0)	1461 (100) (100)

TABLE 9(d)

SOURCE OF REFERRAL OF INPATIENTS ACCORDING TO HEALTH FACILITY IN HPSR-D (LADYSMITH)
Number and Percent (%)

SOURCE OF REFERRAL						
HEALTH FACILITY	SELF	OTHER HOSPITAL	CLINIC	PRIVATE PRACTITIONER	OTHER	TOTAL
LADYSMITH HOSPITAL	273 (44,3) (58,1)	43 (84,3) (9,1)	67 (47,5) (14,3)	58 (59,8) (12,3)	29 (90,6) (6,2)	470 (50,2) (100)
ESTCOURT HOSPITAL	159 (25,8) (70,6)	6 (11,8) (2,7)	26 (18,4) (11,6)	32 (33,0) (14,2)	2 (6,3) (0,9)	225 (24,0) (100)
EMMAUS HOSPITAL	184 (29,9) (76,1)	2 (3,9) (0,8)	48 (34,1) (19,8)	7 (7,2) (2,9)	1 (3,2) (0,4)	242 (25,8) (100)
TOTAL	616 (100) (65,7)	51 (100) (5,5)	141 (100) (15,0)	97 (100) (10,4)	32 (100) (3,4)	937 (100) (100)

TABLE 9(e)**SOURCE OF REFERRAL OF INPATIENTS ACCORDING TO HEALTH FACILITY IN HPSR-F (NGWELEZANA)****Number and Percent (%)**

SOURCE OF REFERRAL						
HEALTH FACILITIES	SELF	OTHER HOSPITAL	CLINIC	PRIVATE PRACTITIONER	OTHER	TOTAL
STANGER HOSPITAL	434 (18,8) (99,1)	2 (0,6) (0,5)	1 (0,3) (0,2)	1 (0,6) (0,2)	0 (0) (0)	438 (13,8) (100)
EMPANGENI HOSPITAL	16 (0,7) (21,6)	0 (0) (0)	4 (1,4) (5,4)	54 (30,1) (73,0)	0 (0) (0)	74 (2,3) (100)
UMPHUMULO HOSPITAL	77 (3,3) (74,8)	2 (0,6) (1,9)	24 (8,2) (23,3)	0 (0) (0)	0 (0) (0)	103 (3,4) (100)
NKANDLA HOSPITAL	309 (13,4) (98,7)	1 (0,3) (0,3)	2 (0,7) (0,7)	0 (0) (0)	1 (1,5) (0,3)	313 (9,9) (100)
CATHERINE BOOTH HOSPITAL	53 (2,3) (62,4)	4 (1,2) (4,7)	28 (9,5) (32,9)	0 (0) (0)	0 (0) (0)	85 (2,7) (100)
MBONGOLWANI HOSPITAL	95 (4,1) (75,4)	22 (6,9) (17,5)	9 (3,1) (7,1)	0 (0) (0)	0 (0) (0)	126 (4,0) (100)
EKOMBE HOSPITAL	93 (4,0) (75,0)	0 (0) (0)	20 (6,8) (16,1)	3 (1,7) (2,4)	8 (11,9) (6,5)	124 (3,9) (100)
NKONJENI HOSPITAL	128 (5,6) (73,1)	1 (0,3) (0,6)	30 (10,2) (17,1)	1 (0,6) (0,6)	15 (22,4) (8,6)	175 (5,5) (100)
ST MARY'S HOSPITAL (MELMOTH)	78 (3,4) (89,7)	0 (0) (0)	8 (2,7) (9,2)	1 (0,6) (1,1)	0 (0) (0)	87 (2,7) (100)
CEZA HOSPITAL	119 (5,2) (53,8)	101 (31,5) (45,7)	0 (0) (0)	0 (0) (0)	1 (1,5) (0,5)	221 (7,0) (100)
CHURCH OF SCOTLAND HOSPITAL	186 (8,1) (86,1)	1 (0,3) (0,5)	5 (1,6) (2,3)	1 (0,6) (0,5)	23 (34,3) (10,6)	216 (6,8) (100)
ST FRANCIS HOSPITAL	10 (0,4) (14,9)	57 (17,8) (85,1)	0 (0) (0)	0 (0) (0)	0 (0) (0)	67 (2,1) (100)
NGWELEZANA HOSPITAL	426 (18,5) (57,5)	104 (32,4) (14,0)	131 (44,6) (17,7)	67 (37,4) (9,0)	13 (19,4) (1,8)	741 (23,4) (100)
ESHOWE	280 (12,2) (70,9)	26 (8,1) (6,6)	32 (10,9) (8,1)	51 (28,4) (12,9)	6 (9,0) (1,5)	395 (12,3) (100)
TOTAL	2304 (100) (72,8)	321 (100) (10,1)	294 (100) (9,3)	179 (100) (5,7)	67 (100) (2,1)	3165 (100) (100)

TABLE 9(f)

**SOURCE OF REFERRAL OF INPATIENTS ACCORDING TO HEALTH
FACILITY IN HPSR-G (PIETERMARITZBURG)**
Number and Percent (%)

SOURCE OF REFERRAL						
HEALTH FACILITY	SELF	OTHER HOSPITAL	CLINIC	PRIVATE PRACTI- TIONER	OTHER	TOTAL
GREYS HOSPITAL	14 (1,1) (3,8)	10 (2,9) (2,7)	50 (8,6) (13,7)	291 (46,4) (79,5)	1 (1,1) (0,3)	366 (12,7) (100)
UNTUNJAMBILI HOSPITAL	80 (6,3) (51,5)	4 (1,0) (2,9)	3 (0,5) (2,2)	59 (9,4) (43,4)	0 (0) (0)	136 (4,7) (100)
GREYTOWN HOSPITAL	104 (8,2) (61,9)	0 (0) (0)	5 (0,9) (3,0)	51 (8,2) (30,4)	8 (9,8) (4,7)	168 (5,8) (100)
CHRIST THE KING HOSPITAL	82 (6,6) (51,6)	2 (0,6) (1,3)	8 (1,4) (5,0)	57 (9,1) (35,8)	10 (12,4) (6,3)	159 (5,5) (100)
NORTHDALE HOSPITAL	167 (13,5) (65,5)	9 (2,6) (3,5)	2 (0,3) (0,8)	47 (7,5) (18,4)	30 (36,6) (11,8)	255 (8,9) (100)
EDENDALE HOSPITAL	746 (60,2) (53,5)	253 (72,3) (18,2)	287 (49,5) (20,6)	88 (14,0) (6,3)	20 (24,4) (1,4)	1394 (48,4) (100)
DON McKENZIE CENTRE	2 (0,1) (0,8)	72 (20,6) (29,8)	123 (21,2) (50,9)	34 (5,4) (14,0)	11 (13,4) (4,5)	242 (8,4) (100)
ST APPOLLINARIS HOSPITAL	54 (4,4) (34,2)	0 (0) (0)	102 (7,9) (64,6)	0 (0) (0)	2 (2,4) (1,2)	158 (5,5) (100)
TOTAL	1239 (100) (43,0)	350 (100) (12,2)	580 (100) (20,2)	627 (100) (21,8)	82 (100) (2,8)	2878 (100) (100)

TABLE 9(g)

**SOURCE OF REFERRAL OF INPATIENTS ACCORDING TO HEALTH
FACILITY IN HPSR-H (DURBAN)**
Number and Percent (%)

SOURCE OF REFERRAL						
HEALTH FACILITY	SELF	OTHER HOSPITAL	CLINIC	PRIVATE PRACTI- TIONER	OTHER	TOTAL
PRINCE MSHIYENI HOSPITAL	230 (10,0) (64,2)	9 (0,3) (2,5)	64 (5,3) (17,9)	6 (1,8) (1,7)	49 (16,8) (13,7)	358 (4,9) (100)
ST MARY'S HOSPITAL (MARIANHILL)	250 (10,9) (85,9)	2 (0,1) (0,7)	3 (0,2) (1,0)	16 (4,9) (5,5)	20 (6,8) (6,9)	291 (4,0) (100)
KING GEORGE V HOSPITAL	21 (1,0) (1,5)	1039 (32,6) (76,5)	282 (23,5) (20,8)	13 (4,0) (0,9)	4 (1,4) (0,3)	1359 (18,6) (100)
CLAIRWOOD HOSPITAL	5 (0,2) (0,4)	1068 (33,6) (91,9)	89 (6,9) (7,7)	0 (0) (0)	0 (0) (0)	1162 (15,9) (100)
OSINDISWENI HOSPITAL	324 (14,0) (67,1)	14 (0,4) (2,9)	83 (6,5) (17,2)	59 (18,0) (12,2)	3 (1,0) (0,6)	483 (6,6) (100)
R.K. KHAN HOSPITAL	288 (12,4) (71,1)	9 (0,3) (2,2)	37 (2,8) (9,1)	61 (18,6) (15,1)	10 (3,4) (2,5)	405 (5,5) (100)
ADDINGTON HOSPITAL	130 (5,6) (24,3)	31 (1,0) (5,8)	207 (17,3) (38,6)	41 (12,5) (7,6)	127 (43,4) (23,7)	536 (7,3) (100)
MONTEBELLO HOSPITAL	186 (8,0) (57,9)	65 (2,0) (20,3)	36 (2,9) (11,2)	0 (0) (0)	34 (11,76) (10,6)	321 (4,4) (100)
McCORD ZULU HOSPITAL	192 (8,2) (78,0)	8 (0,3) (3,3)	25 (2,0) (10,2)	16 (4,9) (6,5)	5 (1,7) (2,0)	246 (3,4) (100)
HILLCREST HOSPITAL	0 (0) (0)	192 (6,0) (100)	0 (0) (0)	0 (0) (0)	0 (0) (0)	192 (2,6) (100)
WENTWORTH HOSPITAL	7 (0,3) (2,9)	188 (5,9) (78,3)	15 (1,2) (6,3)	29 (8,8) (12,1)	1 (0,3) (0,4)	240 (3,3) (100)
KING EDWARD VIII	670 (29,1) (39,2)	558 (17,5) (32,6)	357 (29,8) (20,9)	87 (26,5) (5,1)	39 (13,4) (2,4)	1711 (23,4) (100)
TOTAL	2303 (100) (31,5)	3183 (100) (43,6)	1198 (100) (16,4)	328 (100) (4,5)	292 (100) (4,0)	7304 (100) (100)

TABLE 9(h)

**SOURCE OF REFERRAL OF INPATIENTS ACCORDING TO HEALTH
FACILITY IN HPSR-I (PORT SHEPSTONE)**
Number and Percent (%)

SOURCE OF REFERRAL						
HEALTH FACILITY	SELF	OTHER HOSPITAL	CLINIC	PRIVATE PRACTI- TIONER	OTHER	TOTAL
G.J. CROOKES HOSPITAL	219 (25,6) (88,3)	0 (0) (0)	6 (3,1) (2,4)	20 (6,2) (8,1)	3 (2,8) (1,2)	248 (16,3) (100)
MURCHISON HOSPITAL	190 (22,2) (67,4)	22 (53,7) (7,8)	61 (31,1) (21,6)	4 (1,2) (1,4)	5 (4,7) (1,8)	282 (18,5) (100)
PORT SHEPSTONE HOSPITAL	115 (13,5) (40,1)	14 (34,2) (4,9)	25 (12,8) (8,7)	53 (16,4) (18,5)	80 (74,8) (27,8)	287 (18,9) (100)
USHER MEMORIAL HOSPITAL	26 (3,0) (18,7)	1 (2,4) (0,7)	103 (52,5) (74,1)	8 (2,5) (5,8)	1 (0,9) (0,7)	139 (9,1) (100)
TAYLOR BEQUEST HOSPITAL	37 (4,3) (14,4)	2 (4,9) (6,8)	0 (0) (0)	212 (65,7) (82,5)	6 (5,6) (2,3)	257 (16,9) (100)
ASSISSI HOSPITAL	110 (12,9) (98,2)	1 (2,4) (0,4)	1 (0,5) (0,4)	0 (0) (0)	0 (0) (0)	112 (7,4) (100)
ST ANDREWS HOSPITAL	158 (18,5) (80,2)	1 (2,4) (0,5)	0 (0) (0)	26 (8,0) (13,2)	12 (11,2) (6,1)	197 (12,9) (100)
TOTAL	855 (100) (56,2)	41 (100) (2,7)	196 (100) (12,9)	323 (100) (21,2)	107 (100) (7,0)	1522 (100) (100)

EXPLANATION OF TABLE 10

Columns:- Indicate the major clinical categories (2-6) and the number and percent (%) of each of these within a particular HPSR in proportion to all the other HPSRs, eg Column 3 (SURGERY) - for HPSR-D (Row 5) reads 200 (4,7) - ie in HPSR-D there were 200 surgical patients on the night of the study which represents 4,7% of the total number of inpatients for Natal/Kwa-Zulu.

Rows:- Indicate each HPSR (A-I excluding E) and again give us an indication of the percentage of the various categories of inpatients in each individual HPSR, eg for HPSR-D Column 3 (SURGERY) tells one that in HPSR-D there were 200 surgical patients which represented 21,3% of total number of inpatients in HPSR-D.

TABLES 11 (a-h) - Read as for Table 10 - substituting individuals within a particular HPSR for the HPSRs of Table 24.

By studying tables 11(a-h) one can obtain the relative proportions of the different major clinical categories for each of the hospitals studied.

TABLE 10
MAJOR CLINICAL CATEGORY OF INPATIENTS ACCORDING TO
HPSR
NUMBER AND PERCENT (%)

MAJOR CLINICAL CATEGORY							
HPSR	MEDICINE	SURGERY	OBSTERICS	GYNAE- COLOGY	PSYCHIA- TRY	PAEDIA- TRICS	TOTAL
A	369 (5,8) (21,0)	209 (4,9) (11,9)	91 (3,6) (5,2)	48 (7,6) (2,7)	751 (69,2) (42,8)	285 (5,8) (16,3)	1753 (8,8) (100)
B	231 (3,6) (29,2)	118 (2,8) (14,9)	221 (8,8) (27,9)	20 (3,1) (2,5)	17 (1,6) (2,1)	184 (3,7) (23,3)	791 (4,0) (100)
C	522 (8,2) (35,8)	200 (4,7) (13,7)	241 (9,6) (16,5)	25 (3,9) (1,7)	9 (0,8) (0,6)	463 (9,4) (31,7)	1460 (7,4) (100)
D	284 (4,4) (30,3)	200 (4,7) (21,3)	135 (5,4) (14,4)	45 (7,1) (4,8)	7 (0,6) (0,7)	266 (5,4) (28,4)	937 (4,7) (100)
F	923 (14,4) (29,2)	590 (13,8) (18,6)	507 (20,2) (16,0)	82 (12,9) (2,6)	49 (4,5) (1,5)	1015 (20,6) (32,1)	3166 (16,0) (100)
G	857 (13,4) (31,5)	817 (19,2) (30,0)	354 (14,1) (13,0)	112 (17,6) (4,1)	25 (2,3) (0,9)	555 (11,3) (20,4)	2720 (13,7) (100)
H	2692 (42,1) (36,1)	1791 (42,0) (24,0)	764 (30,5) (10,2)	280 (44,1) (3,8)	213 (19,6) (2,9)	1722 (34,9) (23,1)	7462 (37,7) (100)
I	512 (8,0) (33,6)	337 (7,9) (22,1)	195 (7,8) (12,8)	23 (3,6) (1,5)	14 (1,3) (0,9)	441 (8,9) (29,0)	1522 (7,7) (100)
TOTAL	6390 (100) (32,3)	4262 (100) (21,5)	2508 (100) (12,7)	635 (100) (3,2)	1085 (100) (5,5)	4931 (100) (24,9)	19811 (100) (100)

TABLE 11(a)

MAJOR CLINICAL CATEOGRY OF INPATIENTS IN HPSR-A
NUMBER AND PERCENT (%)

MAJOR CLINICAL CATEGORY							
HEALTH FACILITY	MEDICINE	SURGERY	OBSTE- TRICS	GYNAE- COLOGY	PSYCHIA- TRY	PAEDIA- TRICS	TOTAL
MADADENI	236 (64,0) (17,9)	117 (56,0) (8,9)	30 (33,0) (2,3)	39 (81,3) (3,0)	751 (100) (57,0)	144 (50,5) (10,9)	1317 (75,1) (100)
NEW- CASTLE	38 (10,3) (30,6)	36 (17,2) (29,0)	18 (19,8) (14,5)	4 (8,3) (3,2)	0 (0) (0)	28 (9,8) (22,6)	124 (7,1) (100)
UTRECHT	21 (5,7) (52,5)	6 (2,9) (15,0)	3 (3,3) (7,5)	2 (4,2) (5,0)	0 (0) (0)	8 (2,8) (20,0)	40 (2,3) (100)
DUNDEE	74 (20,1) (27,2)	50 (23,9) (14,7)	40 (44,0) (1,1)	3 (6,3) (0)	0 (0) (38,6)	105 (36,8) (100)	272 (15,5)
TOTAL	369 (100) (21,0)	209 (100) (11,9)	91 (100) (5,2)	48 (100) (2,7)	751 (100) (42,8)	285 (100) (16,3)	1753 (100) (100)

TABLE 11(b)

MAJOR CLINICAL CATEGORY OF INPATIENTS IN HPSR-B
NUMBER AND PERCENT (%)

MAJOR CLINICAL CATEGORY							
HEALTH FACILITY	MEDICINE	SURGERY	OBSTE- TRICS	GYNAE- COLOGY	PSYCHIA- TRY	PAEDIA TRICS	TOTAL
SILOAH MISSION	43 (18,6) (53,8)	5 (4,2) (6,2)	9 (4,1) (11,3)	0 (0) (0)	0 (0) (0)	23 (12,5) (28,8)	80 (10,1) (100)
VRYHEID	56 (24,2) (26,2)	74 (62,7) (34,6)	29 (12,7) (13,1)	14 (70,0) (6,5)	0 (0) (0)	42 (22,8) (19,6)	214 (27,1) (100)
MOUNTAIN VIEW	32 (13,9) (76,2)	0 (0) (0)	2 (0,9) (4,8)	0 (0) (0)	0 (0) (0)	8 (4,3) (19,0)	42 (5,3) (100)
CHARLES JOHNSON	100 (43,3) (22,0)	39 (33,1) (8,6)	182 (82,4) (40,0)	6 (20,0) (1,3)	18 (100) (3,7)	111 (60,3) (24,4)	455 (57,5) (100)
TOTAL	231 (100) (29,2)	118 (100) (14,9)	221 (100) (27,9)	20 (100) (2,5)	17 (100) (2,1)	184 (100) (23,3)	791 (100) (100)

TABLE 11(c)

MAJOR CLINICAL CATEGORY OF INPATIENTS IN HPSR-C
NUMBER AND PERCENT (%)

MAJOR CLINICAL CATEGORY							
HEALTH FACILITY	MEDICINE	SURGERY	OBSTE-TRICS	GYNAE-COLOGY	PSYCHIA-TRY	PAEDIA-TRICS	TOTAL
MANGUZI	89 (17,0) (34,8)	48 (24,0) (18,8)	35 (14,5) (13,7)	0 (0) (0)	0 (0) (0)	84 (18,1) (32,8)	256 (17,5) (100)
ITSHELE-JUBA	1 (0,2) (9,1)	2 (1,0) (18,2)	5 (2,1) (45,5)	0 (0) (0)	0 (0) (0)	3 (0,6) (27,3)	11 (0,8) (100)
MSELENI	63 (12,1) (36,2)	24 (12,0) (13,8)	40 (16,6) (23,0)	2 (8,0) (1,1)	0 (0) (0)	45 (9,7) (25,9)	174 (11,9) (100)
BETHESDA	87 (16,7) (46,0)	14 (7,0) (7,4)	44 (18,3) (23,3)	0 (0) (0)	0 (0) (0)	44 (9,5) (23,3)	189 (12,9) (100)
MOSVOLD	76 (14,6) (46,3)	16 (8,0) (9,8)	12 (5,0) (7,3)	2 (8,0) (1,2)	0 (0) (0)	58 (12,5) (35,4)	164 (11,2) (100)
BENEDIC-TINE	96 (18,4) (27,1)	52 (26,0) (14,7)	73 (30,3) (20,6)	7 (28,0) (2,0)	9 (100) (2,5)	117 (25,3) (33,0)	354 (24,2) (100)
HLABISA	110 (21,1) (35,3)	44 (22,0) (14,1)	32 (13,3) (10,3)	14 (56,0) (4,5)	0 (0) (0)	112 (24,2) (35,9)	312 (21,4) (100)
TOTAL	522 (100) (35,8)	200 (100) (13,7)	241 (100) (16,5)	25 (100) (1,7)	9 (100) (0,6)	463 (100) (31,7)	1460 (100) (100)

TABLE 11(d)

MAJOR CLINICAL CATEGORY OF INPATIENTS IN HPSR-D
NUMBER AND PERCENT (%)

MAJOR CLINICAL CATEGORY							
HEALTH FACILITY	MEDICINE	SURGERY	OBSTE-TRICS	GYNAE-COLOGY	PSYCHIA-TRY	PAEDIA-TRICS	TOTAL
LADYSMITH	97 (34,2) (20,6)	163 (81,5) (34,7)	64 (47,4) (13,6)	30 (66,7) (6,4)	0 (0) (0)	116 (43,6) (24,7)	470 (50,2) (100)
ESTCOURT	85 (29,9) (37,8)	28 (14,0) (12,4)	32 (23,7) (14,2)	9 (20,0) (4,0)	2 (28,6) (0,9)	69 (25,9) (30,7)	225 (24,0) (100)
EMMAUS	102 (35,9) (42,1)	9 (4,5) (3,7)	39 (28,9) (16,1)	6 (13,3) (2,5)	5 (71,4) (2,1)	81 (30,5) (33,5)	242 (25,8) (100)
TOTAL	284 (100) (30,3)	200 (100) (21,3)	135 (100) (14,4)	45 (100) (4,8)	7 (100) (0,7)	266 (100) (28,4)	937 (100) (100)

TABLE 11(e)

MAJOR CLINICAL CATEGORY OF INPATIENTS IN HPSR-F
NUMBER AND PERCENT (%)

MAJOR CLINICAL CATEGORY							
HEALTH FACILITY	MEDICINE	SURGERY	OBSTETRICS	GYNAECOLOGY	PSYCHIATRY	PAEDIATRICS	TOTAL
STANGER	110 (11,9) (25,1)	108 (18,3) (24,7)	66 (13,0) (15,1)	0 (0) (0)	0 (0) (0)	154 (15,2) (35,2)	438 (13,8) (100)
EMPANGENI	9 (1,0) (12,2)	32 (5,4) (43,2)	10 (2,0) (23,5)	11 (13,4) (14,9)	0 (0) (0)	12 (1,2) (16,2)	74 (2,3) (100)
UMPHU-MULO	31 (3,4) (30,1)	24 (4,1) (23,3)	25 (4,9) (24,3)	0 (0) (0)	4 (8,2) (3,9)	19 (1,9) (18,4)	103 (3,3) (100)
NKANDLA (23,9)	75 (8,1) (5,4)	17 (2,0) (13,7)	43 (8,5) (1,0)	3 (3,7) (0,3)	1 (2,0) (55,7)	175 (17,2) (100)	314 (9,9) (100)
CATHERINE BOOTH	45 (4,9) (52,9)	8 (1,4) (9,4)	4 (0,8) (4,7)	0 (0) (0)	1 (2,0) (1,2)	27 (2,7) (31,8)	85 (2,7) (100)
MBONGON- TWINI	75 (8,1) (59,5)	9 (1,5) (7,1)	11 (2,2) (8,7)	1 (1,2) (0,8)	2 (4,1) (1,6)	28 (2,8) (22,2)	126 (4,0) (100)
EKOMBE	33 (3,6) (26,6)	5 (0,8) (4,0)	22 (4,3) (17,7)	1 (1,2) (0,8)	1 (2,0) (0,8)	62 (6,1) (50,0)	124 (3,9) (100)
ESHOWE	116 (12,6) (29,4)	96 (16,3) (24,3)	47 (9,3) (11,9)	6 (7,3) (1,5)	1 (2,0) (0,3)	129 (12,7) (32,7)	395 (12,5) (100)
NKONJENI	30 (3,3) (17,1)	30 (5,1) (17,1)	59 (11,6) (33,7)	5 (6,1) (2,9)	17 (34,7) (9,7)	34 (3,3) (19,4)	175 (5,5) (100)
ST MARY'S (MELMOTH)	26 (2,8) (19,9)	13 (2,2) (14,9)	14 (2,8) (16,1)	0 (0) (0)	0 (0) (0)	34 (3,3) (39,1)	87 (2,7) (100)
CEZA	106 (11,5) (48,0)	14 (2,4) (6,3)	48 (9,5) (21,7)	1 (1,2) (0,5)	1 (2,0) (0,5)	51 (4,0) (23,1)	221 (7,0) (100)
CHURCH OF SCOTLAND	67 (7,3) (31,0)	17 (2,9) (7,9)	54 (10,7) (25,0)	3 (3,7) (1,4)	3 (6,1) (1,4)	72 (7,1) (33,3)	216 (6,8) (100)
ST FRANCIS	46 (5,0) (68,7)	7 (1,2) (10,4)	9 (1,8) (13,4)	0 (0) (0)	4 (8,2) (6,0)	1 (0,1) (1,5)	67 (2,1) (100)
NGWELE- ZANA	154 (16,6) (20,8)	210 (35,6) (28,3)	95 (18,7) (12,8)	51 (62,2) (6,9)	14 (18,6) (1,9)	217 (21,4) (29,3)	741 (23,4) (100)
TOTAL	923 (100) (29,2)	590 (100) (18,6)	507 (100) (16,0)	82 (100) (2,6)	49 (100) (1,5)	1015 (100) (32,1)	3166 (100) (100)

TABLE 11(f)

MAJOR CLINICAL CATEGORY OF INPATIENTS IN HPSR-G
Number and Percent (%)

MAJOR CLINICAL CATEGORY							
HEALTH FACILITY	MEDICINE	SURGERY	OBSTE-TRICS	GYNAE-COLOGY	PSYCHIA-TRY	PAEDIA-TRICS	TOTAL
GREYS (26,0)	95 (10,3) (40,7)	149 (17,7) (7,1)	26 (7,2) (6,6)	24 (21,4) (6,3)	23 (92,0) (13,4)	49 (7,9) (100)	366 (12,7)
UNTUN- JAMBILI	57 (6,2) (41,9)	24 (2,9) (17,9)	0 (0) (0)	3 (2,7) (2,2)	1 (4,0) (0,7)	51 (8,3) (37,5)	136 (4,7) (100)
GREYTOWN	40 (4,3) (23,8)	32 (3,8) (19,0)	21 (58,9) (12,5)	5 (4,5) (3,0)	1 (4,0) (0,6)	69 (11,2) (41,1)	168 (5,8) (100)
CHRIST THE KING	38 (4,1) (23,9)	28 (3,3) (17,6)	39 (10,9) (24,5)	2 (1,8) (1,3)	0 (0) (0)	52 (8,4) (32,7)	159 (5,5) (100)
NORTH- DALE	88 (9,5) (34,5)	97 (11,5) (38,0)	32 (8,9) (12,5)	13 (11,6) (5,1)	0 (0) (0)	25 (4,0) (9,8)	255 (8,9) (100)
EDENDALE	297 (32,1) (21,3)	487 (58,0) (34,9)	236 (65,7) (16,9)	65 (58,0) (4,7)	0 (0) (0)	309 (50,0) (22,2)	1394 (48,4) (100)
ST APPO- LLINARIS	67 (7,3) (42,4)	23 (2,7) (14,6)	5 (1,4) (3,2)	0 (0) (0)	0 (0) (0)	63 (10,2) (39,9)	158 (5,5) (100)
DON McKENZIE	242 (28,2) (100)	0 (0) (0)	0 (0) (0)	0 (0) (0)	0 (0) (0)	0 (0) (0)	242 (8,9) (100)
TOTAL	857 (100) (31,5)	817 (100) (30,0)	354 (100) (13,0)	112 (100) (4,1)	25 (100) (0,9)	555 (100) (20,4)	2720 (100) (100)

TABLE 11(g)

MAJOR CLINICAL CATEGORY OF INPATIENTS IN HPSR-H
NUMBER AND PERCENT(%)

MAJOR CLINICAL CATEGORY							
HEALTH FACILITY	MEDICINE	SURGERY	OBSTETRICS	GYNAECOLOGY	PSYCHIATRY	PAEDIATRICS	TOTAL
PRINCE MSHIYENI	75 (298) (20,9)	59 (3,3) (16,5)	65 (8,5) (18,2)	13 (4,6) (3,6)	9 (4,2) (2,5)	137 (8,3) (38,3)	358 (4,9) (100)
ST MARY'S	81 (3,0) (27,8)	10 (0,6) (3,4)	62 (8,1) (21,3)	6 (2,1) (2,1)	0 (0) (0)	132 (7,8) (45,4)	291 (4,0) (100)
KING GEORGE V	808 (30,8) (59,5)	130 (7,4) (9,6)	0 (0) (0)	0 (0) (0)	182 (85,4) (13,4)	239 (14,4) (17,6)	1359 (18,6) (100)
CLAIR-WOOD	198 (7,5) (17,0)	476 (26,9) (41,0)	102 (13,4) (8,8)	74 (25,4) (6,4)	0 (0) (0)	312 (18,8) (26,9)	1162 (15,9) (100)
OSINDISWENI	245 (931) (50,7)	62 (3,5) (12,8)	31 (4,1) (6,4)	15 (5,4) (3,1)	0 (0) (0)	130 (7,8) (26,9)	483 (6,6) (100)
R.K. KHAN	149 (5,7) (36,8)	132 (7,5) (32,6)	44 (5,8) (10,9)	35 (12,5) (8,6)	0 (0) (0)	45 (2,7) (11,1)	405 (5,3) (100)
ADDINGTON	181 (6,9) (33,8)	193 (10,9) (36,0)	44 (5,8) (8,2)	20 (7,1) (3,7)	0 (0) (0)	98 (5,9) (18,3)	536 (7,3) (100)
APPELS-BOSCH/MONTEBELLO	146 (5,6) (45,5)	30 (1,7) (9,3)	68 (9,0) (21,2)	3 (1,1) (0,9)	3 (1,4) (0,9)	71 (4,2) (22,1)	321 (4,4) (100)
McCORD ZULU	89 (3,4) (36,2)	42 (2,4) (17,1)	52 (6,8) (21,1)	7 (2,5) (2,8)	0 (0) (0)	56 (3,4) (22,8)	246 (3,4) (100)
HILLCREST	192 (7,4) (100)	0 (0) (0)	0 (0) (0)	0 (0) (0)	0 (0) (0)	0 (0) (0)	192 (2,6) (100)
WENTWORTH	87 (3,3) (36,3)	100 (5,7) (41,7)	0 (0) (0)	0 (0) (0)	0 (0) (0)	53 (3,2) (22,1)	240 (3,3) (100)
KING EDWARD VIII	374 (14,2) (21,9)	534 (30,2) (31,2)	291 (38,3) (17,0)	107 (38,2) (6,3)	19 (8,9) (1,1)	386 (23,3) (22,6)	1711 (23,4) (100)
TOTAL	2625 (100) (35,9)	1768 (100) (24,2)	759 (100) (104,2)	280 (100) (3,8)	213 (100) (2,9)	1659 (100) (22,7)	7304 (100) (100)

TABLE 11(h)

MAJOR CLINICAL CATEGORY OF INPATIENTS IN HPSR-I
NUMBER AND PERCENT (%)

MAJOR CLINICAL CATEGORY							
HEALTH FACILITY	MEDICINE	SURGERY	OBSTE- TRICS	GYNÆ- COLOGY	PSYCHIA- TRY	PAEDIA- TRICS	TOTAL
GJ CROOKES	92 (18,0) (37,1)	75 (22,3) (30,2)	39 (20,0) (15,7)	0 (0) (0)	0 (0) (0)	42 (9,5) (16,9)	248 (16,3) (100)
MURCHI- SON	128 (25,0) (45,4)	39 (11,6) (13,8)	33 (16,9) (11,7)	0 (0) (0)	1 (7,1) (0,4)	81 (18,4) (28,7)	282 (18,5) (100)
PORT SHEPSTONE	89 (17,4) (31,0)	95 (28,2) (33,1)	39 (20,0) (13,6)	12 (52,2) (4,2)	11 (78,6) (3,8)	41 (9,3) (14,3)	287 (18,9) (100)
USHER MEMORIAL	49 (9,6) (35,3)	34 (10,1) (24,5)	12 (6,2) (8,6)	4 (17,4) (2,9)	0 (0) (0)	40 (9,1) (28,8)	139 (9,1) (100)
TAYLOR BEQUEST	83 (16,2) (32,3)	41 (12,2) (16,0)	32 (16,4) (12,5)	4 (17,4) (1,6)	0 (0) (0)	97 (22,0) (37,7)	257 (16,9) (100)
ASSISSI	27 (5,3) (24,1)	14 (4,1) (12,5)	7 (3,6) (6,3)	3 (13,0) (2,7)	1 (7,1) (0,9)	60 (13,6) (53,6)	112 (7,4) (100)
ST ANDREWS	44 (8,6) (22,3)	39 (11,6) (19,8)	33 (16,9) (16,8)	0 (0) (0)	1 (7,1) (0,5)	80 (18,1) (40,6)	197 (12,9) (100)
TOTAL	512 (100) (33,6)	337 (100) (22,1)	195 (100) (12,8)	23 (100) (1,5)	14 (100) (0,9)	441 (100) (29,0)	1522 (100) (100)

EXPLANATION OF TABLE 12

COLUMN:- 1 - shows the HPSR whose Catchment Population is under consideration

2-8 give the numbers of the catchment population from the given HPSR attending the Health facilities in the HPSRs of Column 1.

Row:- 1 - shows the HPSR of Residence of users of the Health facilities

2-8 - show the HPSR of residence of catchment populations and percent (%) of users of health facilities in given HPSR

eg. Row 5 (HPSR-D), Column 4 (HPSR of residence - C) shows 313. This
(0,1)

implies that of the total catchment population for HPSR-D (417411), 313 (0,1%) were residents of HPSR-C (column 4).

TOTAL - COLUMN:- Indicates the catchment populations of an HPSR

eg Row 7 (HPSR-G) had a catchment population of 101587.

- **ROW:-** indicates the catchment population number and percent (%) who live in the particular HPSR

eg Column 3 (HPSR-B) supplied a catchment population of 291741 (4,2%) of the total catchment population of 6899124.

TABLE 12

CATCHMENT POPULATION OF HPSRs ACCORDING TO HPSR OF RESIDENCE OF USERS
OF HEALTH FACILITIES

HPSR	HPSR OF RESIDENCE OF USERS								
	A	B	C	D	F	G	H	I	TOTAL
A	*400250 (72,7)	38391 (7,0)	23729 (4,3)	53059 (9,6)	14589 (2,6)	14911 (2,7)	5467 (1,0)	418 (0,1)	550894 (100)
B	5103 (2,1)	*203580 (83,5)	28842 (11,8)	0 (0)	6117 (2,5)	0 (0)	0 (0)	267 (0,1)	243909 (100)
C	127 (0,1)	5864 (1,2)	*473859 (97,7)	423 (0,1)	4754 (1,0)	154 (0,1)	0 (0)	0 (0)	485181 (100)
D	99688 (2,4)	7007 (1,7)	313 (0,1)	*398187 (95,3)	400 (0,1)	877 (0,2)	337 (0,1)	322 (0,1)	417411 (100)
F	1146 (0,1)	18534 (2,0)	41789 (4,5)	800 (0,1)	*855162 (92,1)	1488 (0,2)	8546 (0,9)	1106 (0,1)	928571 (100)
G	92772 (9,1)	8061 (0,8)	2478 (0,2)	20819 (2,0)	48139 (4,7)	*663882 (65,4)	56528 (5,6)	123195 (12,2)	1015874 (100)
H	22382 (0,8)	10304 (0,4)	54871 (1,9)	13464 (0,5)	202272 (1,2)	350850 (12,4)	*2050895 (72,7)	116372 (4,1)	2821610 (100)
I	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	5033 (1,2)	14394 (3,3)	*416247 (95,5)	435647 (100)
TOTAL	531948 (7,7)	291741 (4,2)	625881 (9,1)	486752 (7,1)	1131433 (16,4)	1037275 (15,0)	2136167 (31,0)	657927 (9,5)	*6899124 (100)

TABLE 13

HPSR OF RESIDENCE OF USERS ACCORDING TO HPSR OF HOSPITAL USED: PERCENT

HPSR	HPSR OF RESIDENCE OF USERS								
	A	B	C	D	F	G	H	I	TOTAL
A	*75,2	13,2	3,8	10,9	1,3	1,4	0,3	0,1	8,0
B	1,0	*69,8	4,6	0	0,5	0	0	0,1	3,5
C	0,1	2,0	*75,7	0,1	0,4	0,1	0	0	7,0
D	1,9	2,4	0,1	81,8	0,1	0,1	0,1	0,1	6,1
F	0,2	6,4	6,7	0,2	*75,6	0,2	0,5	0,2	13,5
G	17,5	2,8	0,4	4,3	4,3	*64,0	2,7	18,7	14,7
H	4,2	3,5	8,8	2,8	17,9	33,8	*96,1	17,7	40,9
I	0	0	0	0	0	0,5	0,7	*63,3	6,3
TOTAL	100	100	100	100	100	100	100	100	100

Explanation of Tables 14(a-h)

These tables indicate the HPSR of residence of the catchment populations (potential users) of each individual hospital.

Columns: Indicate the HPSR of Residence of the potential users.

Rows: The name of the hospital is given.

: Beside each population number is a percent - this is the percentage of the population of the HPSR in the column which attends a particular hospital, eg Table 14(a) - Utrecht Hospital (Row 4) reads 20 723 (5,1) in Column 2 (99,2)

(HPSR-A). This indicates that the inpatient catchment population from HPSR-A for Utrecht Hospital is 20 723 or 5,1% of HPSR-A's population which uses hospitals in HPSR-A attend Utrecht Hospital.

: Below each catchment number is another percent figure. This is the percentage of the catchment population of an individual hospital which resides in the particular HPSR, eg Table 14(a) - Dundee Hospital (Row 5) reads 6331 (16,5) for column 3 (HPSR-B). This implies that 6331 residents of (7,2)

HPSR-B are potential users of Dundee Hospital and this number represents 7,2% of Dundee Hospital's total inpatient catchment population.

TABLE 14(a)

CATCHMENT POPULATION AND CROSS BOUNDARY FLOW ACCORDING TO HEALTH FACILITY IN
HPSR-A
NUMBER AND PERCENT %

HEALTH FACILITY	A	B	HEALTH PLANNING SUB-REGION OF RESIDENCE				H	I	TOTAL
			C	D	F	G			
MADADENI	304446 (72,6)	31378 (7,5)	23729 (5,7)	23901 (5,7)	14589 (3,5)	14991 (3,6)	5467 (1,3)	418 (0,1)	418919 (100)
NEWCASTLE PROV.	23238 (97,8)	516 (2,2)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	23754 (100)
UTRECHT	20723 (99,2)	166 (0,8)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	20889 (100)
DUNDEE	51843 (59,4)	6331 (7,2)	0 (0)	29158 (33,4)	0 (0)	0 (0)	0 (0)	0 (0)	87332 (100)
TOTAL	400250 (72,7)	38391 (7,0)	23729 (4,3)	53059 (9,6)	14589 (2,6)	14991 (2,7)	5467 (1,0)	418 (0,1)	550894 (100)

TABLE 14(b)

CATCHMENT POPULATION AND CROSS BOUNDARY FLOW ACCORDING TO HEALTH FACILITY IN
HPSR-B
NUMBER AND PERCENT (%)

HEALTH FACILITY	HEALTH PLANNING SUB-REGION OF RESIDENCE ON USERS OF HEALTH FACILITIES						H	I	TOTAL
	A	B	C	D	F	G			
SILOAH MISSION	0 (0)	8770 (33,2)	16291 (61,6)	0 (0)	1108 (4,2)	0 (0)	0 (0)	267 (1,0)	26436 (100)
VRYHEID PROV.	9 (0)	50840 (86,4)	7177 (12,2)	0 (0)	812 (1,4)	0 (0)	0 (0)	0 (0)	58829 (100)
MOUNTAIN VIEW	196 (1,5)	6018 (46,4)	5374 (41,6)	9 (0)	1338 (10,4)	0 (0)	0 (0)	0 (0)	12926 (100)
CHARLES JOHNSON	4907 (3,4)	137952 (94,7)	0 (0)	0 (0)	2859 (2,0)	0 (0)	0 (0)	0 (0)	145718 (100)
TOTAL	5103 (2,1)	203580 (83,5)	28842 (11,8)	0 (0)	6117 (2,5)	0 (0)	0 (0)	267 (0,1)	243909 (100)

TABLE 14(c)

CATCHMENT POPULATION AND CROSS BOUNDARY FLOWS ACCORDING TO HEALTH FACILITY IN
HPSR-C
NUMBER AND PERCENT (%)

HEALTH FACILITY	A	HEALTH PLANNING SUB-REGION OF RESIDENCE OF USERS OF HEALTH FACILITIES							I	TOTAL
		B	C	D	F	G	H			
MANGUZI HOSPITAL	0 (0)	0 (0)	57721 (99,9)	0 (0)	69 (0,1)	0 (0)	0 (0)	0 (0)	0 (0)	57790 (100)
ITSHELEJUBA HOSPITAL	0 (0)	0 (0)	67589 (100)	9 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	67589 (100)
MSELENI HOSPITAL	0 (0)	0 (0)	39906 (100)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	39906 (100)
BETHESDA HOSPITAL	0 (0)	0 (0)	44729 (99,5)	0 (0)	208 (0,5)	0 (0)	0 (0)	0 (0)	0 (0)	44937 (100)
MOSVOLD HOSPITAL	0 (0)	0 (0)	37751 (100)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	37751 (100)
BENEDICTINE HOSPITAL	127 (0,1)	5531 (5,3)	97415 (92,5)	423 (0,4)	1773 (1,7)	0 (0)	0 (0)	0 (0)	0 (0)	105269 (100)
HLABISA HOSPITAL	0 (0)	333 (0,3)	128748 (97,6)	0 (0)	2704 (2,0)	154 (0,1)	0 (0)	0 (0)	0 (0)	131939 (100)
TOTAL	127 (0,1)	5864 (1,2)	473859 (97,7)	423 (0,1)	4754 (1,0)	154 (0,1)	0 (0)	0 (0)	0 (0)	485181 (100)

TABLE 14(d)

CATCHMENT POPULATION AND CROSS BOUNDARY FLOW ACCORDING TO HEALTH FACILITY IN
HPSR-D
NUMBER AND PERCENT (5)

HEALTH FACILITIES IN HPSR-D	HEALTH PLANNING SUB-REGION OF RESIDENCE OF USERS OF HEALTH FACILITIES								TOTAL
	A	B	C	D	F	G	H	I	
LADYSMITH HOSPITAL	9968 (4,8)	7007 (3,4)	313 (0,2)	186634 (91,0)	232 (0,1)	258 (0,1)	337 (0,2)	322 (0,2)	205071 (100)
ESTCOURT HOSPITAL	0 (0)	0 (0)	0 (0)	174322 (99,6)	168 (0,1)	619 (0,3)	0 (0)	0 (0)	175109 (100)
EMMAU'S HOSPITAL	0 (0)	0 (0)	0 (0)	37231 (100)	0 (0)	0 (0)	0 (0)	0 (0)	37231 (0)
TOTAL	9968 (2,4)	7007 (1,6)	313 (0,1)	398187 (95,4)	400 (0,1)	877 (0,2)	337 (0,1)	322 (0,1)	417411 (100)

TABLE 14(e)

CATCHMENT POPULATION AND CROSS BOUNDARY FLOW ACCORDING TO HEALTH FACILITY IN
HPSR-F
NUMBER AND PERCENT (%)

HEALTH FACILITY	A	B	C	D	F	G	H	I	TOTAL
STANGER	127 (0,2)	0 (0)	313 (0,4)	0 (0)	76933 (91,8)	0 (0)	6380 (7,6)	0 (0)	83753 (100)
EMPANGENT	0 (0)	332 (2,3)	445 (3,1)	0 (0)	13381 (94,6)	0 (0)	0 (0)	0 (0)	14158 (100)
UMPHUMULO	0 (0)	0 (0)	0 (0)	0 (0)	36337 (98,4)	132 (0,4)	284 (0,8)	139 (0,4)	36892 (100)
NKANDLA	127 (0,2)	2871 (3,9)	313 (0,4)	0 (0)	69092 (94,2)	528 (0,7)	418 (0,6)	0 (0)	73349 (100)
CATHERINE BOOTH	0 (0)	0 (0)	313 (2,8)	0 (0)	10990 (97,2)	0 (0)	0 (0)	0 (0)	11303 (100)
ST MARY'S (MELMOTH)	0 (0)	2726 (19,1)	0 (0)	0 (0)	11520 (80,9)	0 (0)	0 (0)	0 (0)	14246 (100)
MBONGOLWANI	0 (0)	0 (0)	0 (0)	0 (0)	33750 (100)	0 (0)	0 (0)	0 (0)	33750 (100)
CHURCH OF SCOTLAND	0 (0)	0 (0)	0 (0)	0 (0)	59739 (100)	0 (0)	0 (0)	0 (0)	59739 (100)
EKOMBE	0 (0)	0 (0)	0 (0)	0 (0)	28624 (78,9)	0 (0)	327 (1,1)	0 (0)	28951 (100)
NKONIENI	0 (0)	2063 (4,3)	1167 (2,6)	0 (0)	42422 (92,9)	0 (0)	0 (0)	0 (0)	45652 (100)
CEZA	0 (0)	9655 (17,3)	9155 (16,3)	0 (0)	37215 (66,4)	0 (0)	0 (0)	0 (0)	56025 (100)
ESHOWE	0 (0)	389 (0,3)	1516 (1,3)	800 (0,8)	96092 (96,9)	0 (0)	327 (0,3)	0 (0)	99124 (100)
NGWELEZANA	892 (0,3)	498 (0,2)	27629 (7,8)	0 (0)	322271 (91,1)	570 (0,2)	810 (0,2)	967 (0,2)	353637 (100)
ST FRANCIS'	0 (0)	0 (0)	938 (3,2)	0 (0)	16794 (93,4)	258 (1,4)	0 (0)	0 (0)	17990 (100)
TOTAL	1146 (0,1)	18534 (2,0)	41789 (4,3)	800 (0,1)	855162 (92,1)	1488 (0,2)	8546 (0,9)	1106 (0,1)	928571 (100)

TABLE 14(f)

CATCHMENT POPULATION AND CROSS BOUNDARY FLOW ACCORDING TO HEALTH FACILITY IN
HPSR-G
NUMBER AND PERCENT (%)

HEALTH FACILITY	A	HEALTH PLANNING SUB-REGION OF RESIDENCE OF USERS OF HEALTH FACILITIES							I	TOTAL
		B	C	D	F	G	H			
GREYS	12239 (12,8)	1032 (1,0)	0 (0)	5228 (5,5)	624 (0,7)	72440 (75,5)	801 (0,8)	3526 (3,7)		95890 (100)
CHRIST THE KING	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	26754 (18,6)	0 (0)	117443 (81,4)		144197 (100)
NORTHDALÉ	1039 (1,6)	0 (0)	0 (0)	2036 (3,2)	0 (0)	60778 (94,2)	327 (0,5)	322 (0,5)		64502 (100)
GREYTOWN	25025 (38,0)	0 (0)	288 (0,4)	922 (1,4)	12326 (18,8)	26597 (40,4)	655 (1,0)	0 (0)		65813 (100)
EDENDALE	30659 (5,8)	7029 (1,3)	2190 (0,4)	12018 (2,3)	2647 (0,5)	468347 (88,5)	4458 (0,8)	1904 (0,4)		529252 (100)
ST APPO-LINARIS	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	76031 (99,6)	0 (0)	322 (0,4)		76359 (100)
UNTUNJAMBU	23810 (41,6)	0 (0)	0 (0)	615 (1,1)	29644 (51,8)	3163 (5,5)	0 (0)	0 (0)		57232 (100)
DON McKENZIE	0 (0)	0 (0)	0 (0)	0 (0)	2898 (4,9)	5803 (9,8)	50287 (85,3)	0 (0)		58988 (100)
TOTAL	92772 (8,5)	8061 (0,7)	2478 (0,2)	20819 (1,9)	48139 (4,4)	739913 (67,7)	56528 (5,2)	123517 (11,3)		1092233 (100)

TABLE 14(g)

CATCHMENT POPULATION AND CROSS BOUNDARY FLOW ACCORDING TO HEALTH FACILITY IN
HPSR-H
NUMBER AND PERCENT (%)

HEALTH FACILITIES	A	HEALTH PLANNING SUB-REGION B	C	D	RESIDENCE OF F	G	H	I	TOTAL
OSINDISWENT	0 (0)	0 (0)	0 (0)	0 (0)	30156 (21,8)	1785 (1,3)	103597 (74,9)	2697 (2,0)	138235 (100)
PRINCE MSHYENI	892 (0,5)	0 (0)	0 (0)	0 (0)	1431 (0,9)	1033 (0,6)	132107 (81,1)	27471 (16,9)	162934 (100)
ADDINGTON	1464 (0,9)	0 (0)	0 (0)	0 (0)	1961 (1,2)	1291 (0,8)	156508 (94,0)	3187 (3,1)	166411 (100)
KING GEORGE	4137 (1,0)	332 (0,1)	3737 (0,9)	3245 (0,8)	45561 (10,9)	47040 (11,2)	296438 (70,5)	19331 (4,6)	419831 (100)
CLAIRWOOD	1096 (0,2)	1698 (0,3)	4007 (0,8)	2204 (0,5)	17532 (3,4)	11726 (2,3)	447427 (87,8)	23988 (4,7)	509678 (100)
ST MARY'S (MARIANHILL)	0 (0)	0 (0)	0 (0)	732 (0,5)	708 (0,5)	114026 (77,2)	31980 (21,6)	279 (0,2)	147725 (100)
R.K. KAHN	0 (0)	0 (0)	0 (0)	0 (0)	3874 (1,7)	1033 (0,4)	225968 (97,3)	1394 (0,6)	232267 (100)
MONTEBELLO	0 (0)	0 (0)	0 (0)	0 (0)	50237 (36,3)	59195 (42,7)	29053 (21,0)	0 (0)	138487 (100)
McCORD ZULU	0 (0)	0 (0)	0 (0)	0 (0)	1050 (1,1)	389 (0,4)	91725 (98,1)	418 (0,4)	93582 (100)
HILLCREST	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	28041 0 (100)	28041 (0)	(100)
WENTWORTH	1532 (2,3)	2138 (3,0)	870 (1,3)	1137 (1,6)	8108 (11,4)	9453 (13,3)	42315 (59,3)	5518 (7,8)	71191 (100)
KING EDWARD VIII	13341 (2,1)	6136 (1,0)	46237 (7,3)	6146 (1,0)	41654 (6,5)	27852 (4,4)	465734 (73,0)	29767 (4,7)	636867 (100)
TOTAL	22582 (0,8)	10304 (0,4)	54871 (2,0)	13464 (0,5)	202272 (7,4)	274819 (10,0)	2050893 (74,7)	116050 (4,2)	2745251 (100)

TABLE 14(h)

CATCHMENT POPULATION AND CROSS BOUNDARY FLOW ACCORDING TO HEALTH FACILITY IN
HPSR-I
NUMBER AND PERCENT (%)

HEALTH FACILITIES	A	HEALTH PLANNING SUB-REGION OF RESIDENCE OF USERS OF HEALTH FACILITIES							I	TOTAL
		B	C	D	F	G	H			
G-J CROOKES	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	3739 (5,7)	14067 (21,3)	48237 (73,0)		66043 (100)
MURCHISON	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	265 (0,2)	0 (0)	136713 (99,8)		136978 (100)
PORT SHPESTONE	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	794 (0,6)	327 (0,3)	126790 (99,1)		127911 (100)
USHER MEMORIAL	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	18477 (100)		18477 (100)
ASSISSI	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	72215 (100)		72215 (100)
TAYLOR BEQUEST	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	5479 (100)		5479 (100)
ST ANDREWS	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	235 (2,7)	0 (0)	8336 (97,3)		8571 (100)
TOTAL	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	5033 (1,2)	14394 (3,3)	416247 (95,5)		435674 (100)

ANNEXURE A

PROTOCOLCATCHMENT POPULATIONS OF PUBLIC HOSPITALS IN
NATAL/KWAZULU (INPATIENTS)1. PURPOSE

To determine, in respect of inpatients, the Catchment Populations of hospitals in Natal/KwaZulu.

2. OBJECTIVES

- a. To identify hospitals with inpatient facilities in Natal/KwaZulu under the jurisdiction of the Health Authorities.
- b. To determine the number and location of each of the above hospitals according to magisterial district and Health Planning Sub Region (HPSR).
- c. To determine the populations of all magisterial districts and HPSR's in Natal/KwaZulu.
- d. To determine the usage of hospital inpatient facilities according to Health Planning Subregion of Residence, source of referral and major clinical categories.
- e. To determine the inpatient Catchment Population of each hospital in Natal/KwaZulu.
- f. To submit recommendations, where appropriate in respect of future planning of hospital facilities.
- g. To ascertain the extent of cross-boundary flow according to HPSR.

3. CRITERIA

- a. Catchment Population: The size of the population served by the hospital.
- b. KwaZulu: The area administered by the KwaZulu Government.
- c. Natal: The area administered by the Natal Provincial Administration.
- d. Health Authorities: Department of National Health and Population Development (NAT.HEALTH).

KwaZulu Department of Health and Welfare
(K-Z HEALTH).

Natal Provincial Administration (NPA).

- e. Hospitals: Excludes Private Hospitals and special care institutions.
- f. Health Planning Sub Region: A geographically defined area by the Natal/KwaZulu Health Liaison Committee, which will constitute an operational unit for the planning, coordination, delivery, and management of health services.

4. REDUCTION OF BIAS

All public hospitals in Natal/KwaZulu will be included in the study. (TABLE 1).

All inpatients present in each hospital at midnight on the day of the study will be included.

No control group will be necessary as this is a descriptive study.

Interviewing: Standard Collation sheets will be utilised to collect data in respect of Racial identity, magisterial district of residence, source of referral, and major clinical categories.

Nursing personnel will be briefed by senior personnel of the hospital concerned with regard to the conducting of the survey.

5. METHOD

- a. Authority to collect, collate, analyse and produce a report will be obtained from the Natal/KwaZulu Health Services Liaison Committee.
- b. The survey will be coordinated by the Department of Community Health who designed the collation and instruction sheets. (ANNEXURE A+B)
- c. The collation sheets will be distributed to the Medical Superintendents of each hospital concerned to implement the study of their respective hospitals.
- d. The inpatients will be interviewed by nursing personnel, and relevant data will be recorded directly onto the collation.
- e. The study will be conducted at midnight on a single night in each hospital. Each inpatient will be included in the study.
- f. Completed collation sheets will be submitted to the Department of Community Health.
- g. Collected data will be assessed for completeness and incomplete forms corrected as necessary.
- h. Population data will be obtained from the 1985 decennial National Census.

6. DATA SOURCES

Data will be collected from hospitals administered by the three health authorities (see criteria above).

Population statistics will be obtained from the 1985 Census.

7. LITERATURE SURVEY

Appraisal of relevant literature will be ongoing during the course of the research study.

8. COLLATION AND ANALYSIS OF DATA

Data collected will be collated manually and analysed using a microcomputer. Presentation of data will employ standard statistical procedures.

9. PUBLICATION OF FINDINGS

1. An initial report of the findings of the study will be submitted to the Natal/KwaZulu Health Liaison Committee.
2. A final report will be prepared for submission to the College of Medicine of South Africa in partial fulfilment of the requirements of Part 1 of the Fellowship of the Faculty of Community Health of the College of Medicine.

10. BARRIER DATES

1. Completion of research protocol : 01.02.87
2. Obtaining of authorities : 31.01.87
3. Collection of data : 31.03.87
4. Collation of data : 30.05.87
5. Submission of initial report : 28.03.88
6. Submission of final report : 31.06.88

P. EMERSON

DEPARTMENT OF COMMUNITY HEALTH

UNIVERSITY OF NATAL

JOINT INQUIRY INTO CATCHMENT POPULATIONS OF HOSPITALS IN NATAL AND KWAZULU

At present the catchment populations of hospitals in Natal and KwaZulu are unknown. As knowledge of catchment populations is essential to objective planning of health facilities the Department of National Health and Population Development, the Department of Health and Welfare (KwaZulu), and the Department of Hospital Services are committed to obtaining this information. Your assistance in this joint planning exercise would be greatly appreciated.

The catchment population is the proportion of the population of each magisterial district which uses a particular hospital compared with other hospitals.

To determine the catchment population all that is required is for each hospital to record the Hospital No., Racial Group, Magisterial District of normal residence, Source of Referral and Major Clinical Categories of each inpatient.

For reasons of uniformity it is preferable that all information be submitted in respect of the same period and it is considered that 18 February 1987 would be most suitable for this purpose.

So that additional staff workload is reduced to an absolute minimum collation sheets have been specially designed for each hospital and require only the entry of a tick in each of five columns. It should be possible for existing staff in hospitals to do this without assistance for the day concerned. An example of how the columns of the collation sheet are to be marked is shown on the attached Instruction Sheet.

The adequate briefing, by senior personnel, of staff engaged in this simple task is essential to the success of this undertaking. The importance of this information for planning cannot be overemphasized and your assistance and co-operation in this regard would be greatly appreciated.

Should you have any queries in regard to the above please contact Dr K Naidoo or Dr P Emerson of the Department of Community Health of the University of Natal, Durban (Telephone 254211 Ext 287) who will be co-ordinating this inquiry.

Yours faithfully,

CO-ORDINATOR

JOINT INQUIRY INTO CATCHMENT POPULATIONS OF HOSPITALS IN NATAL AND KWAZULU: INPATIENTS

INSTRUCTION SHEET

A. Instructions to staff responsible for filling in the forms:

1. Information on every inpatient in your institution at midnight on 18 February 1987 must be collected.
2. A separate row should be filled in for each person, eg If the total number of inpatients on 18 February 1987 is 205, 10 forms plus 5 rows of the eleventh form should be completed. Each form has 20 rows and one row is used for each inpatient.
3. For each inpatient you should enter the admission number and tick the appropriate column.
eg
 - (1) Racial group - tick the racial group to which the person belongs.
 - (2) Magisterial District of normal residence - this refers to the persons home address where they spend most of their time.
 - (3) Source of Referral - this refers to the person or institution who referred the patient or client to you.
 - (4) Major clinical categories - this refers to the clinical group into which the patient is diagnosed.
 - (5) Enter ENT, Eyes, Orthopaedics, maxillo facilla and dental conditions as surgical and skin conditions as medical.

NB: Do not include boarder status patients in the study.

B. Examples:

The following examples serve to illustrate how the necessary information should be recorded onto the forms provided. Clairwood Hospital in Durban is used as an example.

Patient 1: Mrs Zulu, an African female, aged 27 years, is an inpatient in the medical ward on 18 February 1987 without any referral. She became ill whilst visiting her relatives in Chesterville. Her normal place of residence is Hlabisa. Her hospital number is 8639/87.

Patient 2: Sybil Blair, a Coloured female, aged 10 years, was referred by a clinic to Clairwood Hospital. She lives in Wentworth, Durban. Her hospital number is 1395/84.

INQUIRY INTO CATCHMENT POPULATIONS OF HOSPITALS IN NATAL AND KWAZULU: INPATIENTS

NAME OF AUTHORITY: DEPARTMENT OF HOSPITAL SERVICES

NAME OF HOSPITAL: CLAIRWOOD

For each patient in hospital at midnight on 18 February 1987 please tick the appropriate columns indicating the hospital number, race, magisterial district of normal residence, the source of referral and major clinical category.

HOSPITAL NUMBER	RACIAL GROUP (TICK ONE)				MAGISTERIAL DISTRICT OF NORMAL RESIDENCE (TICK ONE OR SPECIFY)										SOURCE OF REFEFFAL (TICK ONE)					MAJOR CLINICAL CATEGORIES					
	A F R I C A N	C O L O U R E D	I N D I A N	W H I T E	D U R B A N	I N A N D A	N T U Z U M A	U M Z I N T O	N D W E D W E	M L A Z I	P I N E T O W N	C H A T S W O R T H	E M B U M B U L U		S E L F	O T H E R H O S P I T A L	C L I N I C	P R I V A T E D O C T O R	O T H E R	AGE (>=12YRS)		<12 YRS			
																				M E D I C I N E	S U R G E R Y	O B S T E T R I C S	G Y N A E C C O L O G Y	P S Y C H I A T R Y	P A E D I A T R I C S

INQUIRY INTO CATCHMENT POPULATIONS OF HOSPITALS IN NATAL AND KWAZULU: INPATIENTS

NAME OF AUTHORITY: _____

NAME OF HOSPITAL: _____

For each patient in hospital at midnight on 18 February 1987 please tick the appropriate columns indicating the hospital number, race, magisterial district of normal residence, the source of referral and major clinical category.

[illegible]

ANNEXURE D

CALCULATING THE INPATIENT CATCHMENT POPULATION OF A HOSPITAL

The catchment population of a hospital is calculated by determining the proportion of each component population of a region which utilises that hospital. By applying these proportions to the sizes of the component populations, the size of the potential user (catchment) population of a hospital can be determined.⁽³⁾

The following abbreviations may be used to represent the required data:

C_A^X = The number of inpatients at hospital "X" from health Planning Sub-region A. (HPSR-A)

C_A^T = The total number of attendances at all hospitals by residents of HPSR-A.

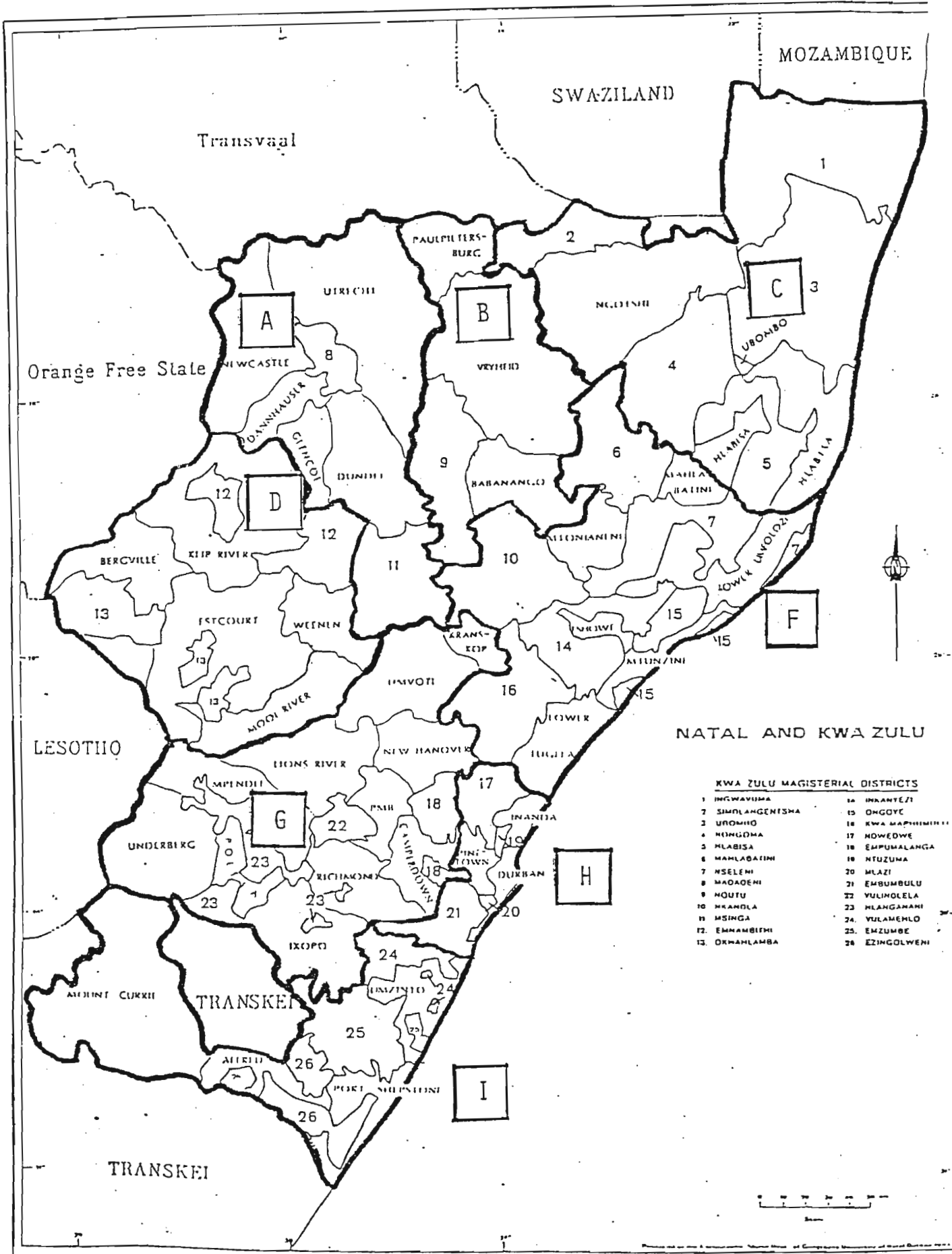
P_A = The population of HPSR-A.

K_A^X = Catchment population component of hospital "X" attributable residents of HPSR-A

$$K_A^X = \frac{C_A^X}{C_A^T} * P_A$$

The total inpatient catchment population of a hospital is the sum of these catchment population components. If HPSRs A to I (excluding E) are considered the total inpatient catchment population of hospital "X" may be represented as follows:

$$K^X = K_A^X + K_B^X + K_C^X + K_D^X + K_F^X + K_G^X + K_H^X + K_I^X$$



Source: Med-Design.



HOSPITAL AUTHORITY KEY

S = STATE (NATIONAL HEALTH AND POPULATION DEVELOPMENT)

Z = KWAZULU DEPARTMENT OF HEALTH

N = NATAL PROVINCIAL ADMINISTRATION

P = PRIVATE

MAJOR ROADS IN NATAL AND KWAZULU

