

Public Health Intelligence

Sources of Data

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Introduction

This catalogue of data resources is intended for people of all backgrounds working in, or interested in, public health. No such list can be comprehensive, but it includes sources of data widely ranging in type, importance, quality, completeness and availability. There are data sets consisting of individual records, such as hospital stays, births and deaths, population registers and cancer registrations, together with aggregated data sets in printed or electronic form, such as teenage pregnancy counts and population estimates. There are data sets which are outwardly not about health at all, but which describe risk factors or determinants of health, knowledge of which is necessary if the health problems in society are to be fully understood.

Some of the data described here may be available from websites, such as the ONS 'Neighbourhood Statistics' site, others may only be available by special request from other local organisations, such as the police or social services.

One source, the Compendium of Clinical and Health Indicators, is particularly useful. It incorporates the Public Health Common Data Set, which has been a mainstay of public health intelligence since the late 1980s. It now includes a massive range of indicators, at health and local authority level, with rates and confidence intervals ready-calculated, and is usually the first port of call when numbers are needed. That, and web sites such as ONS Neighbourhood Statistics and those operated by Public Health Observatories, are sources readily available to everyone working in public health – many of the other data sources described will normally be accessed through public health analysis or information departments.

While dependence on printed data has diminished enormously, there is still a wealth of information available in this form. This area is not covered at all comprehensively here, but a few reports have been mentioned where they are the primary source of particular data, eg. *Population Trends* for teenage pregnancy data. Furthermore, there are datasets which give international comparisons, some available commercially on CD-ROM, which have not been covered.

One final source of data locally, which cannot be covered here because there is no consistent format, is local DPH annual reports, which present a variety of analyses, based on many of the data sources listed in this catalogue.

This catalogue is structured around the public health purpose of the information, rather than simply running through a list of data, and hence there is a small amount of repetition, but it is hoped that this format is more helpful to public health practitioners who know what they want to do, rather than which data set they need.

1. Population and Demography

Census	Data from the 1991 Census give population data by age group, sex, social class, ethnic origin, etc at national, regional, district (health and local authority), electoral ward and enumeration district. Data from the 2001 Census will become available late in 2002 – until then the data are extremely out of date.
Office for National Statistics	<p>ONS issue annual mid-year estimates of population by age group and sex at local and health authority level.</p> <p>In 1998 they issued estimates of ward populations in three broad age bands.</p> <p>ONS periodically issue population projections at local and health authority level.</p>
Health Authority Patient Registers	Health authorities hold registers of all residents of their catchment area registered with a GP, from which counts by age, sex, geographical area (PCT, ward, enumeration district, postcode) and general practice can be obtained. Patient registers do not include residents not registered with a GP, but still tend to over-count population (partly because of delays in removal from lists), and hence can not be totally relied upon.
Local Estimates	Health authorities may produce their own estimates by combining the above sources. In addition, some local authorities produce estimates of population based on the electoral register. In some cases, estimates may be produced collaboratively combining all the available information.

2. Mortality

Office for National Statistics	<p>Annual extracts give final death records for all deaths occurring in, or registered in, each calendar year. The individual records can be aggregated by age, sex, cause(s) of death, area of residence, etc. Registered GP is not included on the death certificate: if it were, analysis of mortality rates by practice or PCT would be more practicable.</p> <p>The Public Health Mortality File consists of individual death certificate records supplied to health authorities on a weekly or monthly basis to support public health surveillance. Causes of death given are not always final hence the annual extracts are more reliable when they become available.</p> <p>Summary statistics are provided in various reports, eg. the vital statistics (VS1, 2, 3, 5) reports, which give counts of deaths by cause and, particularly, summaries of perinatal and infant mortality rates at health authority level.</p>
Compendium of Clinical and Health Indicators	<p>The Compendium is an annual data set issued to HAs on CD-ROM, consisting of spreadsheets giving counts and rates for a wide range of health indicators for all HAs and LAs in England. It includes analyses of deaths for a wide selection of causes, giving age-specific rates, SMRs, directly standardised rates, all with 95% confidence intervals, and years of life lost.</p>
Health Authority Patient Registers	<p>Deaths can be identified from the 'deletions' file of patients removed from GPs' lists.</p>
Local Register Offices	<p>Historically public health surveillance has made use of a regular supply of death certificate records direct from local register offices. This source has largely been rendered superfluous by the Public Health Mortality File, which includes data for residents of the HA, wherever their death was registered, and includes ICD-coded causes of death.</p>
Confidential Enquiry Reports	<p>Annual reports from confidential enquiries include data on infant and perinatal deaths, maternal deaths and others.</p>

3. Incidence and Prevalence

Cancer Registries	Data on all cancer registrations are held by Regional cancer registries and can be made available to health authorities. Individual records can be aggregated by age, sex, area of residence, etc, to give good estimates of incidence rates.
Disease Registers	Registers of patients with specific conditions are kept locally, but with no consistency across the country. These include people with diabetes, those with psychiatric illness, abused children, etc. Following the National Service Framework for coronary heart disease, primary care-based CHD registers are being established where they did not exist previously. They will be unreliable in the short-term, but in the longer-term registers like this give a good opportunity to monitor incidence and prevalence of a range of important conditions.
Primary Care	In some areas, where GPs have advanced information systems, analysis can be carried out (possibly using analysis tools such as MIQUEST) to estimate the prevalence of certain diseases and conditions. As primary care information systems improve and are used more effectively, there is potential for information on incidence and prevalence of a wide variety of conditions to be made available. Many conditions are primarily treated in general practices and knowledge of them could contribute a great deal to epidemiological understanding of health and illness in society.
Hospital Activity	Health authorities have records of inpatient admissions, outpatient and A&E attendances involving their residents, supplied by acute hospitals. For some acute events which almost universally result in hospitalisation, for example fractured neck of femur, they may be used to estimate incidence rates, but for most they can only be taken as a poor indicator of need.
Infectious Disease Notifications	Details of all cases of notifiable diseases are collected by local authority or health authority and are usually kept by Consultants in Communicable Disease Control (CCDCs).

National Surveys	<p>The General Household Survey gives data at Regional level on the prevalence of longstanding and acute illness and the extent to which they limit their daily activity.</p> <p>The Health Survey for England collects information on specific disease areas, covering different areas each year. Data are provided at health authority level, but the sample size is extremely small and hence confidence intervals very wide.</p> <p>ONS also do a range of intermittent national surveys, for example the psychiatric surveys giving estimates of prevalence for psychiatric disorders.</p>
Local Surveys	<p>Ad hoc surveys, such as the Sheffield SHAIPS survey, can give estimates of disease prevalence.</p> <p>In most areas regular surveys of children's dental health give estimates of prevalence of tooth decay (DMFT scores), kept by Dental Public Health Directors.</p>
Compendium of Clinical and Health Indicators	<p>The Compendium is an annual data set issued to HAs on CD-ROM, consisting of spreadsheets giving counts and rates for a wide range of health indicators for all HAs and LAs in England. It includes some data on incidence, eg. cancers, fractured neck of femur, meningitis, etc.</p>
Census	<p>The 1991 and 2001 Censuses included a question on long-term illness and the extent to which it limits daily activity. 2001 data will be made available by mid-2003.</p>
Literature	<p>For many areas of health, the best hope of estimating local incidence or prevalence is from published literature, particularly reviews. Health authority library and information services may be able to help.</p>

4. Births, Conceptions and Abortions

Office for National Statistics

Annual extracts give birth records for all births occurring in each calendar year. The individual records can be aggregated by outcome (live or stillbirth), sex, birthweight, area of residence, etc.

The Public Health Birth File gives data from the birth registrations monthly. This is not purchased in many health authorities.

Summary reports, such as VS1 and VS2, give aggregated data on birthweight, maternal age and outcome.

Counts of conceptions (abortions and maternities) are provided by ONS to health authorities at HA and ward level, broken down by maternal age to allow monitoring of teenage pregnancy rates (under 16, under 18 and under 20). At ward level data are not always made available for confidentiality reasons.

ONS can provide ad hoc aggregated analyses on request, for example aggregated over a longer time period to avoid small number confidentiality problems.

Hospital activity

Inpatient records supplied by hospitals give details of births in hospital.

Population Trends

The Spring issues of the journal *Population Trends* give the first figures each year on teenage pregnancies for all health authorities in England.

Compendium of Clinical and Health Indicators

The Compendium is an annual data set issued to HAs on CD-ROM, consisting of spreadsheets giving counts and rates for a wide range of health indicators for all HAs and LAs in England. It includes counts and rates of conceptions, births and abortions.

5. Lifestyle and Risk Factors

National Surveys	<p>The General Household Survey gives estimates of smoking and alcohol consumption, at Regional level.</p> <p>The Health Survey for England collects data on risk factors through physical measurements (height, weight, blood pressure, etc) and a blood sample (cholesterol, serum cotinine for smoking, etc) in addition to a questionnaire. Data are provided at health authority level, but the sample size is extremely small and hence confidence intervals very wide.</p>
Local Surveys	<p>Lifestyle surveys are frequently carried out by health authorities to obtain estimates of lifestyle factors related to health, such as smoking, diet, alcohol, exercise, stress, etc. The expense of obtaining samples large enough to estimate the prevalence of these factors for small areas within health authorities (eg wards) is normally prohibitive.</p>
Primary Care	<p>In some areas, where GPs have advanced information systems, analysis can be carried out (possibly using analysis tools such as MIQUEST) to estimate prevalence of certain risk factors. As primary care information systems improve and are used more effectively, there is potential for information on incidence and prevalence of a wide variety of conditions to be made available. It must be borne in mind that reporting of health-related behaviour to GPs is not necessarily accurate.</p>
Literature	<p>For many risk factors, the best hope of estimating local incidence or prevalence is from published literature. Health authority library and information services may be able to help.</p>

6. Wider Determinants of Health

Deprivation Indices	<p>There are several commonly used deprivation indices based on Census data. They include the Townsend and Carstairs Indices, developed by researchers in the health field, and the Index of Local Conditions and Index of Local Deprivation, developed for use in local government. Each uses a slightly different combination of Census variables, and there is broad agreement between them in their categorisation of local and health authorities, wards and enumeration districts. They are all readily available within health and local authorities or on the Internet.</p> <p>Other deprivation indicators have been developed for resource allocation, and are probably best used for this purpose, for example the Jarman Score and the Relative Needs Index.</p> <p>The Indices of Multiple Deprivation 2000 were developed to overcome the problem of using out-of-date Census data, and use 1998 data. They are available at local authority and ward level from local authorities or from ONS Neighbourhood Statistics (www.statistics.gov.uk/neighbourhood).</p>
Unemployment	<p>Unemployment rates are very good indicators of general deprivation levels and are available monthly from local authorities. The NOMIS system from which the data are taken is intended to be made available through the ONS Neighbourhood Statistics website in the future. Data are available at local authority and ward level.</p> <p>Census data give unemployment at national, local and health authority, ward and enumeration district level. 2001 data will be available by mid-2003.</p>
Education	<p>Educational attainment data (GCSEs, Key Stage 2 scores, absences and exclusions) are available from local authority education departments. These give details of performance of students each year.</p> <p>Adult numeracy and literacy data can be obtained from the Basic Skills Agency (www.basic-skills.co.uk).</p> <p>Census data give educational attainment levels of people of all ages at national, local and health authority, ward and enumeration district level.</p>

Environment	Local authority Environmental Services departments collect data on pollution levels (eg particulates), usually in only a few locations (eg close to busy roads or junctions).
Housing	<p>The Census gives details of housing type, size and tenure.</p> <p>Local authority housing departments have data from housing needs surveys on various aspects of housing, homelessness and distance from work.</p>
Benefits	The Benefits Agency have data on housing benefit and income support, giving an indication of levels of wealth.
Crime	<p>Local authorities commission crime audits which can usually give crime rates by ward. However, crime rates are difficult to interpret, as the appropriate denominator is often not easily defined (for example car crime is related to where cars are left (shopping, workplace, etc) rather than only the number of residents or households).</p> <p>Police information systems hold detailed data on crimes but are often not easily interrogated to give aggregated data at, say, ward level. However information may be made available to assist enquiries in a particular locality.</p>
Others	<p>The list above is far from comprehensive – there are many more aspects to describing the socio-economic make-up of society. The principal source of data on populations is the decennial Census, which gives detailed, small-area data on the above areas and others such as car ownership and single-parent families.</p> <p>There are also several national surveys, which give annual data, such as the Labour Force Survey which also includes income data.</p> <p>The ONS Neighbourhood Statistics website (www.statistics.gov.uk/neighbourhood) includes a constantly expanding range of data at ward level.</p>

7. Health Services

Hospital Inpatients	Health authorities hold data on all inpatient stays of their residents, received (via a national Clearing Service) from hospitals. The data are at individual level and may be aggregated by age, sex, area of residence (eg. ward, enumeration district, postcode), diagnoses, procedures undertaken, and a great many more variables. The data are reasonably complete and normally taken to be fairly accurately coded, although this will vary from hospital to hospital. These data can be used to compare rates of service utilisation, to identify differences in need for, access to, referral to or provision of services.
Hospital Outpatients	Similarly to the inpatient data, health authorities have records of all outpatient attendances of their residents. Although the data can be used in similar ways to the inpatient data, they are less complete and less well coded. Diagnostic coding, for example, is often incomplete.
Accident and Emergency	A&E datasets are, where available at all, limited in the extent to which they are coded, but comparisons of rates of A&E attendance by GP practice can be made in some areas.
Waiting lists	Details are also received by health authorities from hospitals of patients waiting for inpatient admission, including the waiting time, and counts of those waiting for outpatient appointments.
Community and Mental Health Services	Details of contacts are available in some areas to varying standards.
Körner Returns	Since the 1980s, these aggregated returns have been used to record health service activity. They cover the above areas of hospital and community activity and other aspects of health service provision.

NHS Performance Indicators

These indicators, issued annually, but with varying content and time scales, present comparative analyses of health services around the country. They have previously been labelled high level performance indicators, clinical effectiveness indicators and clinical indicators. They are published by the Department of Health and often receive press interest and coverage. The indicators cover a wide range of service areas, including, readmission rates, postoperative mortality rates, delayed discharges, rates of various complications and many more. Their political weight can be useful in generating interest in variations at a high level within health organisations. The indicators are made available to health authorities directly and some are included in the Compendium of Clinical and Health Indicators.

Primary Care Prescribing

Data are available through the national e-PACT, and e-PACT.net databases on all prescriptions issued by general practitioners in the PCT area. The data include complete details of the drugs prescribed (number and size of tablets or other units as appropriate) and can be related to age-sex adjusted populations (patient units (PUs, etc)) to give rates. However there are no details of the patient involved or the diagnosis, and it is hence not possible to estimate the number of patients being prescribed with any given drug, except in cases where drugs are prescribed only for one purpose.

Vaccination and Immunisation

Data can be extracted from health authority patient register systems on uptake rates for childhood vaccination and immunisation.

Screening

Data on cervical screening uptake rates can be extracted from health authority patient register systems. Aggregated information on attendance rates is available annually on the Körner return, KC61.

Data on breast screening uptake rates are available from annual KC63 return.

Dental Registrations

Routine data, normally held by district dental advisers or dental public health directors give data on the proportion of adults registered with a dentist.

Primary Care Activity

In some areas, where GPs have advanced information systems, analysis can be carried out (possibly using analysis tools such as MIQUEST) of consultations by diagnosis and treatments. As primary care information systems improve and are used more effectively, there is potential for more information on primary care activity to be made available. Linking primary care consultation data to secondary, tertiary and community service records would allow complete pathways of care to be studied and give opportunities for improving communication between sectors and streamlining systems.

Social Services

The mutual dependence of health and social services means that apparently poor performance in one sector can be due to failures in the other. Social Services Performance Indicators give a range of comparative indicators for social services departments across the country. Locally 'Quality Protects' plans give summary data.