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In this chapter a spectrum of data sources available to public health decision makers are presented. The intention is not only to describe the data sources, but also to identify gaps in information availability and integration.





Household Surveys on Health Service Utilisation

October Household Surveys (OHS) of 1994 - 1999

Background

Statistics South Africa conducted these surveys annually every October from 1994 to 1999, except for 1996 when the survey was conducted in November due to the census which was conducted in October. This survey was replaced by the Labour Survey. The sample size was 30 000 households for most years except for 1996 when the sample was reduced to 16 000 households. These surveys collected information on access to health care and asked questions on health service utilisation for each of the households visited. This section asked questions on which health facility the members of households report to when they are ill, whether they would go to a public or a private health care centre or other facilities. The distance from the dwelling to this health centre and the duration it takes for them to reach it is asked, and the closest public hospital and social welfare service point is also identified. In addition, the proportion of the population covered by medical insurance is also identified.¹

Availability

These data are available free from South African Data Archives (SADA). It can be accessed from their web site, which is <http://www.nrf.ac.za/sada>

Demographic and Health Survey (DHS) 1998

Background

This survey was conducted by the Department of Health with the help from the Medical Research Council and Macro-international. DHS is a survey conducted in a number of developing countries, some of which have completed three waves. South Africa conducted wave 1 in 1998 and currently plans for the second wave. This is a survey whose main respondents were women aged between 15 and 49. These 11 735 women were identified from the 12 638 households interviewed. In addition, this survey collected information on adult health from 13 827 adults.² The results of this survey are intended to assist policy makers and programme managers in evaluating and designing programmes and strategies for improving health services in the country. The survey collected information on maternal and child health, and adult health.

Availability

DHS is available on line from the Department of Health web site: <http://www.doh.gov.za> or on order from the Measure DHS web-page: <http://www.measuredhs.com/>



A National Survey of Health Inequalities in South Africa

Background

This nationally representative survey of 4 000 households, was commissioned by the Henry J. Kaiser Family Foundation and conducted by the Community Agency for Social Enquiry (CASE) in June of 1994. The survey was to gather baseline information on health indicators and perceptions among South Africans. The indicators collected are: health-status, access to health-care, utilisation of services, quality of care and health outcomes.

Availability

The report from this survey is available from Health Systems Trust, and can be downloadable from their web site <http://www.hst.org.za>. The data set should be requested directly from the Henry J. Kaiser Family Foundation.

Table 1: Summary of household surveys

Survey title	Brief description	Availability
National Survey of Health Inequalities in South Africa 1994	This is a household survey of 4 000 households.	The data should be requested from Henry J. Kaiser Family Foundation
October Household Survey (OHS) 1995 - 1999	Conducted by Statistics South Africa. The survey interviewed 16 000 households in 1996 and 30 000 households in other years.	This data set is available from South Africa Data Archives (SADA)
Demographic and Health Survey 1998	12 247 households with 11 735 women between 15 and 49 of age interviewed.	Available from Macro DHS+
Other surveys	SADA has a variety of household and individual based surveys on health and other social issues. Most of those not mentioned here are not national surveys, but are conducted provincially or in smaller areas. These are very useful for evaluating health care in specific areas.	The SADA office can be accessed from www.nrf.ac.za/sada Or e-mail: sada@nrf.ac.za Tel: +27 (0)12 481 4158 Fax: +27 (0)12 481 4020



Nelson Mandela/HSRC Study of HIV/AIDS Household Survey 2002

Background

This is the first systematically sampled national community-based survey of prevalence of HIV in South Africa. This is a household survey of 9 963 individuals, of which 8 840 were tested for their HIV status. The study investigated key socio-cultural, political, economic and structural context within which HIV-related behaviour occurs. The survey covered all provinces in the country.³



Availability

The report from this survey is available from Human Sciences Research Council (HSRC), and can be downloadable from their web site: <http://www.hsrpcpublishers.co.za/hiv.html>.

Population Census 1996

Background

The 1996 population census enumerated all individuals who were present in the Republic of South Africa on the census night.⁴ The census is an important source of both household and population level information. Household resources and services are collected from each household, which makes it possible to establish community access to services. The census collects necessary information for estimation of adult mortality and maternal and child health indicators.

Availability

Census 1996 is available from Statistics South Africa.
<http://www.statssa.gov.za>



Population Census 2001

Like census 1996, in 2001 the whole population of South Africa was enumerated and similar indicators were collected. Census 2001 is expected to be available in 2003.



Routine Data Sources on Health Service delivery

The most important source for health care service delivery is the District Health Information System (DHIS), which has been accepted by the National Health Information System (NHIS/SA) as the standard source of health care data in all provinces. The DHIS is built around a comprehensive index of public health care facilities and administrative organisations (i.e. the sub-district, district and provincial hierarchy). This structure is an extremely useful data source in itself, and includes reference data such as the type and location of the facility, and descriptive data such as contact details, the number of beds and the available public utilities. Spatial data (GPS reference data) are also available for public health care facilities, though the quality of the data for one or two provinces is poor. Private health facilities are included in the organisational index, although this is not comprehensive. During the last three years the public health sector has implemented a flexible routine information system based on Minimum Data Sets (MDS) at all administrative levels, and these data sets, along with the organisational structure, comprise the DHIS. The term flexible means that each administrative level, while providing the minimum data needed for the level above, is free to add data





elements and indicators considered essential for their local environment. It also means that Minimum Data Sets should be reviewed and revised regularly to ensure that every single datum element collected actually is being used for monitoring and/or decision-making. The DHIS is a dynamic data source, and additional data sets are being added frequently. Recent additions include data sets for client satisfaction and Prevention of mother-to-child transmission (PMTCT) for the pilot projects.

Primary Health Care Data Set

Background

Several provinces started defining their first Primary Health Care (PHC) MDS in 1997 and 1998. The results from a survey of existing data sets, combined with recommendations from the NHIS/SA Committee, resulted in a National Minimum Data Set for PHC being adopted by the NHIS/SA in April 1999. This MDS for Primary Health Care is still in use and contains 20 compulsory and 18 optional items. However, the National Minimum Data Set (NMDS) has recently been revised and a proposal has been made to change the terminology to Essential Data Set (EDS) and this is awaiting ratification by the Provincial Health Restructuring Committee (PHRC).

Content

After routine data have been captured or collated at district level, the sub-set that belongs to the provincial MDS is submitted electronically (from the DHIS), from the district to the provincial office. Provinces are expected to submit NMDS data items to the national Department of Health on a monthly basis, but there are still delays and interruptions in these data flow for a range of reasons that will receive attention during 2002 and 2003. Some of the interruptions in the data flow occur at or below the provincial level, and are often linked to re-organisation or staff turnover (many districts and even provinces have very few or no staff dedicated to health information). Nevertheless, the major milestone of 95% national data coverage has been reached.

Data from private health providers e.g. Hospital Association of South Africa (HASA), and Non Governmental Organisations (NGOs) are also on the increase, even if most provinces are concentrating on improving the timeliness and quality of public sector PHC data before expanding to the multitude of private health providers. It must be stressed that whereas all districts and provinces are striving to reach 100% data input coverage, additional data beyond 95% will have limited impact on the value of most indicators at provincial or national levels.





Availability

The national database is held at the national Department of Health by the Health Information Systems cluster. It is a DHIS data set, and the national department updates the data issued on the DHIS CD at every DHIS release.


Child and Youth Health Data (Including Nutrition for Children under 5 years)



Background

The national Expanded Programme of Immunisation (EPI) manages routine immunisation data and information, as well as surveillance data on Acute Flaccid Paralysis (AFP), Measles, Neonatal Tetanus (NNT) and Adverse Events Following Immunisation (AEFI).

In 2001 valid information on routine immunisation coverage could not be obtained for South Africa, because three different software tools, as well as a combination of these, were being used by different provinces. The national EPI decided to use the DHIS software as the only system from September 2001 (in line with NHIS/SA) and the Directorate: Child and Youth Health now addresses routine information needs for the directorate that includes EPI, in an integrated way. Currently routine data and information are available in the DHIS software for all provinces except for one, in a fairly valid, reliable and user friendly way.



Purpose of Data sets

- Monitoring routine immunisation coverage, nutrition status and priority diseases e.g. diarrhoea and lower respiratory infections. This helps with the planning, implementation and monitoring of strategies that optimise protection of children and prevention of conditions that impact on under 5 morbidity and mortality.
- Monitoring progress towards reaching global targets for immunisation as well as other aspects regarding the eradication of polio and the elimination of measles and NNT.
- Assisting with the monitoring of the availability, acceptability, accessibility, quality, effectiveness and efficiency of Child and Youth Health Services in South Africa.



Routine data

The standardised routine system in SA (DHIS software) is used for all routine data and information. The data input coverage for 2000 and 2001 are above 95% for all provinces except for one, where the latest version of the DHIS software has not yet been implemented and therefore data are not available. The contents of the system are in line with the National Minimum Data Set for EPI, Child & Youth Health and Nutrition for children under 5 years of age. It includes data on routine immunisation doses and coverage for selected vaccines, dropout rates, incidence of lower respiratory infections, diarrhoea

and malnutrition, as well as the pregnancy rate of women under 18 years of age.

Surveillance data

Surveillance data on AFP, NNT and Measles is entered into EPI INFO at national level, based on World Health Organization (WHO) standards, by magisterial districts. This system is in the process of being adapted according to the demarcation boundaries set in the year 2000 in South Africa and to be linked to the DHIS software, enabling integrated analysis and reporting.

Availability

Routine information is part of the National Routine Information System, managed by the Health Information System Offices at different levels and relevant data are extracted as needed. Data are updated by means of CD's distributed by the HISP Team until data are available on line and updated routinely by the National Information Unit. EPI surveillance data sets are kept at the National EPI sub-directorate. Contact: Christa van den Bergh (berghc@health.gov.za)

Hospital data sets

Background

The hospital minimum data set was implemented in April 2000. It is a national minimum data set, i.e. all public hospitals in the country are required to submit it, on a monthly basis. The data set is relatively simple. It does not include all the data that would be useful to manage a hospital, nor does it even provide an overview that would be adequate for provincial planning. However, it is a major step forward, as all hospitals now collect data according to nationally agreed definitions, which means that we can determine the volume of services being delivered, compare services between provinces, and calculate some simple performance indicators. The purpose of the data set is to set up national standards for hospital information so that facility managers could assess the performance of their hospital against others. It also provides useful information for provincial and national planning exercises.

Data quality

Well over 90% of the hospitals have actually submitted data on a monthly basis since April 2000, which is a huge achievement. However, there are still some problems with the quality of data. The quality of data submitted by hospitals has improved, but the major problem remains the incomplete implementation of the data set in two provinces.

Content

The data set is built on an index of hospitals, which in itself is very useful. The data set primarily deals with patient volumes. These data enables the calculation of indicators such as length of stay, bed occupancy rate and patient



day equivalent. Indicators for deliveries and births can be calculated, such as the caesarean section rate and still birth rate. In combination with financial and human resource data, unit cost and productivity indicators can also be calculated.

There are two other data sets for hospital services that are available in the DHIS:

- 1 Revitalisation data set (implemented April 2002).
- 2 Tertiary services data set (implemented April 2002).

Both of these data sets were implemented with effect from April 2002. The revitalisation data set primarily covers organisational development issues (such as the existence of hospital boards and the use of business plans) in those hospitals included in Hospital Revitalisation Project. At present this includes 27 hospitals (3 from each province).

The tertiary services data set was implemented to monitor patient services funded by the National Tertiary Services Grant. This includes the ten central hospitals, and any other hospital providing tertiary services. The data set is primarily concerned with the volume of the services provided, and access to the services for patients from the various provinces.

Availability

The national database is held at the national Department of Health, in the Hospital Services cluster. It is a DHIS data set, and the national department at every DHIS release updates the data issued on the DHIS CD.



The Electronic TB Register

Background

The first prototype of the 'Electronic TB Register' computer programme was developed in Botswana in 1995 through a collaboration between the Ministry of Health, Botswana, and the Centres for Disease Control, Atlanta Georgia, USA. The aim of the programme is to collect, assimilate, and analyse data on tuberculosis. This is a user friendly, menu driven computer programme, based on Epi-Info (version 6). The initial software was revised several times (in 1996, 1997, 1999 and 2000) to make improvements and to add new features. In 1999 and 2000, a considerable effort was made to make the programme more generic, in order to suit situations other than that in Botswana. In 2002, version 2.2 incorporated South Africa-specific enhancements including a sub-district-level export to DHIS, facility-level profile reports and a function to export aggregate data from province to national.

The Electronic TB Register (ETR) was piloted in Mpumalanga and North West provinces during 2000. In May 2001 approval was given by NHISSA to roll the system out to the rest of the country. KwaZulu-Natal started from the 1st of July 2001 and Gauteng from the 1st of October 2001. Western





Cape is to implement the system from July 2002 (with the exception of the Metropole).

The WHO recommended reporting system for tuberculosis control programmes is based on a standard recording format from which quarterly reports on new cases, smear conversion and outcome of tuberculosis treatment are being generated. These reports serve as important management tools to assess programme performance and to determine possible interventions and future direction.

Data quality and content

Data quality depends on the completeness and correctness of the manual recording tools, especially the register. Upon implementation of the ETR, provinces have had to concentrate effort on improving register completeness. The degree of completeness of registers varied across provinces but is improving. One feature of the use of the patient-based register is to detect such gaps, which was previously not possible via the aggregate system. The data set is patient-based at sub-district up to provincial level. The value of this is to be able to trace patients who ‘moved’ within the sub-district and/or have been ‘transferred’ outside sub-districts.



Availability

Aggregated data are also exported to DHIS and are available from the regular DHIS distributions.

Corporate Information Systems in Public Health Services



Background

All national and provincial public health services use common mainframe computer systems to manage personnel and financial data. The personnel information system used is PERSAL and has been in use by all provincial health departments since the mid-nineties. In the late nineties some provinces still used their own propriety financial management systems, but since 2000 all provinces have standardised on either Financial Management System (FMS) or Basic Accounting System (BAS). Both systems are supported by the National Treasury and provide essentially the same functionality. The National Treasury has developed a management information system known as Vulindlela that provides summarised information from PERSAL and the financial information systems in a user friendly format. Information is not yet available for all provinces on Vulindlela, the exceptions being Eastern Cape, KwaZulu-Natal and the Northern Cape. Financial and personnel information for local authorities is managed in a range of different information systems with little standardisation between municipalities, making it very difficult to obtain comparable information across local authorities.





Information Content

Financial Systems

The financial systems contain budget, expenditure and revenue data down to facility level, or in some cases down to cost centre level within facilities. The financial data are classified using a three axis hierarchical coding the system. The three axes are:

- a) Responsibility. Organisational component (hierarchy from department to facility or cost centre level).
- b) Objective. This is a classification of the function on which the money is spend, for example hospital services, administrative support, emergency services, etc.
- c) Item. This is a classification of the nature of the expenditure or revenue, ranging in a hierarchy with the so-called standard items of personnel, administration, equipment, supplies and livestock, professional services as the top level of the hierarchy and very specific line items at the lower end of the hierarchy.



PERSAL

The personnel system PERSAL contains a wide variety of data related to personnel administration in national and provincial health authorities. The primary function of the system is to manage salary payments. This is both a strength and a weakness of the system. It is a strength in the sense that the basic data are up to date and accurate, but a weakness in that this function dominates the use of the system to the detriment of the accuracy of non-salary information in the system. PERSAL contains the following categories of information:

- a) Member data. This ranges from basic demographic data of salaried individuals to information such as medical aid membership.
- b) Job information. A three part system is used. Occupational classification, following the international standard occupational categories; post class or rank classification following the nationally standardised CORE job classification system and finally a job title description which is not standardised across provinces.
- c) Organisational structure. A series of hierarchical component and sub-component codes provide for the documentation of arbitrarily complex organisational structures from department level down to the smallest organisational unit. The number of approved posts and filled posts can be derived from these structures. Unfortunately this is the part of PERSAL that is not consistently kept up to date, with the result that it rarely reflects accurately the actual organisational structures at facility level.



- d) Salary information. Detail information on annual salary, actual salary, benefits and deductions are available. Unfortunately information of total remuneration package is not directly available and it has to be inferred from paid benefits and deductions as well as external information such as percentage contribution by the employer to pension funds.

Availability

The primary source of corporate data are the Vulindlela system and contact information is available on their web site (<http://www.vulindlela.gov.ac>). Detailed extractions of PERSAL data are provided in a set of text files (so-called MIS data set) on a monthly basis. The files can be requested through the provincial PERSAL system managers (they can be contacted through the provincial treasury departments). Extracted data are less readily available for the financial systems.

Demographic Surveillance Systems

Background

Demographic surveillance systems (DSSs) follow all individuals in a circumscribed geographic area longitudinally over time. After an initial census where all individuals (and optionally their membership to household) and their place of residence are recorded, regular visits to homesteads then records all births, deaths and migrations continuously. In this way accurate demographic information regarding mortality, fertility and net migrations rates are obtained. Information collected in DSSs is not restricted to this basic set of demographic variables and DSSs are seldom initiated primarily to collect demographic data only and act as platforms for other research.

Three 'In-Depth' demographic surveillance sites are operating in South Africa:⁵

- a) Agincourt DSS. The DSS is situated in the Bushbuckridge area of the Limpopo Province. The baseline census was done in 1992 and annual data collection rounds took place since then. The original objective was to provide essential information for district-level programmes. The Agincourt Health and Population Programme (AHPP), a research initiative of the University of the Witwatersrand, operates the DSS. The AHPP is part of the Health Systems Development Unit of the Faculty of Health Sciences. The total surveyed population is approximately 67 000.
- b) Dikgale DSS. The DSS is situated in the Mankweng district of the Limpopo Province. The baseline census was done in 1995 with annual data collection rounds since then. The original objective of the site was to assess the prevalence and incidence of diseases in the area. The University of the North operates the DSS. The total surveyed population is approximately 8 000.



- c) Africa Centre DSS. The DSS is situated in the southern-most part of the Hlabisa district of KwaZulu-Natal. The baseline census was done in 2000 with approximately three data collection rounds per year since then. The original objective of the site was to describe the demographic, social and health impact of a rapidly spreading HIV epidemic in the population. The Africa Centre for Health and Population Studies, a consortium of the Universities of Natal and Durban-Westville and the Medical Research Council, operates the site. The total surveyed population is approximately 90 000.

Information Content

Demographic information



- a) Population structure. A detailed breakdown of the population by age and sex can be obtained. Information on residency is available with an indication of the proportion of people that spend the majority of their time in the surveillance area as opposed to those that return only on occasion.
- b) Fertility. Total and age specific fertility rates are available with annual trends depending on how long the DSS has been in operation. Through the collection of maternity histories retrospective fertility trends can also be calculated.
- c) Mortality. Accurate age specific mortality rates can be calculated. Through the use of verbal autopsies cause specific mortality is also available.



Other information content

- a) All the South African DSSs collect socio-economic data, providing information on employment, education, assets, income and expenditure of rural populations. Agincourt and the Africa Centre also collect information on welfare payments such as old age pensions and child grants.
- b) Depending on the DSS, additional information on nutrition, morbidity, sexual behaviour or population-based HIV status may be available.



Availability

Information from the sites is published in journal articles and monographs. The sites can also be contacted directly for more detailed aggregated information. Due to the complexity of the data and confidentiality concerns, anonymous individual level data are usually made available only in the context of on-site scientific collaboration.

Table 2: Additional sources of Public Health Data

Data Source	Content	Availability
Notifiable Medical Conditions	33 conditions notified by health care practitioners to local authorities. Local authorities send weekly summaries to provincial departments, who update a national database of notifiable cases and deaths.	Department of Health, Cluster: Health Monitoring and Evaluation
Birth Defects Surveillance	Notification of congenital defects. Genetic nurses complete notification forms which are sent directly to National Health for capture and analysis.	Department of Health, Directorate: Maternal, Child and Women's Health
Birth and Death Notification	Health facilities, forensic departments, traditional leaders and local authorities collaborate to submit birth and death notification to the population register maintained by the Dept of Home Affairs. Death notifications are coded by Statistics South Africa who then produces cause specific mortality rates for the country.	Department of Health (National Health Information System), Home Affairs and Statistics South Africa
Annual HIV sero-prevalence survey of women attending antenatal clinics	Unlinked anonymous surveillance at antenatal clinics with data entry at provincial level. National and provincial HIV prevalence rates calculated annually on the basis of this data.	Department of Health, Cluster: Health Monitoring and Evaluation
Saving Mothers, Confidential Enquiries into Maternal Deaths (1998)	Notification of maternal deaths to provincial health authority. Data entered and collated by secretariat of National Committee on Confidential Enquiries into Maternal Deaths (NCCEMD).	Department of Health, Cluster: Maternal, Child and Women's Health.
The South African Vitamin A Consultative Group (SAVAG) (1995)	1994 Survey of children aged 6 to 71 months in South Africa, their anthropometric, vitamin A, iron and immunisation coverage status.	Department of Health Directorate: Nutrition http://www.sahealthinfo.org/nutrition/vitamina.htm
National Food Consumption Survey (1999)	A national survey of children aged 1-9 years. A total of 3 120 children were included in the sample.	Department of Health, Directorate: Nutrition
National Iodine Survey (1999)	A survey of 200 schools (50 pupils at each school) to assess the prevalence of iodine deficiency disorders.	Department of Health, Directorate: Nutrition
Youth Risk Behavioural Survey	A school based survey of all 9 provinces, of learners in Grades 8-11, in both urban and rural areas. Focused on behaviours causing important health problems.	Medical Research Council, Health Promotion Research and Development
National Disability Survey – "We also count!" (1999)	A survey of disability including communication, movement activity, seeing, hearing, daily life activities, intellectual, learning and emotional disabilities.	Department of Health, Directorate: Chronic Diseases, Disabilities and Geriatrics
Pharmaceutical Management Information System (PharMIS)	Supplies detailed processed information on medical items to national provincial, district and municipality government levels.	Department of Health Cluster: Pharmaceutical Policy and Planning http://pharmis.pwv.gov.za/
National PHC Facilities Survey 2000 Health Systems Trust 2000	A survey of PHC facilities covering 445 facilities (10% from each province) focused on: range of services, human resources, equipment, infrastructure, drugs and supplies, supervision, and record keeping.	Health Systems Trust http://www.hst.org.za

Data Source	Content	Availability
Fatal injuries in South Africa in 2000 (2001)	Annual report of the National Injury Mortality Surveillance System	Medical Research Council
Monitoring Alcohol & Drug Abuse Trends, SA Community Epidemiology Network on Drug Use (1999)	Various reports with data on regional trends in drug abuse.	Medical Research Council, Mental Health & Substance Abuse Division

Conclusions and Recommendations on Data Sources for Public Health Service Planning and Evaluation

The breadth of information available for health care planning and evaluation has increased. In particular routine health information systems have become much more established in the past 2 to 3 years, and provide a valuable resource for managers. These data sources are important for equity oriented analysis. The population based surveys give us a measure of equity in terms of development and demographic indicators. The health service utilisation statistics provide us with measures of inequity of access on a geographical basis. The corporate systems provide us with measures of equity in health care expenditure and the case of the personnel system also measures of employment equity in the health sector.

The major challenge is to increase the use made of this resource, and this can only be achieved by:

- Further management development, particularly at local level
- Increased delegation to local managers, so that decision making at local level becomes a reality.

There is very little integration of information across the domains listed here (i.e. quality, disease monitoring, patient volumes, finance). Information from corporate information systems are not integrated with service and utilisation data available in systems such as DHIS. Without the integration of data across the various domains, information will always be of limited use. This is a lost opportunity for public health resource planners.

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