

Beyond 2001
Alternative to the
Census

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Beyond 2001 - Alternative to the Census

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Annex 1: Topics included in the 1991 Censuses in United Kingdom

Based on Census General Reports (1), (2)

Household topics

Dwellings classifications and count
Number of rooms
Type of accommodation
Tenure
Availability of amenities (bath and wc)
Central heating
Number of cars or vans available
Lowest level floor level of accommodation (Scotland only)

Personal topics

Address of enumeration *
Name *
Sex
Date of birth
Number of live births to ever married women (NI only)
Marital status (including whether re-married)
Relationship in household
Position in communal establishment
Whereabouts on Census night
Usual address *
Term time address of students *
Usual address on year ago *
Country of birth
Ethnic group
Limiting long-term illness
Scottish Gaelic language (Scotland only)
Welsh language (Wales only)
Irish language (NI only)
Economic activity last week
Hours worked weekly
Occupation
Industry of occupation
Address of workplace *
Means of travel to work
Higher education qualifications
Religion (NI only)

* These items were not stored on the computer except for postcodes in respect of the addresses

Annex 2: Guidelines for the European Community Programme of Population and Housing Censuses in 2001

Whereas, for the performance of the various tasks conferred on it by the Treaty establishing the European Community, in particular Articles 2, 3, 117, 118, 122 and 123 thereof, the Commission must have access to comparable, coherent, synchronised and regular statistical data on the population, employment, households, families and housing at Community, national, regional and local level; whereas these data are indispensable for defining, implementing, monitoring and evaluating the regional and social policies of the Community;

Whereas only population and housing censuses conducted at regular intervals, according to the various methods advocated in the United Nations' recommendations, will permit the collection of periodical and reliable statistical data, at different geographical levels, on the population, on households and on the main social, economic and family characteristics of persons and the main characteristics of their housing environment;

Whereas the Commission must, to target its action, have speedy access to the main census results in the form of a Community programme of statistical tables; whereas however, in the light of its changing tasks, it must also be able to draw on, rapidly and at low cost, additional statistical data which are difficult to predict in the long term;

Whereas under the provisions of Article 1 of Council Regulation 322/97 of 17 February 1997 on Community Statistics "the national authorities at national level and the Community authority at Community level shall be responsible for the production of Community statistics in compliance with the principle of subsidiarity"; and whereas to guarantee comparability of results, Community statistics shall be produced on the basis of uniform standards".

Whereas the current large-scale population and housing censuses, designed to meet national requirements, do not necessarily supply data which are comparable at Community level, as regards either reference dates, definitions and concepts, or classifications and consequently tables;

Whereas the European Commission (Eurostat) and the United Nations' Economic Commission for Europe are jointly drawing up recommendations for the population and housing censuses to be held in the region of the Economic Commission for Europe in the next century; whereas various international organisations, in particular the United Nations and the Council of Europe recommend that censuses be conducted at the beginning of each decade;

Whereas the methods for collecting statistical information have developed considerably since the last censuses, and whereas the use of data files and other administrative sources - or the combination of large scale on-the-spot surveys for part of the data collection - would, if certain conditions were respected, reduce the costs of large-scale exhaustive censuses without impairing the quality and comparability of the data obtained;

Whereas, under the provisions of Article 3 of Council Regulation 322/97 of 17 February 1997 on Community Statistics, individual statistical actions are to be “decided on by means of agreement between the national authorities and the Community authority within their respective spheres of competence” (paragraph 2, point c), and shall be submitted for “prior examination by the Statistical Programme Committee” (paragraph 1);

Whereas the Community statistical programme for 1998-2000 provides for Eurostat to adopt a proposal to harmonise the definitions, the list of variables, the tables and the use of data in the context of the next round of population and housing censuses;

THE STATISTICAL PROGRAMME COMMITTEE HEREBY ADOPTS THE FOLLOWING GUIDELINES FOR THE COMMUNITY 2001 CENSUS PROGRAMME:

1) General provisions and reference period

The Member States and the Commission, acting in their respective spheres of competence, should compile Community statistics as defined in paragraph 6 below.

For the countries undertaking this operation, these Community statistics should be based on a population and housing census, conducted at a reference date between 1 January and 31 May 2001 according to methods recommended by the United Nations (2001 Census).

2) Field of application

The 2001 Census should comprise statistical data relating to the demographic, economic and social characteristics of persons, households, families, and to the characteristics of housing at Community, national, regional and local levels.

3) Collected data, definitions and details of the variables

The collection of data should cover at least the following basic variables, all designated as essential in the United Nations’ recommendations for Europe. The derived variables indicated in italics should be collected directly or obtained via processing of the basic variables.

Geographic variables

- place of usual residence
- place of usual residence one year prior to the census
- country/place of birth
- place of work

(list continued on next page)

Demographic variables

- sex
- date (day, month, year) of birth (*age*)
- legal marital status
- country of citizenship

Economic variables

- current activity status
- status in employment
- occupation
- industry (branch of economic activity)
- time worked

Educational variables

- educational attainment

Household and family variables

- relationship to reference person of private household (*household status, family status, type of family nucleus, type of private household, size of family nucleus and of household, including number of economically active members, number of children under 25, number of members of retirement age*)
- tenure status of households

Housing variables

- location of living quarters
- type of living quarters
- type of ownership
- number of rooms
- number of occupants
- occupancy status

(list continued on next page)

- occupancy by one or more households
- type of building
- period of construction

The definitions of these variables are those adopted in the United Nations' recommendations for Europe contained in Annex 1, clarified in some cases. The details of variables will be designed to cater for at least the classifications designated as core classifications (ie not optional) in these recommendations.

4) Data collection methods

Each Member State should collect the statistical data referred to in section 3 above by means of:

- exhaustive surveys, or if this is not possible, representative sample surveys;
- the use of registers or other administrative files;
- a combination of both these methods.

These methods should serve to ensure that the fundamental principles of universality, completeness and simultaneity of the censuses are complied with in each Member State.

The Member States should use appropriate checking mechanisms to ensure the complete coverage and quality of the data collected at the various geographical levels.

5) Processing of data

The Member States should process the information collected in such a way that the core and non-core variables described in section 3 are available.

6) Transmission of data to Eurostat

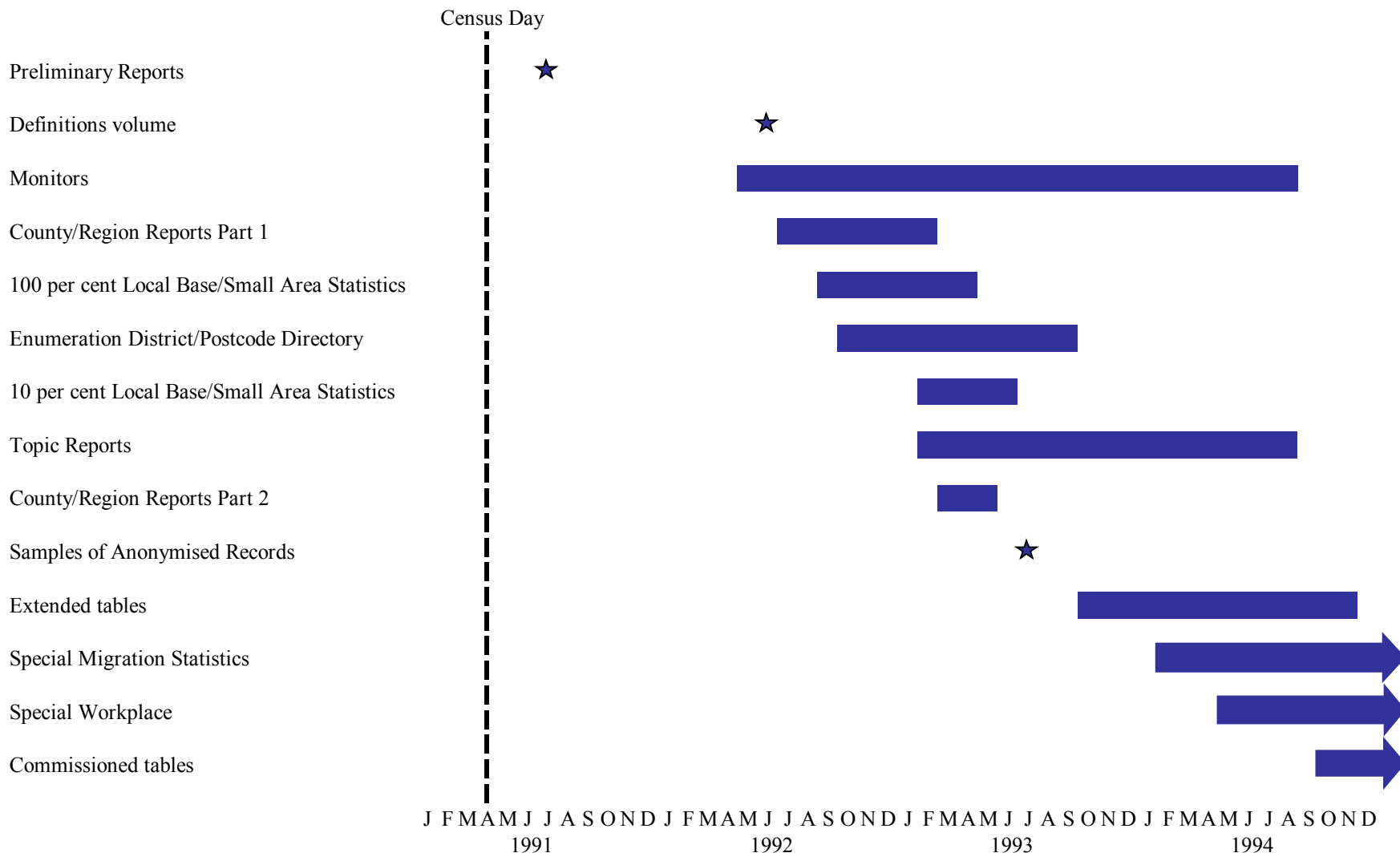
- 1) The Member states should transmit to Eurostat the initial results in the form of the priority statistical tables described in Annex 2 not later than 30 June 2003
- 2) In addition, in order to respond to requests for statistical information not envisaged in the priority tables, rules for the use by Eurostat of the data stored in each Member States should be defined by the Statistical Programme Committee. These rules should be operational by 31 December 2003.
- 3) Confidential data transmitted to Eurostat should be subject to the provisions of Chapter V of the Regulation on Community Statistics.

(continued on next page)

7) Dissemination of data by Eurostat

The data transmitted to Eurostat should be disseminated with due regard for the principles defined in Chapter IV of Regulation (EEC) No 322/97 on Community Statistics. In particular, the initial results referred to in section 6.1 above should be made available to users by Eurostat, down to NUTS 3 level, in whichever form is appropriate.

Annex 3: Publication and availability dates for the main census products - 1991 Census (GB)



Annex 4: Summary of Census developments in European countries

Based on meeting with Aarno Laihonon, Eurostat, July 1998

Developments in European countries

There are big differences between European countries in respect of their census experience and plans. They fall into several groups, as described below. (Information is also in the reports included in the Minutes of the EU Working Party on Population and Housing Censuses, 15-16 October 1997.)

France, Ireland, United Kingdom

In this group of countries traditional censuses have been conducted successfully, and the authorities are planning to continue with traditional censuses, concentrating on reducing costs and improving effectiveness. (More information on plans for the census in France is given in Annex 6.)

Greece, Italy, Portugal, Spain

This second group of countries have had more difficulty with traditional censuses but are persisting with them because they have no alternative.

For example, in Italy there are local population registers, but their reliability is low. The census is in fact used to up-date the registers, a practice which is not acceptable in some other countries.

Denmark, Finland, Iceland

In Nordic countries the high quality of the population and other registers makes it possible to rely more on registers. Recent censuses have been entirely register-based in these three countries.

In Finland, where censuses have been held every five years, the use of registers was introduced in 1970 in combination with data collection from the public as in a traditional census. Gradually the reliance on registers was increased in successive censuses, particularly with the development of the Register of Buildings and Dwellings, until the stage was reached in 1990 when the census was entirely register based. The development in Denmark has been similar, though partly under the pressure of circumstance, the transition from a traditional census of population and housing in 1970 to an entirely register-based census also covering population and housing in 1981 was less gradual. In Denmark there is now virtually no sense in which there could be said to be a census, but in Finland extensive additional analyses are made and published in "census" years. In contrast with Denmark, a tape of anonymised individual data, on a longitudinal basis, is released to authorised researchers under strict conditions (21).

Norway and Sweden

The Register of Dwellings and Buildings is, both in Denmark and in Finland, a key data source for the entirely register-based census. In Norway and Sweden proposals have been put forward to develop such registers in time for the 2001 Census, but the respective governments have yet to reach decisions on the proposals. Without the required Register of Dwellings and Buildings, the census in each country will be partly a register-based function and partly traditional data-gathering. Sweden has also encountered some problems with the quality of the population registers, where a study on the coverage of migrants has revealed some duplication.

Belgium, Luxembourg, Netherlands, Germany

These countries are all moving away from traditional censuses. There are, however, major differences in the arrangements being adopted.

Belgium and Luxembourg are taking action to improve the quality of their registers, and hope to be able to hold entirely register-based censuses. In Germany, where the census has a particularly negative image, the latest proposal is to base population estimates on the local Registers of Population, to derive employment data for small areas from registers of employment, and otherwise to rely on the 1 per cent micro-census and other statistical sources. Some Länder have talked of carrying out their own traditional census to cover additional topics.

The Netherlands have developed a distinctive approach of their own. Their census will be a combination of information from administrative sources and of results from sample surveys. The data gathered will be used to build up, through imputation, micro-files covering the whole population.

Austria, Switzerland

These two countries are likely to hold traditional censuses in 2001 with the intention that these would be the last. Switzerland has population registers, which will be used in the census, and plans to use the census to check these and to develop a register of buildings and dwellings. If successful, subsequent censuses will be register based. The plans are described in a paper presented by the Swiss Federal Statistical Office to the Conference of European Statisticians (33).

Austria has a population register but so far has not been able to use it for census purposes. However, the law has now been changed, so that even though a traditional census is likely to be held in 2001, a register based census would be more feasible subsequently.

PHARE and TACIS countries

Many PHARE and TACIS countries are planning to hold traditional censuses, but there is little donor support for such projects. Moreover, experience with census pilots casts doubt on the countries' capacities to carry out censuses effectively in the next few years. Many of the old administrative systems are still in place, however, so

it may be possible to establish suitable registers. There are plans to develop population registers in many of the countries.

Conditions needed for register-based census

In all countries the technical possibilities of using administrative sources are increasing with the computerisation of manual systems and the development of ADP more generally. There are however big differences in relation to the acceptability of accessing records, even for purely statistical purposes, which are hard to understand. Certainly statistical services need to be separate, and seen to be separate, if they are to retain public confidence.

The statistical service also needs access to administrative records. The right of access needs to be established in law, to clarify both the rights of the statistical service and the duties of the administration. The case for such legislation has to be argued on the financial savings involved. In Finland it is estimated, data collection costs would be seven times higher without access to administrative sources. (More information on savings through the use of administrative registers is included in a report published by Statistics Norway (27).

Where administrative systems are efficient, the records are likely to be reliable. In some countries, the postal service is a good source of information on changes of address. However, it is important to think in terms of using multiple sources, rather than using just one system. This improves the possibility of picking up changes as quickly as possible and also leaves the statistical service less exposed to changes in administrative arrangements.

The address is not necessary to match records if a numbering system is used. Alternatively, name, date and place of birth are adequate. In Finland a great deal of work has been undertaken to establish the reliability of information derived from administrative sources, including (at an early stage) comparisons with individual census returns (25).

EU Guidelines

Copies of "EU Census 2001 Guidelines" (Annex 2) and "Explanatory Notes to Table Programme" were provided. The Guidelines represent a goal rather than a set of binding commitments. There is now a much better dialogue between Eurostat and ECE on census matters. Although changes tend to be introduced slowly, it is likely that the list of requirements will reflect increasingly the views of countries relying on administrative data. Such countries will probably include a number of the PHARE countries in due course.

Annex 5: Census developments in Denmark

Based on meeting with Anita Lange, Danmarks Statistik, July, 1998

Central Population Register

Personal number

Each person's Personal Number (PNR) is issued by the relevant municipality, who obtain the number from the Ministry of the Interior. The first six digits of the number show the person's date of birth. The next digit relates to the century, but may take the values 1-4. The next two are effectively allocated randomly. The final digit is a check digit and also indicates gender.

Maintenance of the Central Population Register

The Central Population Register (CPR) is held in the Ministry of the Interior, which is also responsible for the related policies and practices, but the 275 municipalities in Denmark maintain the content of the CPR. Each municipality is responsible for the entries on persons living in the municipality, and that is the only part to which the municipality has access. The municipalities now up-date the CPR "on-line". (Earlier it was up-dated weekly.) Only the relevant municipality however is able to amend or create a record.

Information on births is passed from hospitals to the municipal authorities, so that the births can then be registered and entries added to the CPR. Births and deaths should be entered on the CPR within five days and migrations within seven days. Legal immigrants are also allocated a number, though sometimes date of birth can be problematical. It is thought to be very difficult to remain in Denmark without acquiring a PNR and an entry on the CPR. In the past fifteen years only two deaths have been registered where it was not possible to find the person on the CPR.

Uses of the PNR and CPR

The PNR is used for many purposes, including taxation, health services and education. Public libraries request a borrower's PNR, and would ask the borrower to obtain the number if it could not be provided immediately. People can use the publicly funded medical services, nurseries and schools only in the municipality to which they belong. Several central government ministries have access to various details. Arrangements have been made for them to access just the fields they need, and appropriate screens designed for them to do so. The police have access to the Central Population Register.

Persons registering a change of address with the Post Office can have that change automatically fed to the various Ministries that need it, and to banks, insurance and telephone companies. These also use the PNR, and are able to purchase from the CPR details of changes of address and the names of the persons involved.

Funding of health authorities is also based on the registrations in the area, and income tax varies according with the municipality. Local income tax makes up about 1/3 of all income tax. Indeed the PNR was introduced in 1968 so that the local population registers could be used in the administration of a new system of income tax involving local variations. The tax authorities write each year to each person aged at least fifteen, and are required to obtain a return from the person. They may if necessary enlist the help of the police to find the person. Changes of address which come to light in this way, or any other way, are then passed to the new municipality, who will make the necessary change to the CPR. This will automatically alert the municipality from which the person has moved, who will then agree to the change or investigate further.

Each person over 18 has the right to obtain, on paper, the information held about themselves. A person also has the right, which has existed for many years, to be told by the municipality the whereabouts of a person if they can give the person's earlier address, provided the person remains in the municipality. People can, however, apply to have their addresses protected, and this will be allowed if there is a good case, eg to prevent access to children in some cases.

If a person cannot be traced by the municipality or by other authorities, the municipality may decide to classify the person as "disappeared". About 0.2 per cent of the population fall into this category. Most of them have foreign nationality, and are assumed to have emigrated. For those of Danish nationality often information is received later which means that they can be removed from the category. For Danish people likely to return to Denmark there is an incentive to inform the authorities about absence abroad to avoid Danish taxation. The main risk of duplication in the system is thought to lie with foreigners coming to Denmark on more than one occasion. and not reporting the earlier stay.

Changes of address

The various uses of the PNR and the registers are together believed to provide strong incentives to the individual and the municipality to notify changes of address promptly. Also, when the municipality enters a change of address, a link is made automatically with the records for other persons at the addresses involved, so that the municipality can ensure that all the relevant records are changed simultaneously and consistently. Experience with sample surveys based on the CPR confirms that the CPR is generally up-to-date.

An address is retained on the CPR as the person's address so long as they retain that address as their home address. Thus, people in hospital or prison would still have their home address shown on the register until they gave up the address, eg on expiry of a lease or sale of the dwelling. Only if they do not have a home address to register will the address of the institution be used. Similar arrangements apply for the armed forces. "Municipality addresses" are available for person's without any other address in Denmark, eg for the homeless and for Danish diplomats overseas (who are all registered in one municipality address in Copenhagen).

Content of the Population Register

The content of municipal registers was laid down in the Population Register Law of 1924, and apart from the addition of the PNR in 1968 it remains much the same now. Computerisation has however altered completely the potential uses of the registers. Information included on the register for each person contains

- full name
- PNR
- address
- date of move to that address
- date of birth
- place of birth (municipality or country if not in Denmark)
- date of immigration (if appropriate)
- citizenship
- marital status
- spouse's PNR
- father's PNR
- mother's PNR

The CPR also records whether a person is a parent, and if so the children can be identified on the CPR. The "search" system that has been created makes it possible to call up various screens (of which copies were provided) on the details of a person with a particular PNR or persons with a particular name, persons living at a particular address, a person's children, the historical record of a person's marital status or a record of changes of address. The development of the historical linking has been a major development in the CPR system in recent years. The CPR also records occupation but this information is thought not to be up-dated at all systematically.

Uses of CPR by Danmarks Statistik

Danmarks Statistik has direct access to the CPR for the preparation of statistics on births, deaths and marriages. Certificates are currently supplied to Danmarks Statistik, and the CPR is used to deal with queries relating to the details on the certificates. (In future the Ministry of Health will supply the details on the certificates in computerised form.)

Danmarks Statistik also receive each year a copy on tape specified details of each live person's entry on the CPR as close as possible to 1 January. The list of fields included on the tape has been provided. Each week Danmarks Statistik receives a list of all the changes to the CPR, including births, deaths, marriages, and changes of address. Danmarks Statistik has, under the Danish Statistical Law, the right of access to all the information they need from other organisations. They are therefore able to specify which of the details on the CPR they require. The details they receive on tape are used to maintain a statistical register, which is up-dated at specific times and which is therefore suitable for deriving population estimates. Quarterly population estimates are now produced within 23 days from the end of the quarter.

All persons living in the same dwelling are regarded as members of the same household. Family units are identified from information about the members of the

household. Only people under 18 can be regarded as members of the same family as their parents. Where the relationship between persons is not clear from their marital status legally, certain conventions are adopted on the basis of survey results obtained some years ago. The definitions of family units conform with those recommended by Eurostat.

Other registers

Danmarks Statistik has been involved in the Working Groups which have overseen the development of various administrative registers. It tries to promote the idea of each register forming part of a system. There seems to be general acceptance of the use at least of the PNR and of the address format adopted on the CPR. With one exception, the main registers which are the sources of statistics that would previously have been obtained from a questionnaire based census are registers established for administrative purposes.

Buildings and Dwellings Register

Like the CPR the municipalities are responsible for the records relating to buildings in their area. The register is held by the Ministry of Housing. Data on the register is held at three levels:

- property (ie an entity in single ownership)
- building
- addressable unit

Different information may be held in respect of each level. For example, the type of roof is held only in respect of the building; the address is held, in coded form; information on use(s) is recorded for the building and for the addressable unit. Information is also held on ownership, including kind of owner (eg private company, municipality, etc) and on tenure. The tenure of the addressable unit is obtained by matching the PNRs of those at a particular address according to the Central Population Register with the PNRs of the owners of the addressable units according to the Buildings and Dwellings Register. This process is carried out several times a year by each municipality. The register includes information on the area, the number of rooms, and the amenities in each dwelling. Property taxes are collected annually from property owners, based on the value of the property. The valuations are determined annually by the Valuation Council for the municipality, on the basis of prices at which sales take place. Details of title to properties are held by the Courts.

Statistik Danmarks is able to meet all EU requirements on dwellings.

Tax Registers

There are a number of registers with partial coverage of the population. There is a register of employers (including the self employed with employees) and a register of employees, with names of employers. There is also a register of the self employed without employees. At the end of the year each employer is required to provide

returns in respect of each person employed during the year, with PNR, earnings paid, dates of employment, and place of employment

Business Register

This was developed by Danmarks Statistik, but for use for administrative as well as statistical purposes. It is now being maintained and developed jointly by Danmarks Statistik and the Ministry of Taxation for their own and other Ministries' use. Each year there is a survey addressed to all employers thought likely to have employees in more than one work place, so that the different workplaces can be numbered. These numbers are then used in the end year returns to the Ministry of Taxation in respect of all employees.

Educational Register

This is the only register maintained for solely statistical purposes.

Each year Danmarks Statistik receives from each educational institution information on each pupil or student, including the PNR, level of study and exam results. This is used to up-date the register of educational qualifications held by each person in Denmark. The register was taken initially from the results of the 1970 Census of Population, though the details for persons over 50 at the time were not thought to be sufficiently accurate to justify retaining those.

Details of awards of professional qualifications are also obtained, and some training provided by employers is also covered. Discussions are going on with the Ministry of the Interior about arrangements to obtain details of qualifications of immigrants.

The Patients Register

The National Register of Patients is maintained by the Ministry of Health and covers all patients who have spent some time in hospital, with details of their hospitalisations. It is used in conjunction with a number of other registers to provide registers for statistical studies eg of occupationally linked hospitalisations. Most statistical work on health issues is carried out in the Ministry of Health of a number of health registers.

General points

The last questionnaire based census in Denmark was held in 1970, two years after the introduction of the PNR. The census, which asked for PNRs, was used partly to check the registration process. Censuses had previously been held every five years. With the register-based system it is possible to produce statistics for very small areas on a much more timely and frequent basis. There is considerable demand for such analyses. There is however much less demand for linking information on a large number of different topics, as the traditional census allows. For this reason, Danmarks Statistik only arrange infrequently to combine data from several different registers. The demand for such linkage comes almost entirely from Eurostat.

Public use tapes are not released, and the law would not permit this. Researchers are however able to submit requests for particular analyses. Provided Danmarks Statistik sees no objection to the analyses, a suitable dataset is then created for analysis on the premises of Danmarks Statistik. No individual data are released to the researchers, who are allowed to take away only the tables on the agreed specifications. Danmarks Statistik charges the full economic cost of the analyses, the main criticism researchers make of the arrangements.

Great care about access to the Registers and about ensuring that personal details are not released accidentally have helped to avoid controversy about the registers. It is however possible too that there is less sensitivity in Denmark than in the United Kingdom about some of the topics covered by the register, thus reducing the possible incentives for abuse of the system.

Note: the register based system in Denmark is described in some detail in a Eurostat publication by Eurostat and Danmarks Statistik (19). The background is also summarised in the report prepared by Philip Redfern for Eurostat in 1985 on the future of the census of population (16).

Annex 6: Census developments in France

Based on discussion with Michel Isnard, INSEE, and a paper by Michel Jacod on population registers (31) and a paper by Michel Isnard on census plans (32)

Recent background

The population census planned for 1997 was postponed until 1999 for budgetary reasons. Funds were allocated for a census in 1999, but INSEE also undertook to find ways to avoid the peaks in expenditure caused by the census. This financial concern has added to the concerns that INSEE already had about the census:

- (i) under-enumeration, as in other countries spread unevenly across the country;
- (ii) the periods between censuses: recent censuses were held in 1954, 1962, 1968, 1975, 1982 and 1990. Thus, the latest available data are now 8 years out of date and the uneven periods between censuses complicates comparisons;
- (iii) the need to change the whole system, including computer programs, before each census because of the rapid change in technology.

Funds have been allocated to enable INSEE to conduct a traditional census in March 1999, but this census will form the launching platform for a new arrangements to meet the requirements from the census in France in subsequent years. These requirements are broadly similar to those in other countries, but they include in particular the need to establish the “legal population” of each the 37,000 communes. The communes vary considerably in size. Paris is the largest, with 2 million inhabitants, but many are very small indeed. In 1990 there were over 1000 communes with fewer than 50 inhabitants. The concept of the “legal population” also adds considerably to the difficulty of meeting the requirements.

The “legal population” is used to determine the financial support granted to the commune from the French government (and evidently for many other purposes). It includes some people twice: those in old people’s homes and in student residences, other students who are boarding away from home, and drafted soldiers. They are counted in the commune in which they live and in the commune from which they come. This involves a double count of around 1 million persons. On the other hand, people in prison or in convents are counted just once.

Central population register

Since 1941 there has been a central population register in France - the Répertoire National d’Identification des Personnes Physiques (RNIPP) as it is now called. Particularly as the register does not include addresses, on its own it does not, however, provide the basis for population estimates. The place of residence was included initially, as in the United Kingdom, but in the aftermath of the war the requirement to declare one’s residence, and any change of residence, was dropped.

RNIPP includes the name of each person born in France, and the date and place of birth. These details are incorporated in the unique identifier for each person - the Id-number. Since 1946 the Identifier has been used also as a person's social security number - the "N° de SS". Persons born abroad are added to RNIPP when they need a Social Security number - their Id-numbers indicate their country of birth. Deaths are noted on RNIPP, provided they occur in France or the French consulate is informed when a death of a person on the register occurs outside France.

The central population register was held first by the Statistique Générale de France, which became INSEE in 1946. The law which created INSEE gave it responsibility both for the central population register and for the "electoral file". Matching of entrees in the two files is possible as name, date and place of birth are collected on the electoral forms, thus providing a means of checking on double entries in the electoral file. Indeed, since 1993 the two files have been held on the same database. This database is likely to prove helpful in estimating the levels of migration within France, at least for French adults.

The political sensitivity of the RNIPP (partly associated with concerns about disclosing foreign place of birth) means that the law in 1978 which established the CNIL (Commission Nationale de l'Informatique et des Libertés) requires that any use of the RNIPP has to be approved by the Conseil d'Etat (the upper court for administrative cases) following initial approval by the CNIL. In guidance issued in 1983, the CNIL recognised that the use of the Id-number in the social security area was an accepted fact, but declared also that every new application in any institution should be built on a specific identifier rather than the national Id-number. This ruling has led some bodies, including the Education and Treasury Departments, to stop using the Id-number for various key purposes. In this context there is thought to be no prospect of linking administrative files to replace the role of the census in France.

Plans for censuses after 1999

After the census in 1999, census data will be collected from September 2001 on a "continuous census" basis. The arrangements for data collection will depend on the size of the commune. Bigger communes will be sampled every year - the 830 communes which have more than 10,000 inhabitants and account for half the French population. A sample of 1 in 20 each year will then give up-to-date data, and the sample of 1 in 4 over five years will give more reliable "average" data for the past five years.

There will not be any sampling within the smaller communes. Instead censuses will be held in each of the small communes, but these will be spread over five years so that 1 in 5 communes are covered each year.

The sampling frame to be used in the bigger communes has still to be created. It will be a register of buildings to be based initially on data collected as part of the census in 1999. It will also draw on information from the business register, SIRENE. The buildings register will list every building, including its co-ordinates, addresses, use (eg residential or business), etc. The register will be up-dated using in particular

information on building and demolition permits and births and deaths recorded on SIRENE.

While census enumerators will be delivering the questionnaires and also collecting them in the 1999 census, other methods of data collection, including mail-out/mail-in are being considered. It is expected that in due course different methods will be adopted according to the nature of the area. The current plan is to obtain from institutions each year the basic information needed about those resident in the institutions.

The data collected in the bigger communes will be re-weighted to produce estimates consistent with the register of buildings, probably with reference back to earlier population estimates eg from the 1999 census in the early years. Each year INSEE will estimate (but not necessarily publish) two population estimates for each commune:

Annual population: based for the bigger communes on the 1/20 sample re-weighted as described, and on the census for the smaller communes covered in the year. (The method for the other communes has still to be settled.)

Average population: the average of the population estimates for the past five years (which, for the smaller communes, will include one census-based result).

INSEE is required to estimate also the “legal population” of each commune, as described above. Two alternatives are being considered: (i) publication of estimates each year for the bigger communes and for the smaller communes covered by censuses in the year, and (ii) publication every 5 or so years with estimates for all communes.

From 2001 the coverage of the social security register will be expanded for administrative reasons to include for each French person a social security number and address. Immigrants, and their dependants, will be added when they start working. While there will be some obvious weaknesses in this register as a source of population estimates, the numbers with addresses in particular areas could provide some help in assessing the population estimates from other sources.

Identity cards - which are not obligatory in France, although used extensively - are issued by the Departmental administrations throughout France. A central database is being created. INSEE does not have access to the individual records, but the central database could in due course also provide information on numbers with addresses in each area.

Annex 7: Census developments in Germany

Based on meeting with Dieter Bierau and Hans Gerd Siedt, Federal Statistical Office, Wiesbaden, July 1998

Current position

At present discussions are continuing between the Federal Statistical Office and the Statistical Offices of the Länder to complete a report on alternative arrangements for the next Census. The report will be presented first to the Conference of Ministers of the Länder in the autumn of this year. There are likely to be two alternatives set out in the report - one much cheaper than the other. Both take account of the background to Census-taking in Germany, particularly in the Federal Republic since the early 1980s, including the respective responsibilities of the Federal Bureau, the Länder and the Municipalities.

The census is conducted under the oversight of the Federal Statistical Office, according to methods and concepts developed by the Federal Statistical Office in consultation with the Länder and representatives of the Municipalities. The Federal Statistical Office does not have the right of access to the individual returns; the Statistical Offices of the Länder supply only the so-called "Tabellenprogramm" to the Federal Statistical Office, a collection of tables that has been negotiated in advance. The Federal Statistical Office is not therefore in strong position to check the quality of the data or to produce additional analyses. Population Registers held by the Municipalities, supplemented by information from Tax Offices about properties in each Municipality, provide the starting point for the Census. New legislation is required whenever a further Census is held, but these features of the arrangements so far are likely to be retained in future Censuses.

Population Registers

Each Municipality is required by law to hold a register of the persons who "reside at an address" in the Municipality, and each person is required by law to register with the local Registration Officer. There are 14,600 Municipalities in Germany, including 8,600 in the former Federal Republic. Almost all the registers are now computerised, many of them held in computer centres used by a group of Municipalities. In Rhineland-Palatinate there is one computer centre for all of the 2,304 Municipalities in the Land. The Central Register held in the former Democratic Republic has been handed over to the relevant Municipalities, so that all municipalities now hold similar registers. The details held on the Registers vary slightly from one Land to another, but there is a basic list of contents required by Federal Law. This list is given in the Annex to this note. It includes information on whether the residence is the sole or main residence, and on other residences where appropriate.

An identity cards is issued when a person registers. This has a number on it, but the number must not be used to link records. The card is likely to be requested when opening a bank account, buying or renting a house, or applying for social benefits. Only persons registered in an area are able to vote in elections. Also, the registration

is important to the Municipality and the Länder for the proper collection of tax. When a person registers in a different Municipality, that Municipality is required to inform the Municipality in which the person was registered previously. Registration of Vital Events - births, marriages and deaths - should lead automatically to appropriate amendment of the Population Registers. For these reasons the registers are thought to be up-to-date in most cases.

In the 1987 Census found 200,000 Germans over 18 not who were not shown at their current address on the relevant population register - partly attributable to changes in the 4-5 months between when the data were extracted from the Registers and the time of the Census. Proportionately, there are more likely to be erroneous records in respect of foreigners who have stayed in the country. Their entries may remain on the registers after they have left. Furthermore, if they return again, an additional entry may be created. In 1987, 300,000 foreigners who were registered could not be traced in the Census. In respect of the total population, the population registers showed a net excess of 0.15 per cent over the Census results.

The 1987 Census

Legislation was passed to hold a census in 1981, but the census was delayed by disagreement between the Federal Government and the Länder over funding. As a result the census was delayed till 1983, but before it was held the Green Party, who were arguing that citizens should not provide information to the State when the State was refusing to disclose the locations of cruise missiles, took up the question of whether it was constitutionally acceptable for information from the Census, a statistical activity, to be used to up-date the Population Registers. This had been the practice in earlier censuses and was envisaged in the legislation already enacted for the 1983 census, though the Data Protection Commissioners had recently advised against. The Constitutional Court eventually ruled against the practice, insisting on a strict separation of statistical from administrative activities. (More details on the issues and the Court's decisions are given by Philip Redfern in "A Study of the Future of the Census of Population", published by Eurostat (16).)

The census carried out in 1987 was conducted on traditional lines, but in the face of considerable difficulty. A major problem was that of finding enough people among the staff of the Municipalities (which had in the past handled this work) who were prepared to become enumerators. Census data collection and processing is carried out by the Länder, with the help of staff from the Municipalities. Respondents complained that most of the information required was already available from the Population Registers. Indeed, if people could not be contacted at an address the details from the population register were used in the census tabulations - about 600,000 people. There were some prosecutions for non-compliance, but these were handled by the Municipalities and the numbers are not available. More information about the underlying difficulties of carrying out the census effectively is given in an essay "The Future of Censuses" by M Jäger and HG Siedt (28).

The first results from the census became available after about 18 months. More detailed results became available after 4-6 years. There was a validation survey

comprising a 0.1 per cent sample after the census. The total cost of the 1987 census was DM 1 billion. The costs to the Länder were reimbursed at least in part by specific grants from the Federal Government (about DM 270 million).

Population estimates

The Federal Statistical Office prepare population estimates each year for each Municipality. These are derived by up-dating the estimates each year since the 1987 census, using information from vital registrations and details of changes to the Population Registers. The Federal Bureau receives in respect of each amendment to the Population Registers the details 3-6 and 17 in the Annex, but without names.

Plans for future censuses

The experience of the cost and of the political reaction to the census has left Ministers, and others, reluctant to agree to a further census involving enumerators asking for information from the public. In 1992 the Working Group on Future Censuses was established by the Federal Statistical Office and the Statistical Offices of the Länder. It also included representatives of the Municipalities. The Working Group and the project groups it established undertook an extensive programme of work on the major requirements from the census, the possible use of registers and alternative possibilities for primary surveys.

The Working Group's report identified numerous options, based on visits by enumerators, telephone inquiries, postal inquiries, full coverage, sample coverage based on Population Registers or Registers of Buildings, and various combinations of these. The costs of the options (which unlike the 1987 Census would cover both East and West Germany) were estimated at DM 1.5-2.3 billion. The most expensive option, at DM 4.2-6 billion over 10 years, involved continual up-dating of estimates for each Municipality based on coverage of 10 per cent of the area of each Municipality each year.

The Working Group presented their report in 1995 to the Ministry of the Interior. However, soon after that Eurostat's proposals for a Census Regulation were circulated. It was decided that there should not be a further census like the 1987 Census, and that the Statistical Offices should develop proposals to meet requirements on the basis of the Population and other Registers, and of other sources of statistics.

The subsequent discussions between the Federal Statistical Office and the Statistical Offices of the Länder have tended to focus on two models. Both involve the Population Register and Registers of Employment. The Registers of Employment are based on social insurance records and would, with information on government sector employees, cover over 90 per cent of persons in employment. The differences between the two models are that:

in the first, the “Federal model”, data on employment would be tabulated for small areas, but would not be linked to the details from the population register at the individual level. The existing micro-census would be used as the source for data on other topics usually covered in the census;

in the second, the “Länder model”, individual data from the Population and Employment Registers would be linked (using name, date of birth and address), and there would be a census of residential buildings, addressed to the owners, to find out about housing conditions and the names of the occupiers, so that details of persons and of dwellings could then be linked. However, the link with the Employment Registers would be made after the estimates of population have been completed. The cost is estimated at less than DM 500 million; the cost of the “federal model” is estimated at less than one tenth of that..

In both models, a sample survey (of about 1 per cent) would be needed to check on the reliability of the Population Registers (mainly by telephone). There would also be a special campaign to encourage Municipalities to ensure that the Population Registers are as up-to-date as possible, eg by following-up cases where documents are returned because the addressee was not at the address used. Also, as part of the Census operation, the Federal Statistical Office would receive individual details from the Registers of Population, including names and dates of birth, to eliminate duplications before the Census analyses of the Register data were undertaken by the Länder. A “census” law would be required to permit the Statistical Offices to have access to and to use the registers in the ways envisaged.

A census of buildings, but without a request for information on people, was carried out successfully in East Germany in 1995. A list of buildings from Tax Offices can be used to help identify residential buildings, but one block of flats in single ownership has only one entry, with no detail of how it is divided or used. In the proposed Census of Buildings such detail would be sought from the owners, as it was in the similar census in East Germany

The costs which will fall on the Länder, and the extent to which they will be reimbursed from Federal funds, are likely to be a significant issue, as it was in the run-up to the 1987 Census. The census fieldwork would be carried out by the Länder, with less involvement from the Municipalities. The reduced scale of the task makes this more feasible.

Requirements from the Census

The differences between the Federal and the Länder model reflect the differences in requirements from the census at the different levels of government. The Federal Government is concerned primarily with the basic demographic information the census would yield, particularly to rebase the current population estimates. The Länder and the Municipalities, on the other hand, are concerned also to have up-to-date information on other topics also, particularly on buildings and dwellings, for smaller areas than those for which the micro-census can give reliable estimates.

The Advisory Committee on Official Statistics, which meets annually, has been kept informed about census developments. The Advisory Committee on the Census, however, has not met for some years. Academic users of census data have not so far been particularly vociferous, but interest is developing. The German Statistical Society is holding a meeting on the census in September. Private users pay for additional tabulations, which often involve work by the Länder as well as by the Federal Statistical Office.

As in other countries, census results are used extensively by both the public and private sectors. They are used in particular for allocating funds both among the Länder and among the Municipalities, and for determining the number and size of constituencies, for calculating the seats in the Community bodies and for calculating the votes of the Länder in the Bundesrat. The Constituency Delimitation Commission has the task of reviewing constituency boundaries using the population estimates from the census. The Statistical Office is responsible for calculating the final results of the elections to the Bundesrat on the basis of the complicated formula involved.

Micro-census

Since 1957 the Federal Statistical Office has conducted a continuous 1 per cent sample survey on a compulsory basis. The 200 or so questions involved vary from year to year. Once sampled, an address stays in for four years. The Labour Force Survey forms part of the micro-census. The samples, comprising units which are very small areas, are selected by the Federal Statistical Office, on the basis of population numbers from the latest census. The fieldwork is carried out by the Länder, and results are published for Districts (typically comprising around 250,000 people.) The results are constrained to match the official population estimates.

Annex 8: Census developments in Sweden

*Note based on meeting with Ake Bruhn and Tomas Blomqvist, Statistics Sweden,
July 1998*

Central Population Register

There is a long history of use of administrative registers for statistical purposes in Sweden. Statistics Sweden (SCB) started using the population registers when they were computerised and linked electronically in 1968 to form the Central Population Register (CPR). Personal Identification Numbers were introduced in 1948 for purposes of taxation, but the local population registers were held manually and updated by the Church. In fact the Church remained responsible for up-dating the population registers until 1991. They passed details to the Local Tax Office who maintained the computerised Central Population Register. The Local Tax Office in each county is now entirely responsible for the population register covering the people in the county, and thus for the relevant part of the CPR.

Any person may be given the name and address of the holder of a particular PIN, though persons may apply to have the information protected. Access to the information on the CPR is specified in legislation, as is the content of the register and the responsibility for up-dating by the Local Tax Offices. The CPR includes the following, in addition to the Personal Identification Number (PIN) , for each person:

- name
- sex
- date of birth
- address
- country of birth
- nationality
- marital status (with PIN of spouse)
- PINs of parents
- PINs of children and of other children for whom guardian

The PIN comprises six digits based on the date of birth (year, month, day), three numbers unique to the person, and one check digit. Hospitals were until 1991 responsible for allocating a PIN on the birth of a child (with the result that the PIN indicated where the person was born), but since 1991 each child's PIN has been allocated by the tax authorities on notification of the birth by the hospital. The PINs were allocated initially to the population in 1948 according to where they were living at the time. A PIN is allocated to an immigrant when the tax authority receives the necessary authority from the immigration authorities. When a death is certified by a hospital, as required in each case, the hospital notifies the tax authorities.

The PIN is required for many purposes in Sweden, including use of medical services, schools, employment, tax, banks, etc. Its use in some areas, notably when borrowing from libraries and purchasing season tickets for public transport, has however reduced in response to public criticism. It is thought to be very difficult to exist in Sweden without a PIN, and generally the addresses too are thought to be kept up-to-date.. This

was borne out in the use of the CPR in the 1985 census. The main problem in relation to the coverage of the CPR centres on people who have moved abroad, particularly non-Nordic citizens. A study of apparent death rates among different groups points to inflation of the CPR in respect of non-Nordic persons.

When a person moves he or she is required to inform the tax authorities (possibly by completing the appropriate form for the Post Office (or a private company appointed to pass on such changes), who then inform the Local Tax Office in the area from which the person is moving. Notification of the change to the centre leads to the automatic transmission of the details to the area to which the person is moving. The Local Population Register in the area from which the person is moving is amended only when the change is agreed by the tax office in the area to which the person is moving. Suitable arrangements have been made to deal with moves between Nordic countries. Persons moving into hospital or into prison may retain their home address on the register, though if the address is subsequently given up they will then be registered at the address of the institution or "on the parish". Persons known to have moved abroad are retained on the CPR. Each year the tax authorities send a notification to each person aged over 16 years. If there is no response they record may be changed to "address unknown", and depending on whether the person is Nordic or non-Nordic may eventually be assumed to have left the country.

Use of CPR by Statistics Sweden

Statistics Sweden (SCB) receive each day details of amendments to the CPR. These are used to up-date the copy held by SCB purely for statistical purposes. (In particular, by law the SCB has not been allowed since 1985 to use surveys to correct the CPR in respect of any person, though it can question information received from the CPR if it is implausible, eg successive children are born to the same mother within six months.) SCB receives a copy of the complete register every fifth year. The information the SCB receives from the CPR is used to prepare population estimates, birth and death rates, etc. A copy of the register on 31 December is retained as the main analyses relate to that date. The system used for handling the data in SCB makes it possible to move backwards and forwards in time when analysing the data.

The CPR was used first in the Swedish census in 1975. The questionnaires were pre-printed with details taken from the population register. Other details, eg on housing and economic activity were collected on the questionnaires. The CPR has been used in each of the censuses since then - in 1980, 1985 and 1990 - in combination with other registers.

Recent Censuses in Sweden

Immediately before the 1980 census the first attempt was made to create a suitable real estate register, which was then used in the census to provide the information on dwellings and households, while information on economic activity was collected by questionnaire. The real estate register did not however prove satisfactory. The possibility of combining the CPR and the real estate register was not pursued in the 1985 census, but a register of economic activity was created at this stage. (This relates to those with earnings in October or earnings in the year above a certain level.) The

1985 census thus involved matching data on the CPR, the economic activity register and the business register. Questions on economic activity in the census questionnaire related only to occupation and hours worked, but questions were also included on educational qualifications, dwellings and households.

The 1990 census made use of the CPR, the register of economic activity and the business register. Information on educational qualifications and occupation (where available from the 1985 census) were, like the name and address, pre-printed on the questionnaires. (A slightly different form was used if the information was not available from the 1985 census - a copy is available). One questionnaire was sent to each person over 16 years of age. Questions were included on the persons living in the household, and on the characteristics of the dwellings. (The household is defined as those living in the same dwelling.) Another questionnaire was addressed to the owner of the building at each address asking for the name of one of the occupiers of each of the dwellings at the address. This was necessary to be able to match dwellings and buildings: the building at one address can cover many dwellings - a factor which is still proving problematical, as explained below.

The 1990 census, which was conducted entirely by post, achieved a response rate of 97.5 per cent nationally, somewhat lower in Stockholm.

A specific law is required each time a census is conducted. Access to a particular register is regulated by the law relating to that register. There are also a Secrecy Law, which includes a section applying to the powers of and restrictions on SCB, and a Statistical Law which covers access to data on administrative registers, the use of registers held by SCB, and the circumstances in which the approval of the Data Protection Board must be sought. Even if a census is to be entirely register-based a specific law is necessary if the records are to be retained with personal identifiers attached, as they are in the case of censuses in Sweden so that they can be linked with other data for research purposes, eg on occupational mortality.

Education Register

This is a register of the educational qualifications held by each person, identified by the PIN. The register was created by SCB from the information collected in the 1970 census and was up-dated with the results of the 1990 census. Information is now provided each year to the SCB from educational institutions so that the register can be kept up-to-date. The main difficulty is the coverage of immigrants. SCB have special surveys focusing on them.

Register of Occupations

This is to be developed on the basis of a survey addressed to the employer who paid the highest amount the employee received from any employer in the previous year. This survey has existed for some time, but now has 100 per cent coverage. There has been some difficulty with the coding of occupations, so they are now coded at the three rather than the five digit level.

Register of Income Verification (RIV)

This register is held by the tax authorities and provides information on the income from different sources. The details include earnings as an employee and identifies the employer and workplace involved. The RIV is used to generate also the income register held by SCB.

Business Register (BR)

This is held by SCB (who sell addresses from it) and includes an identification number for each workplace in each business. The identification number for the business has the same format as the PIN, and in the case of small businesses may be a person's PIN. By means of the workplace number it is possible to link the employee with the place of work and the appropriate industrial classification.

Register of Real Estate (RE)

As it is at present, the register includes the information needed for property taxation, including the name and address of the owner, but the property may be registered at any of three levels:

- estate
- building
- dwelling

In general the building corresponds to one address, but there can be many dwellings at one address. There is no standardised system for allocating addresses within buildings, though postmen are thought to have their own informal systems. When the building comprises more than one dwelling only the total floor area and other features of the building, such as the heating arrangements, would be recorded.

Preparations for the Next Census

SCB developed plans to hold a totally register-based census in 2000. This would involve, in particular, linking the four main registers described above: the CPR, the RIV, the BR and the RE. The links would be achieved using the PIN, the business and workplace identifiers, and addresses (as illustrated in a diagram provided, which shows also how these relate to the economic activity register held in SCB). However, since one address can cover many dwellings, a dwelling identifier is needed in addition to the address to match people to dwellings.

The plan was to develop the Register of Real Estate to provide also a register of buildings and dwellings, with a unique identifier for each dwelling. The National Land Survey, who maintain the Register of Real Estate, were successful in developing the register of dwellings in the two areas where pilots were conducted, but the tax authorities, who maintain the CPR, were unable to link persons to dwellings. In consequence the Government decided in June of this year that the work on the development of the dwelling register should be suspended (the team of 30 staff involved has been dispersed); SCB has been asked to consider alternative ways of conducting the census and the tax authorities have been asked to consider further how

they might match people with their dwellings, which they need to do for their own purposes. The National Land Survey has also been asked to look at whether a register of buildings and dwellings might be self-financing.

It is now clear that the next census will have to include the collection of some data by questionnaire. Information on households and dwellings is a major requirement for planning purposes. SCB is currently looking at ways of keeping the number of people receiving questionnaires to a minimum. The ideas include identifying from the CPR where possible those living in the same dwelling and not approaching them. Another idea is to send forms only where the entry on the register of real estate is known from the last census to include more than one dwelling, or where the dwelling is new or has been modified extensively.

Questions on travel to work will be omitted. In any case, the address given on the register may not be the one used while working. Cohabitation will be imputed on the basis of rules derived from the results of the 1990 census. Hours of work - or at least whether full or part-time will be estimated from earnings.

Census costs

The cost of the 1990 census was 250 million Swedish Crowns (SEK). In 2000 it would cost about 300 million SEK if conducted in the same way. The cost of introducing dwelling identification numbers on the CPR and of developing the building and dwellings register was put at 350 million SEK. The census would then have cost 10 million SEK.

The Register of Occupations, which is being produced for other purposes, will cost 40-50 million SEK to develop, and 3-4 million SEK per year to maintain.

Changes in requirements for Census information

A group comprising census users meets regularly with SCB. There is a continuing need for statistics to use in the allocation of resources to particular areas. The main need for linking data arises from the importance of the household unit in analytical work for policy and research purposes. The list of dwellings identified in the census also provides the sampling frame for the household budget and labour force surveys. The topic coverage of the census in Sweden is driven predominantly by national requirements. There were some complaints because a census was not held in 1995.

The main change in requirements in recent years has been the increase in the demand for databases from which users could themselves extract the analyses they require. Databases are supplied for use on PCs which contain individual data with identifiers removed and encrypted in such a way that users cannot read individual records. SCB may however provide access to identifiable records, with names, if they are satisfied that this is justified, eg to support a particular line of medical research. Such access is provided very rarely. (SCB has refused, with Ministers' endorsement, the three requests made by judges in recent years to see census details for particular individuals.)

Public attitudes to data linking

One newspaper tried to generate interest in the trials for the next census, but the interest did not develop. There was a wide-scale debate about linking records in the 1970s and 1980s, but the current arrangements for the use of PINs and for data transfer, which are set out in detail in legislation, command a wide consensus. SCB consider that the legislation makes an essential contribution to this consensus. In the context of SCB's work, the legislation ensures, for SCB, the continuing right of access to certain data from administrative sources and, for those holding the records for administrative purposes, the law clarifies the obligations on them with respect to transfer of data to SCB for statistical purposes.

Annex 9: Registration of vital events, England and Wales
Note based on discussion with ONS staff in Southport and Titchfield

Information collected on vital events

Births and deaths in England and Wales

The Births and Deaths Registration Act 1953 places on appropriate persons the obligation to register births, including still births, and deaths in England and Wales. (Separate legislation covers Scotland and Northern Ireland.) The completed (or otherwise closed) registers are held in the custody of the Superintendent Registrar for the district where the event occurred. The current registers are the responsibility of the Registrars of Births and Deaths. The law requires that certified copies of the original entries are sent to the Registrar General at the end of the quarter in which the registration is made. Public access to these registers is possible through the purchase of certified copies of individual entries.

(i) Registration of births

The register contains the following information in respect of each birth in recent years (as set out in as set out in Form 309 (Rev), following SI 1987/2088; earlier entries were slightly shorter):

- Registration district etc.
 - Register No. and Entry No.
 - CHILD
 - 1. Date and place of birth
 - 2. Name and surname
 - 3. Sex
 - FATHER
 - 4. Name and surname
 - 5. Place of birth
 - 6. Occupation
 - MOTHER
 - 7. Name and surname of mother
 - 8(a) Place of birth
 - 8(b) Occupation
 - 9(a) Maiden surname
 - 9(b) Surname at marriage if different from maiden surname
 - 10. Usual address (if different from place of child's birth)
 - INFORMANT
 - 11. Name and surname (if not the mother or father)
 - 12. Qualification
 - 13. Usual address (if different from that in 10 above)
 - 14. Signature of informant
 - 15. Date of registration
 - 16. Signature of Registrar and Designation
- NHS Number (on Form 309, but not on register)

Details of the father may be omitted from the Register if the father is not married to the child's mother. The register also contains space (Space 17) for the child's name (and surname) for completion in circumstances where the child is named after registration.

A slightly different form - Form 308 (Rev) which includes questions on cause of death etc - is used for the registration of still-births.

The above details are referred to as the "public record". The Population (Statistics) Acts of 1938 and 1980 authorise the collection at the time of registration of births and deaths certain additional, personal and confidential particulars, for statistical purposes. These are not entered on the register, but are sent to ONS for the purpose only of compiling statistics. The Schedule to the Population (Statistics) Act 1980 (which extends to Scotland but not Northern Ireland) sets out the "particulars" which may be required. On registration of a birth (including a still-birth), these are (as worded in Form 309 (Rev)):

1. Where the father's name is entered in register: Father's date of birth
2. In all cases: Mother's date of birth
3. Where the child is born within marriage -
 - (i) Date of marriage;
 - (ii) Has the mother been married more than once?
 - (iii) Mother's previous children (excluding birth or births now being registered) by her present husband and any former husband
 - (a) Number born alive (including any who have died)
 - (b) Number still-born.

Registrars are also required to "seek to obtain" certain "additional statistical information". In respect of births this includes:

Details of economic activity of the child's mother and father:

Occupation

Industry

Employment status

Child's birth-weight

Postcode for the usual address of the mother

Whether multiple birth (and if so numbers involved and reference to registration of relevant births or still-births)

The 1988 Green Paper (41) and the 1990 White Paper (42) on the Registration Service both envisaged the modification of the "confidential particulars" on registration of a birth to be extended to cover previous births outside, as well as inside, marriage, and to include the date of birth of the last previous live born child. These changes have not yet been implemented.

(ii) Registration of deaths

The following information is recorded for the “public record” in respect of a death (as worded in Form 310 (Rev), following SI 1987/2088):

- Registration district etc.
- Register No. and Entry No.
- 1. Date and place of death
- 2. Name and surname
- 3. Sex
- 4. Maiden surname of woman who has married
- 5. Date and place of birth
- 6. Occupation and usual address
- 7. (a) Name and surname of informant
 - (b) Qualification
 - (c) usual address
- 8. Cause of death
- 9. Signature of informant
- 10. Date of registration
- 11. Registrar’s signature and Designation

On registration of a death the following confidential particulars are required under the Population (Statistics) Acts:

At date of death deceased was

- 1. Single
- 2. Married (if married insert date of birth of spouse)
- 3. Widowed
- 4. Divorced
- 5. Not known

Registrars are also required to “seek to obtain”...”additional statistical information” on registration of a death. This information includes:

- Additional information about cause of death
- Length of stay in communal establishment (if death occurred in communal establishment)
- Details of economic activity (where deceased was under 75 years of age)
 - Occupation
 - Industry
 - Employment status
- NHS Number
- Postcode for the usual address of the deceased person
- Age (as a check on dates of birth and death given to the Registrar)

The Green and White Papers referred to above recommended that the marital status of a deceased person was added to the public record - as in Scotland and Northern

Ireland already. (Some information about the marital status of a deceased woman may in any case be given on the register.) The date of birth of a surviving spouse would then be the only “confidential particular” collected at the registration of a death. These changes, like those proposed in relation to the registration of births, have not yet been implemented.

(iii) Processing of data on births and deaths

Information on births and deaths, covering both the Register entries and the additional information which is collected, are sent by the Registrars to ONS Titchfield each week. Over the course of a year ONS receive records of about 650,000 births and 560,000 deaths. For about 94 per cent of the registrations, the details are received on disk. Those data received on paper - on the draft entry forms - are keyed and verified, and merged with the data on disk. The data are then loaded onto the linked Registrations and Statistical Databases held on the Model 204 computer system in Titchfield. ONS Southport have on-line access to the details of the “public record” on the Registrations Database, and any changes to this database are strictly controlled by ONS Registration Division. The databases hold details of births and deaths in England and Wales (but not marriages) since 1993. The details are held in files created for each calendar year.

In addition to supplying information weekly to ONS Titchfield, Registrars also send information on registrations of births to Southport (on paper) for use on the NHSCR. This information is restricted to the “public record” of the registration, which may be available before some of the other details, such as birth weight, are received. (The Registrar usually receives information on birth weight from the hospital or health authority.)

ONS Titchfield create each week a file of deaths for use by ONS Southport in updating the NHSCR.. Southport then provide the NHS numbers for addition to the Model 204 Database. Titchfield also supply to each HA a list of deaths in its area - in computer readable form. The lists supplied to HAs by the Registrars are, by law, supplied on paper.) Lists of deaths are also sent quarterly to the Department of Social Security.

Before 1993, details from registrations of births and deaths were computerised from around 1960, but fewer details were entered in respect of each registration - particularly before 1984. Computerised indices (described in more detail below) have been produced for the years from 1984. Proposals are being developed to computerise the data held on earlier registrations. This will be expensive and would need to involve public/private sector partnership. Registration records go back to 1837. There are 300 million in total (including registrations of marriages). It is likely, in any case, to be necessary to redevelop the Titchfield database system in the early years of the next century.

Marriages in England and Wales

The form of the register entry in respect of marriages in England and Wales has remained unchanged since 1837 despite changes to other aspects covered by the Marriage Acts. The details recorded in the register are:

Registration district
Number of entry in register
1. When married
2. Name and surname*
3. Age*
4. Condition (ie marital status)*
5. Rank or profession*
6. Residence at the time of marriage*
7. Father's name and surname*
8. Rank or profession of father*
Place of marriage
Signatures of parties to marriage
Signature of two witnesses
Signature and designation of person officiating
Authority for marriage
Religious denomination (if appropriate)

* denotes that the relevant details are recorded for each partner

Both the Green Paper and the White Paper referred to above proposed adding more information to the marriage register entry - "in particular the date and place of birth of each of the parties, and, to give equal treatment to both sexes, the names and occupations of their mothers as well as their fathers". There are no additional particulars collected for statistical purposes at the time of a marriage.

The register details in respect of marriages are supplied to the Registrar General only on paper, as required by law. A Quarterly Certified Copy of each entry in the marriage registers for England and Wales is sent to Registration Division in Southport, having previously received it from the person who solemnised the marriage eg a Registrar or member of the Clergy. The documents are sent in batches each week from Southport to Titchfield to be keyed and verified on-line for addition to the relevant database on the Model 204 system. The processed batches, plus system reports, are returned to Southport the following week. Registration Division in Southport is responsible for making any necessary amendments to the databases in respect of marriages. The registration details held in the databases for marriages in each year since 1993 are restricted to the district of registration, the register volume and entry number, items 1-4 in the list above, and flags to indicate whether the couple were cohabiting before the marriage (based on the entries at 6 above), the type of establishment in which the marriage took place, the denomination (if appropriate) of the person who officiated, and the authority for the marriage (eg banns, licence, etc).

Some details from marriage registrations between about 1963 and 1992 were computerised for analysis on earlier processing systems, but, like the databases in

respect of registrations of births and deaths in that period, they contain fewer details than the later databases. The indexes of marriages (described further below) have been computerised from 1984, and are all soon to be available on-line to the public.

Divorces

ONS Titchfield process information on decrees absolute issued by courts with divorce jurisdiction in England and Wales. These courts are the County Courts - and the High Courts which deal with more complex cases. The processing is undertaken on an agency basis for the Lord Chancellor's Department. The resulting databases - which extend back to the early 1990s - are used to up-date the index of divorces held in the Principal Registry of Family Division (PRFD) and to produce statistical analyses.

Courts send information to Titchfield each week on Form D105 - one form for each divorce.. The data are keyed and verified, with the help of the relevant Court and of the LCD if necessary. Each fortnight ONS send to the LCD listings of the latest batch of decrees; these are followed monthly by a fiche index and selected data on disk. An annual index is prepared at the end of the year.

The details which are held on each divorce in the annual databases include the surname of the marriage, the forenames of the partners to the marriage, alternative surnames and forenames; the date of the marriage; the age and marital status of each of the partners at marriage; dates of birth of children under 18; the number of children aged 18. However, before making use of this information for any purpose other than producing statistics, eg in dealing with Civil Registration issues, ONS must seek approval from the PRFD. The current arrangements are, in any case, under review. LCD are likely to establish a computer network which would enable the courts to pass information directly to the PRFD, without the need for keying by ONS. The LCD have indicated that they will continue to provide ONS the access it needs to derive statistics.

Registration Service

The Registrars are statutory post-holders and, as such, neither local authority nor central government employees. They can be dismissed only by the Registrar General. The arrangements for registration in each LA area must be approved by the Minister. The Registers are essentially records of events. Thus, while there is provision for corrections of errors and re-registrations to add additional details (particularly of the father, if not entered originally), the Register is not amended subsequently, eg for changes of identity.

The law requires that registration details are supplied to the Registrar General on paper, so each quarter each Registrar supplies to the Receipt and Index Section in Southport a copy of the entries in the local registers during the quarter. The data for almost all registrations of births and deaths are also sent to ONS on disc. A national network will be implemented from December linking Register Offices and ONS, so

that data can be sent electronically. It will also provide email facilities and consistent access to reference information, eg handbooks and legislation.

At the local level, the Registrar draws up the birth or death draft entry on a computer screen, including the additional information for statistical purposes, and then the entry in the register (in bound form - not loose-leaf) is copied manually from that. There is no draft entry for marriages

Indexes of births, deaths and marriages

ONS holds in Southport indexes of births, marriages and deaths in England and Wales since 1837 when the registration service came into being. Indexes for registrations since 1984 are grouped by year, but include the month of registration. For registrations in earlier years the indexes group registrations into volumes for each quarter. The indexes for each period list persons in alphabetical order of their names.

The indexes of births give the surname and forenames of the child, the mother's maiden name, the district of registration, the register volume and entry number and (since 1984) the month of registration

The indexes of deaths give the surname, first name and initials of other names, date of birth (age in years before 1970), the district of registration, the register volume and entry number and (since 1984) the month of registration.

The indexes of marriages contain separate entries for each partner to the marriage. The entry gives the surname, first name and initials of other names, the surname of the partner to the marriage, the district of registration, the register volume and entry number and (since 1984) the month of registration

There is usually a lag of 9-12 months before the index is up-dated. The indexes for registrations since 1984 have been computerised. Others are on micro-fiche. Indexes of divorces are not available for England and Wales, though they are for Scotland in respect of 1984 and later years.

Members of the public may purchase certificates in respect of any entries in the indexes. A copy of each index is held in the Family Records Centre housed with the Public Records Office in Islington, but the Centre cannot supply the authorised copies of certificates. Provision of certificates requires reference to the copies held in Southport of the entries in the Registers which are retained locally. Each week 12,000 applications are received, via the Family Records Centre, for copies of certificates of births, deaths or marriages. There also about 500 postal applications each week.

Overseas registrations

The Overseas Section in Southport receives returns of births, marriages and deaths of British citizens around the world, including British Forces, but registration is not compulsory in all circumstances. The particulars required for entry in the register are

the same as those for registrations in England and Wales, but some details (eg precise dates of birth, or age) may be missing. Indexes of these registrations also are on view at the Family Record Centre and copies of the indexes, on microfiche, can be purchased from the Overseas Section in Southport. Computerised indices of all overseas registrations have been prepared for internal use, but the details of the registrations are not computerised. The indexes, which are compiled by year of registration, have broadly the same content as those for registrations in England and Wales.

Review of Civil Registration

A review of Civil Registration for the 21st Century is about to start. The terms of reference as currently drafted are:

To review the requirements for the registration of births, deaths and marriages in preparing a consultation document which will:

- 1 Set out options for the future development of the registration service in England and Wales.
- 2 Outline the requirements for a service which will be capable of taking full advantage of advances in technology in the recording, transfer, storage, linking and dissemination of data.
- 3 provide options for service delivery including the role of a Local Registration Service.

Two issues which are particularly relevant to the possible use of information from registrations as a source of information currently collected in the Census are (i) whether more of the historic data on registrations will be computerised, and (ii) whether closer links will be made between registrations of vital events and other administrative records, perhaps as part of the Better Government initiative. The addition to the marriage register entry of the date and place of birth of each of the parties, as proposed in the 1988 Green Paper and the 1990 White Paper, would also be very helpful in linking records. Another highly relevant issue is whether steps can be taken to link information on marriages and divorces.

Annex 10: National Health Service Central Register, England and Wales

Based on discussion with ONS staff in Southport, Gillian Goddard, Department of Health and Simon Leng, NHS Executive

The National Health Service Central Register (NHSCR) is held and maintained by the Office for National Statistics on an agency basis for the Department of Health. The main function of the NHSCR is to support the work of the 106 Health Authorities (HAs) in England, Wales and the Isle of Man, by maintaining a central record of all patients registered for NHS purposes. This involves:

informing HAs of patients moving out of their area and into a new area, of deaths, of emigrations, of enlistment into the Armed Forces and other exits from the NHS. These actions enable HAs to transfer patients' medical records and ensure that GPs are paid correctly;

controlling the issue of NHS numbers, which are allocated locally at the registration of births but allocated centrally for immigrants and adopted persons;

liaising with Registries in Scotland and Northern Ireland to ensure that there is a comprehensive system for the whole of the United Kingdom.

Health Authority Registers are now computerised, and GPs' records are increasingly becoming linked electronically with the Health Authorities. The new NHS number with its standard format (in place of the fourteen different formats which were used earlier) is now being adopted in all aspects of health care, so that records are becoming much more accessible to those authorised to have access.

The NHSCR is also used for other purposes, notably a wide variety of medical research projects.

The NHS Executive currently pays ONS for the maintenance and use of the NHSCR. There are also contributions from the Welsh Office, the Ministry of Defence and the Department of Health, though ONS bears part of the cost in recognition of the benefit it gains, eg for population estimates.

Separate charges are made for the Tracing Service provided to HAs, hospitals, etc to find a patient's NHS number.

Content of the NHSCR

The NHSCR comprises several historical registers as well as the current computerised system (CHRIS) - Central Health Register Inquiry System - run on a Hewlett Packard mainframe.. Details of CHRIS and the earlier NHSCR indexes are described in “A Guide to the National Health Service Central Register”. CHRIS was generated from the registers of the 98 Family Health Service Authorities which there were in 1991 and which preceded the Health Authorities. The registers from which the NHSCR was copied had been pruned to exclude deaths.

CHRIS holds for each patient:

- surname (and any previous name if appropriate)
- forename
- date of birth
- HA cipher*
- sex
- medical research flags
- cancer flag
- pre 1996 NHS number and new NHS number

*The HA cipher indicates the Health Authority where the person is registered, or that the person has died, is a long-term psychiatric patient, is in prison for two years or more, or has left the country.

The NHSCR does not include the person's address.

The Registrars allocate the NHS number when births are registered, but the number is not now recorded in the Register or on the Birth Certificate. (For births between 1948 and 1996 the Birth Certificates had the NHS number on the Certificate.) For immigrants and adoptions the numbers are allocated centrally. Records are retained after a person's death. There are 63 million entries on the current register.

Up-dating the NHSCR

Births

Births should be registered with the Registrar of Births and Deaths within 6 weeks of the birth. The NHS number is allocated at this stage by the Registrar. This leads to an entry on the NHSCR. It is possible, however, that the infant will already have been registered with a doctor, and that a temporary NHS number has been allocated. In principle, the two entries on the NHSCR should be matched to avoid duplication.

Deaths

Notifications of deaths are received from the Registrars of Births and Deaths. Information regarding deaths of pensioners is received also from DSS. Some deaths overseas are registered with the Consulates. The entries for the deceased persons are identified on the NHSCR, so that the relevant HAs can be informed. About 40 per cent of cases need to be matched manually, and fuzzy matching techniques are employed. Information on deaths is also pooled with the corresponding NHS registration services in Scotland and Northern Ireland.

Emigration

Information is received from various sources including:

Immigration Officers at ports of embarkation

Department of Social Security

Home Office

Members of the public who hand in their medical cards, etc

On receipt of information, Southport informs the relevant HA but CHRIS is up-dated only when the HA confirms that the person has left the country. Under the NHS Regulations 1992, persons leaving the country with the intention of being away for a period of at least three months should be removed from the doctor's list.

Immigration

An NHS number is allocated to an immigrant when the immigrant registers with a GP. The patient is required to give the date of first coming to live in the UK (and the first address where registered with a doctor). If previously registered the person is also asked to give the date of leaving the country. Like other persons applying to join a doctor's list the applicant is required to give the town and country of birth.

Service personnel

Persons joining the Armed Forces are required to surrender their Medical Cards and the cards are sent to the NHSCR (otherwise a default form is completed). HAs are notified so that the persons can be removed from the Doctors' lists.

Service Dependants are also entitled to Service Medical Care. Following a request from a Station Medical Officer medical records would be transferred to the Station from the HA, via the NHSCR.

On leaving the Armed Forces, the NHSCR would be up-dated when the person concerned registered with a GP.

Members of foreign armed services in the United Kingdom, and their dependents, are thought to be registered with military medical personnel. They are therefore likely to be omitted from the NHSCR.

Long stay psychiatric patients

Information is received from psychiatric hospitals of patients who have been in hospital for over 2 years. CHRIS is up-dated and the relevant HAs are informed so that the patient can be removed from the Doctors' lists.

Prisoners

The Home Office holds information relating to individuals who have been sentenced to a term of imprisonment. When notified of a sentence of more than two years, CHRIS is up-dated and a notification is sent to the relevant HAs so that the person can be removed from the Doctor's lists. The NHS Regulations require that patients with prison sentences of more than two years are removed from the doctor's list. However, the supply of information from the Home Office has not been maintained and is currently a matter of negotiation with them.

Matching of records

Maintaining the NHSCR involves handling around 7 million notifications of changes per year, 20 per cent of which do not match at all readily. Of the 7 million transactions a year, 80 per cent can be matched automatically. For the remaining 20 per cent staff usually spend up to 1/4 hour on each case before it is referred to the supervisor for possible referral back to the HA. A Data Quality Section is available in ONS Southport to assist the HA resolve problems. The aim is to keep wrong associations to less than 0.1 per cent. The Data Quality Section also undertakes large scale data reconciliation exercises between the NHSCR and the HA databases.

The Health Authorities own registers are now computerised, and GPs' records are increasingly becoming linked electronically with the Health Authorities. The new NHS number with its standard ten-digit format (in place of the 22 different formats which were used earlier) is now being adopted in all aspects of health care, so that records are becoming much more accessible to those authorised to have access.

Future of the NHSCR

The NHS Executive's plans for the NHS Strategic Tracing Service (NSTS) are likely to have a significant impact on the NHSCR, and particularly on the role played by ONS. The NSTS is described briefly in a paper provided by the NHS Executive (44). The NSTS is being developed as a project under the Private Finance Initiative.

The NSTS is described in a document supplied by the NSTS Team (45). It will be a database of people who come into contact with the NHS in England and Wales. The primary objectives of the service will be to

- provide an on-line NHS Number Tracing Service to allow NHS organisations to trace NHS numbers against an accredited source of information;

- support the public health agenda by facilitating health events linkages, epidemiological studies and health gains assessment;

- provide national administrative database functions to reduce bureaucracy in NHS organisations;

- support the work to identify and tackle prescription fraud and list inflation, and

- provide a national register of NHS patients, organisations and practitioners that will allow replacement of existing registers.

The NSTS will hold a national set of information on:

- Patients (names, NHS number, addresses, date of birth, date of death);

- Organisations (NHS trusts, health authorities, organisation codes and other appropriate demographic units) and

- Practitioners (including GPs, GP practices and how they are organised).

The plan is to construct the NSTS database initially from data on the NHSCR. It will then be enriched, as a second stage of data loading, with data from the Patient Registers, including patients' addresses and GP details. In due course it will take on data from other sources including NHS Trusts and Child Health Registers.

Access will of course be strictly controlled, in line with the controls on access to other NHS systems. A basic principle is that access will only be granted to a user to the extent necessary to support the users' business needs. NSTS Team have said that data needed for existing statistical functions will continue to be available to ONS.

The wider issues surrounding any possible future rationalisation of the registers will be explored in a study involving the NHS Executive, statistical customers of the NHSCR within the Department of Health, the NHSCR staff and NHSCR statistical customers within the Office for National Statistics.

Annex 11: Health Authority Patient Registers, England and Wales

*Based mainly on information provided by Tracie Kilbey, ONS,
and drawn from a report by her and her colleagues in the
ONS Population Estimates Development Unit (46)*

Health Authorities are required to maintain in respect of each doctor in its list a register of the patients in its locality accepted by or assigned to each doctor. These lists are used, among other purposes, to determine the remuneration of each doctor.

The coverage of the lists, and in particular the requirements to remove names from the lists, are set out in the NHS Regulations.

At present, though Health Authorities came into existence on 1 April 1996, most patient registers are still organised in terms of the former Family Health Service Authorities (FHSAs). The transition to organisation in terms of HAs is to be completed by March 1999. The text below assumes that this transition is complete.

Application to join a doctor's list

Application to join a doctor's list (other than as a temporary resident) involves completing a form which requests the following:

- Surname
- Title (Mr/Mrs/Miss/Ms)
- Forenames
- Previous surnames
- Date of birth
- Male/female
- Address
- Telephone number
- NHS number
- Name and address of last GP (including Armed Forces if appropriate)
- Latest address with that GP
- Town and country of birth

If the person has come from abroad, the following are also required:

- Date of first coming to live in the UK
- The first address in this country where registered with a doctor
- If previously registered, the date of leaving.

Temporary residents

A person is regarded as a temporary resident in a place if on arrival in the place the intention is to stay for more than 24 hours but no more than three months. At the end of three months in the new location the person is to be regarded as having left any previous location in which the person was registered and would be removed from the

previous doctor's list. No amendment is made to the NHSCR when a temporary resident registers with a doctor, although the resident is included on the doctor's list..

Removal from doctor's list

The HA arranges for the removal from a doctor's list of patients who have registered with another doctor or who, on advice from the NHSCR should be removed for other reasons, as described above in the section on the NHSCR. Under the NHS Regulations "a person for whose medical treatment a doctor is responsible" should be removed from that doctor's list when the person

- (a) leaves the United Kingdom with the intention of being away for a period of at least three months (or has been absent from the United Kingdom for a period of more than three months);
- (b) is in Her Majesty's forces;
- (c) is serving a prison sentence of more than two years (or sentences totalling more than two years); or
- (d) dies.

The removal takes effect s soon as the HA receives notification.

Persons will also be removed from a doctor's list if they have notified the HA that they no longer wish to avail themselves of general medical services. A person will also be removed if known to have moved to an address outside the HA's locality, or if the address of the person is no longer known to the HA - unless within six months the doctor satisfies the HA that he/she is still responsible for general medical services to that person, including visits when necessary.

The NHS is about to announce a series of measures to remove duplicate entries and otherwise improve the accuracy of the patient registers.

Evaluation of coverage of patient registers

The registers cover only people who are currently registered with a General Practitioner in England and Wales. People who are not registered may nevertheless be included on the NHSCR, eg those born in England and Wales since 1991 and persons in the British Armed Forces who were previously on a doctor's list.

A detailed evaluation of patient registers as a source of population estimates for FHSA areas has been carried out by the ONS Population Estimates Development Unit (45) on the basis of extracts from the patient registers of each FHSA - including the postcode of the patient's address - for 1991 and each year 1994 to 1997. The extracts were provided via Family Health Systems, Exeter. The report on the study presents comparisons between the numbers on the FHSA registers and the mid-year population estimates which, it is recognised, refer to a slightly different population. But of course, particularly in view of the uncertainties relating to the population estimates,

the explanation for such differences, after allowing for differences in definition, cannot be attributed entirely to weaknesses in the FHSAs records.

The extent of “list inflation” as defined in the study depends on the treatment of temporary residents, who can appear on more than one doctor’s list, and on the treatment of other “rejected” entries (those that contain one or more validation check).

After excluding temporary residents, cleaning some records, removing duplicates and including some “dirty” records, the study finds “list inflation” in 1996 in England and Wales of 3.37 per cent. (This is the same as the result for 1991, and below the levels of 3.98 and 3.93 per cent in 1994 and 1995 respectively.) However, with only validated records included, the level of “list inflation” in 1996 was 1.85 per cent.

The analyses of list inflation including some “dirty” records shows “list inflation” highest amongst males aged 38-44 and elderly males, and amongst females aged 20-30.

In total, list inflation is higher among males than among females, though both reveal negative “list inflation” among those under 1. This is thought to be mainly because of delays in registering births, leading to delays in registering with a doctor. List inflation is higher in England than in Wales (3.47 compared with 1.70), possibly as a result of the way in which screening programmes are targeted. “List inflation” for Wales is negative when only validated records are counted. Compared with those for England, there are also different distributions by age both in respect of males and females.

“List inflation” is highest in the South East Region, and negative in East Anglia (even when the appropriate “dirty” records are included. These two regions are two of the three which show the largest variability in “list inflation” between FHSAs within a region. The difference between the levels with and without the relevant rejected records shows the extent to which the quality of the FHSAs’ data can have on list inflation - as much as 20 per cent in exceptional cases. There is however some evidence from the comparisons that the quality of FHSAs records has improved since 1991. List inflation in 1996 turns out to be positively correlated with the number of new acceptances onto a patient register (aged more than 1) and the number coded as immigrants. Other research (50) suggests the excess register count is particularly high for South Asians, and that the excess increases with age. This may be because of the different naming systems used by South Asians and the problem that date of birth is sometimes not known, both of which create difficulty in tracing earlier registrations.

Calculation of “list inflation” for each local authority area could be made only using validated records. The results for 1996 range from over 20 per cent to below -10 per cent. “List inflation” in Inner London was 15 per cent. The evidence suggests that it is particularly high among the mobile age groups and that records for those who have died are not being removed effectively. The presence of armed forces is thought to be partly responsible for the extent of the negative levels in some areas, while the failure to de-register students is thought likely to be responsible for the “list inflation” among those aged 20-35 in areas with large numbers of students.

Annex 27 refers to a study of “list inflation” in Northern Ireland (49).

Annex 12: Immigration, United Kingdom

Based on discussion with Madeleine Watson, Home Office

Work is progressing to replace the current databases, which are not found to be highly reliable. In any case they were not designed for use after the millenium. In view of the set-backs encountered, however, it is now unlikely that the new arrangements will be in place by the end of 1999 as had been planned. Generally the databases lack information on addresses, and where an address is given it may be that of a representative.

The new system should provide information on the various categories of persons allowed into the country, other than persons staying for short periods (usually of less than six months). Such categories include those "staying temporarily", or holding "work permits", or entering "as married partners", or granted "indefinite leave to remain" in the country. It is hoped that the system will hold the date of arrival as well as the dates of applications and of changes of status. The information will include for each person the full name(s), date of birth, sex, date of birth and nationality. In addition to the details of the principal applicant, the system will also hold information on dependents covered by the application.

No information is collected on people leaving the country.

Annex 13: Education and Training, England

Based on discussion with Denis Allnutt and Nick Kew, Department for Education and Employment, and copies of documents provided

Two consultation documents issued by the Department for Education and Employment over the past years or so are particularly relevant:

- (i) Database of the education and training participation and achievements of young people aged 14-21;
- (ii) Proposed arrangements for collecting statistical information from schools.

Both relate to education or training in England, but it is possible that the Welsh Office will bring forward broadly similar proposals relating to Wales.

(i) Education and training participation of people aged 14-21

The proposed database would contribute, at the national level, to the “monitoring, evaluation and development of education and training policy”, and could also “assist with the planning and development of services and provision” at local or institutional level also. The database would be used solely for statistical and research purposes.

The database “would include “a single longitudinal record for each young person on England and Wales (with a few exceptions). This record would show their history of participation in education and training, and the qualifications they gained (or attempted to gain) along the way. For most areas of education and training participation and achievement, named individuals records are already collected for other purposes, but are held by the Department or allied national agencies in several separate and currently unconnected data sets. Each young person’s longitudinal record on the database would be constructed by linking together, within and across these various data sets, all of the records relating to them”.

The consultation paper lists various data sets which already exist, or are under development, and which would contribute to the database. All involve 100 per cent coverage, rather than samples. These are

Individualised Student Records collected by the Further Education Funding Council;

DfEE’s database on TEC funded trainees;

HESA student records covering students in HE institutions (see Annex 14);

DfEE’s database of young peoples GCSE and GCE entries and achievements (SERAP);

DfEE's GNVQ student database showing young people's GNVQ registrations and achievements;

DfEE's National Information System for Vocational Qualifications - though the coverage is not yet complete;

The Employment Service Jobseeker's Allowance and Labour Market Systems of unemployed claimants, and of non-claimants using the Employment Service's job broking service.

In each of the data sets individual records are identified by name, gender and date of birth. Pilot studies were planned to test whether a sufficiently high degree of accuracy for statistical purposes can be achieved in matching the above data sets on these bases.

There would be significant gaps in the database - notably on labour market experience. DfEE is not planning to collect new data solely to fill these gaps, but relevant data sets which were created (or extended) for other purposes would be added to the database where possible.

Subject to suitable safeguards, access to the database would be shared as widely as possible with national and local agencies, and bona fide researchers.

The responses to the consultation paper were almost all strongly supportive, but also included some reservations. The Data Protection Registrar, amongst others, expressed concerns about access by local agencies to named records - a matter to be considered further with the interested parties.

These included doubts about the adequacy of the matching procedures. The Department now plans "to commission organisations to undertake an in-depth evaluation of all the data sets, develop proposals for data matching, make an assessment of the likely level of accuracy that could be achieved, provide a report on all these things, and on the basis of that estimate the cost of setting up the full database - but not actually to do the data matching itself". In view of another point raised in the consultation - that the age limit of 21 is too low - the evaluations will examine data for young people up to age 25.

The next step is to place an advertisement in the OJEC seeking expressions of interest in undertaking the evaluation. The aim is - subject to the evaluation reports, to the availability of funding and to final Ministerial approval - to appoint a contractor to commence development of the database by January 1999.

(ii) Information from schools

The White Paper *Excellence in Schools* (July 1997) highlighted the need for improvements in the collection and use of comparative data about pupils. The consultation paper on the proposed arrangements issued by DfEE later in 1997 was

prepared in co-operation with the Qualifications and Curriculum Authority and the Office for Standards in Education.

The consultation paper sought views on three related proposals:

- (i) collecting more pupil information as individual pupil records;
- (ii) introducing a system of unique pupil numbers that schools will assign to pupils (when they first enrolled at a school) and include routinely when reporting individual pupil information;
- (iii) new measures to contain the data burden that data collection imposes on schools.

The extent to which these proposals would apply to independent schools would be discussed with their representative bodies.

DfEE collects “information (currently as school totals) about a range of pupil characteristics - eligibility for free school meals, special needs, ethnic group, whether English is an additional language. The consultation paper lists the advantages, in the educational context, of collecting such information on individual pupil records. Annex B of the consultation paper gives a “provisional outline specification” of the “common pupil record”. It includes, in addition to the topics already mentioned, the unique pupil number, name, gender, date of birth, home postcode, date of joining this school, etc.

The paper also detailed proposals on the proposed unique pupil number (UPN). It states too that “we would not ... allow the unique pupil number (or any extension of it) to be used by other Government departments or agencies for purposes unconnected with education or training”.

The records for pupils aged 14-21 would be fed into the database described above relating to persons aged 14-21 years.

The response to the consultation paper was favourable on the whole, but concerns were expressed on a number of aspects. A code of practice is now being prepared following a meeting with the Data Protection Registrar, Liberty and the Advisory Centre for Education. DfEE plan to pilot the new data collection arrangements in a small number of schools and their LEAs in 1998/99 before attempting large scale implementation. In line with a requirement stressed by the National Union of Teachers, the pilot is to be independently evaluated.

Discussions are taking place with a view to the UPN being adopted as a (unique learner number” in post-16 education and training, eg on Learning Cards issued by Careers Service.

DENI has indicated that it wishes to adopt the same system of UPNs in Northern Ireland.

Annex 14: Higher Education, United Kingdom

Note based on meeting with Adrian Crossley, Higher Education Statistics Agency,

HESA receives from each Higher Education Institution in the United Kingdom two returns in each academic year which contain records relating to the individual students:

- (i) A return covering students registered on a course spanning 1 December;
- (ii) More comprehensive information on all students participating in courses of study during the year.

HESA has provided a copy of the detailed manual supplied to those completing the returns. Institutions have two options in deciding how to supply the required information. They can complete either

a "combined record" where all the students registered for a particular course are entered against the course (this is usually the option followed by the older universities with structured courses), or

"two records", with one covering the details of modules and the other containing the details of the students and the modules they are taking.

In each case the personal details likely to be of interest in any consideration of the possibility of replacing the Census of Population are the same. Also, most of the personal details are required both in the December and in the full year records. (Those which are obligatory in the December records are indicated by a diamond in the list of fields in the manual provided; all are required in the full year returns.)

The personal details recorded include

- full name
- date of birth
- gender
- full-time/part-time study
- country of domicile
- post code of permanent address
- nature of term time accommodation
- nationality
- ethnicity
- disability
- occupation code (for parent or guardian)

The full home address is not available, and the postcode is validated only in respect of the first three characters (ie up to the space). According to the instructions given, the postcode relates to the "student's permanent or home address prior to entry to the programme of study. It is not necessarily the correspondence address of the student". However, the intention of this instruction is not to suggest that an address should be

retained if the student's permanent or home address changes, eg because parents have moved - only that it is not the term-time address that is required. In any case, it is thought, institutions report the "permanent or home" address they hold at the time each return is made to HESA, even if this differs from the address they held when the student enrolled.

Students from Scotland could be identified from the Scottish Reference Number allocated by UCAS. (UCAS is likely to have the full home address of all students who enter higher education through UCAS - roughly half of the 1/2 million new students each year, but mainly the students entering straight from school rather than the mature students.) The codes for domicile and nationality would help to identify overseas students.

Individual records are passed to DfEE for analytical purposes, but with the names removed. The records provided to DfEE do contain, however, a Soundex coding of the name which can be used to facilitate linkage with other data on individuals held by DfEE. Anonymised data are sent also to HESA's other Statutory Customers. The exceptions, where the names of students are also provided, are the transfer to the Scottish Office and the Scottish HE Funding Council of the names of students studying at Scottish institutions, and the transfer to the Welsh Office and Welsh Funding Council of the names of FE students studying at Welsh institutions. Also, there is a delivery to the Further Education Funding Council about FE students in England which contains names. HESA receives information on students on HE courses in FE institutions.

The HEIs are content to provide names and other identifying characteristics of students to HESA, but do not want these to be passed on to the government departments involved in HE policy and funding. If ONS wished to receive the names and other details of students, as reported to HESA, it would be necessary for HESA to raise the matter with the HEIs, probably through the Committee of Vice-Chancellors and Principals or the Standing Conference of Principals. There would be advantage to HESA in having the full home address, possibly by requesting the full post-code and the street number/house name. It would then be more feasible for HESA to contact students directly eg in surveys of students first employment after finishing an HE course. At present, such surveys have to be routed via the HEIs. The first opportunity for such a change would be in the 2003 revision to the records. Planning for this is likely to start in 2000-1.

In the medium term HESA hope to have just one format in which HEIs would provide student records. This would probably be in four parts:

- (i) personal details of student
- (ii) courses followed
- (iii) modules making up the courses
- (iv) results.

Records in this form would correspond well with the general approach to life long learning advocated in the Dearing report.

Annex 15: Further Education, England and Wales

Based on information provided by Michael Stock, Further Education Funding Council and Frances Good, Further Education Funding Council for Wales

The Further Education Funding Council (FEFC) is responsible for allocating funds to colleges in the Further Education (FE) sector in England and other institutions providing FE courses. The Further Education Funding Council for Wales (FEFCW) has a similar responsibility in Wales. The description below relates to FEFC, but FEFCW follows similar procedures and holds similar data.

FE colleges and other institutions in England are required to provide to FEFC Individualised Student Record (ISR) data at three dates in respect of each teaching year. For 1998-99 the reference dates are 1 November 1998, 31 July 1999 and 31 December 1999. The returns cover both full-time and part-time students, though students with fewer than specified numbers of “guided learning hours a year” and who are not eligible for funding by FEFC or HESA can be covered in “reduced”, or in some cases “aggregate”, returns only. FEFC has provided a copy of the Institution Support Manual which is supplied to institutions to assist them in the completion of the returns.

FEFC maintains a computerised database of individualised records. The student data set includes the following items (for “full record” students):

- Student data set reference*
- Surname
- Initials
- Date of birth*
- Sex*
- Home postcode
- Country of domicile
- Ethnicity
- Learning difficulties/disabilities

* included on “reduced” record.

Information is not requested on the student’s full address, but it is thought that the institutions would have this. The postcode held by FEFC is “the permanent or home postcode of the student prior to enrolling at the institution”. This is required, rather than the current home address, “to establish catchment areas”, and accords with HESA practice. (Annex 13 contains further information on this point.)

Items needed by HESA, but not FEFC, are required for those on HE courses in FE institutions. As described also in Annex 14, HESA deliver to FEFC details of students on FE courses in HE institutions in England, and FEFC supplies to HESA information on students on HE courses in FE institutions.

The FEFC has published “Council Confidentiality and Release Guidelines for Data”. These guidelines are included in the Institution Support Manual referred to above.

Annex 16: Social Security, United Kingdom

Notes based on meetings with David Frazer and colleagues in the Analytical Services Division of the Department of Social Security, Longbenton, Newcastle, and subsequent correspondence.

While most of the systems maintained by the Department relate to a particular benefit or to contributions, the recent Green paper on Welfare Reform envisages a more integrated system of administration focused on the client. In this spirit the Analytical Services Division (ASD) have been linking information drawn from different benefit systems (including job Seekers Allowance) for the 5% sample of NI numbers on which their regular statistical analyses are based. ASD supplied a copy of a short note which describes the main thrust of this cross-benefit project. A report on the project is currently in preparation, and ASD hope to be able to publish the first set of analyses in the autumn.

The cross-benefit project covers beneficiaries of working ages. Information from the Child Benefit records contain information on recipients of child benefit, including the children in respect of whom the benefit is paid. The Retirement Benefit records include information on those receiving Retirement Pension or Old Age Pension. The IS system covers those in Income Support, of whatever age over 16. The Department also maintains a Departmental Central Index. The following paragraphs consider the information available in these systems from the viewpoint of its suitability to replace information on individuals currently collected in the Census of Population.

Departmental Central Index - DCI (Terry Mullen)

Local offices are linked to the DCI and use it in benefit administration. It was set up in 1968 to take over functions previously provided within the NIRS system (described below). The main purposes of the DCI are

- (i) to allocate new National Insurance Numbers (NINOs);
- (ii) to trace NINOs for benefit and contribution enquiries.

It is based on NI numbers and indicates benefits received. The DCI includes NI number, name, date of birth, last known address, and gender. In theory the DCI also records the start and end date for the period of payment of each individual benefit, but there are believed to be significant problems with this information in practice.

In the past an entry was created, with NI number, when a person reached age 16, or when a number was allocated at a later age, eg for immigrants. However, since 1992 the DCI has allocated a child reference number for all children as they qualify for Child Benefit (ie as soon as the claim has been accepted). This number is the same as the National Insurance number - it is merely renamed when the person reaches age 16.

Up-dating details on the DCI

Systems exist for data to be transferred between the benefit systems and the DCI - in each direction - and there is a DCI support team to clear mis-matches. The DCI works on a system of nightly up-dates and must be provided with correct details of the existing record before it will make changes. Mis-matches may arise at this stage when the DCI accepts and processes information passed to it from the source systems on addresses and other details. For example, if the IS system tells the DCI to make a change, IS must provide details which agree with those on the DCI (eg name and address) before the DCI will apply any changes. If the IS system has become out of line with DCI then it may not hold the correct information and the record will be rejected for investigation.

Most of the work of the DCI support team on mis-matches concerns checking and resolving conflicting information from source systems. There is not a large volume of cases where no information can be found for a claimant or NINO, which in turn would lead to an accumulation of redundant NINOs. In addition, routine work in local offices (supported by the DCI) is geared towards ensuring that new NINOs are allocated only if the claimant can satisfy them that there is a genuine reason why the original NINO cannot be located. This includes checks on information on the DCI of addresses (including parents' addresses - held for Child Benefit purposes).

Deaths are routinely captured on the DCI and NIRS (described below). Deaths are notified as a matter of routine business via the Benefits Agency and the Contributions Agency. ONS and GRO(S) also provide regular extracts of registrations of deaths to capture any which have not already been notified in the course of routine business.

There is a problem with keeping track on the DCI and on the NIRS of people who move abroad, If a move is not reported to the Benefits Agency or the Contributions Agency then the systems cannot record that the person has left the country. Even if the move is notified, the DCI will not always hold the relevant indicator - though it could be obtained from the NIRS. It is estimated that there are 5.4 million such records held on the DCI.

Coverage of the DCI

There are almost 80 million records held on the DCI. Over 10 million of these are known to be for deceased people (and have to be maintained for operational purposes). The remainder is accounted for largely by people who have gone abroad (see above) and a group of people who may have been allocated duplicate NINOs. A large proportion of this latter may be the consequence of a business decision taken in 1988 to make a bulk allocation of NINOs on the Pension Strategy Computer System for the automatic payment of pensions and maintenance of the associated records. Some of these pensioners may have already had NINOs, but the manual effort to establish which of them had was judged to be too great. Not all of the persons whose records were involved will still be alive.

Accuracy of addresses on the DCI

The DCI Team are confident that the address information on the DCI should be of reasonably good quality for people receiving benefits. A date is also held to record when the latest address was notified to the DCI. The DCI Team believe that any problems with address details are concentrated among those people who are known to DSS only through the NIRS system, ie through registration for contributions. (The Contributions Agency have however said that there are various initiatives in progress linked to compliance which should improve the reliability of the information for these cases.)

Extracting data from the DCI

The DCI has facilities to take electronic extracts of its data. However, these are not designed to provide routine extracts of the entire system. In addition to the Data Protection issues involved, there would be significant cost implications also which would have to be explored if such extracts were to be made.

Future of DCI

The DCI will continue to provide a National Insurance Number allocation and tracing service after the introduction of the proposed Customer Account Payments System (CAPS). It is envisaged that in future address information for benefit claimants will normally (but not exclusively) be captured by CAPS and sent electronically to DCI. However, it is uncertain at this stage how CAPS and DCI will fit into the ACCORD (Access to Corporate Data) project which is being developed as a strand of the Modern Services Team initiative. In any event, though, it is likely that similar functionality will be provided.

Retirement Pensions (Helen Watson)

The new "scan" for the 5% sample for statistical purposes will contain names and addresses. Date of birth is also included. The records all include an NI number. The whole of the United Kingdom is covered. The address may not be up-dated however as the Order Book may be sent to a post office or payment may be made into a bank account. Persons moving abroad are still entitled to some benefit - how much depends on the country and the reciprocal arrangements in place - and the recipient should inform DSS. If the recipient wants to be paid abroad, this will be noted.

The 5% scan, which is made 6 months, covers cases which remain live or have been live in the past six months. It includes the date of death where appropriate. (Information on registrations of deaths is supplied to DSS, starting 10 years ago.) The system does not cover non-claimants, notably those between 65-70 who have decided to defer receipt to earn a higher pension later. (The invitation to apply for a pension is sent from the Contributions Branch.)

It is not possible to link the separate records of husbands and wives. Where there is an addition for a dependant this will be apparent, though not necessarily the

relationship of the dependant. (Most wives have a pension in their own right.) Marital status is recorded, but some of the older records are problematical in this respect.

In the new scan it is planned to cover "suspense" accounts ie for persons in prison or for whom there is doubt about eligibility, eg because the Order Book has been returned.

ASD are trying to create "pseudo" records of movements from one scan to the next.

Widows Benefit (Helen Watson)

The details on recipients of Widows' Benefit are similar to those on Retirement Pensioners, and include the NI number as the main identifier. Widows Benefit is payable only to those aged 45 or over on their husband's death, or under 45 with children at the time of his death. Provided it has not ceased earlier, Widows Benefit ceases when the recipient reaches age 60 and Retirement Pension becomes payable. Widows' Benefit will also cease if the children leave school and the widow is under 45, or if she lives as part of a married couple.

Income Support

Similar points apply, but the addresses are likely to be more reliable. A change should trigger a change in the DCI, but the changes are not always followed through since some procedures are still manually based. The IS system includes persons of retirement age who do not qualify for Retirement Pension, as well as people in younger age groups.

The records incorporate the NI number, but do not give those of a partner.

Child Benefit (Helen Watson)

The Child Benefit Reference number is different from the NI number. There is no link between the two numbering systems, though it is planned to link them under CAPS. An NI number is however allocated to a children as soon as the child's details enter the Child Benefit System.

The Child Benefit Reference number relates to the payee, but the administration of the system rests heavily on the details of the children for whom payment is made. The child's birth certificate has to be provided as proof of birth, and details of the name and date of birth are verified. A copy of the claim form has been provided to show the information collected from the applicant.

The 5% sample of records downloaded quarterly includes the name of the beneficiary (and, if nominated, an alternative payee at the same address); address; date of birth of payee; children's names, dates of birth and gender; number in family (covering those excluded, eg children in care). It covers the whole of the United Kingdom.

Written notification to check address etc is required every 60 weeks from those being paid by credit transfer. Those being paid by Order Book are required to notify

changes according to the instructions in the Order Book. The Child Benefit system has always passed details of claimants to the DCI, but cannot accept up-dates from it on changes of address etc notified through other systems. There will however be a two way feed of information when personal details are passed to and from the Child Benefit system via CAPS (see above).

Child benefit remains payable for up to eight weeks temporary absence from Britain. For persons who move abroad for longer periods there should be an "abroad" indicator.

The Child Benefit data have been matched with NIRS in an analytical study.

Contributions Register (Sarah Carroll, Emma Slater)

The National Insurance Recording System (NIRS) holds information on contributions. A record, with NI number, is created when a person reaches age 16. It covers all those who had not reached retirement age when the system was created in 1975, and covers the whole of the United Kingdom. The contribution history is up-date from employers returns and from flat rate contributions from the self-employed. NIRS includes information on contribution credits eg for the unemployed and those over between 16 and 18 in full-time education, and Home Responsibilities Protection. Information on deaths is drawn from various sources, notably DCI and benefit systems.

NIRS 2 is almost developed. It will provide the sequence of addresses which have been given while the person was in this country and making contributions. These data for employees come from the P14 form completed by the employer. A copy of the form and the guidance to employers was provided. One form is submitted from each employer for each employee. The form now includes the starting and finishing dates of employment, and the name, date of birth, NI number and residential address of the employee. All the records for one person can then be linked. ASD is examining the possibility of linking records of husbands and wives.

The employer also provides the tax office and tax office reference. DSS now receive a download of the IDBR and this is used to add the industrial classification to the information.

By September about 90% of the P14s for the previous year have been returned. ASD receive extracts (for a 1 per cent sample covering the whole of the United Kingdom) in November. Processing of the 1996-7 returns has just been completed.

DSS expects to continue to receive the P14s after the Contributions Agency transfers to Inland Revenue, but Inland Revenue would then be sole "owners" of the data. They may also have views about the accuracy of the information on the addresses of employees.

Annex 17: Joint Unemployment and Vacancies On-line System, United Kingdom

Note based on information provided by Andrew Machin, ONS

The Joint Unemployment and Vacancies On-line System (JUVOS) is a database of all claimant for Job Seekers Allowance or National Insurance credits during a period of unemployment. The database is held by the Office for National Statistics and is updated, currently daily, using information supplied by local offices of the Employment Service. The system is used each month to produce the published counts of claimants.

The data for JUVOS come from the Job Seekers Allowance Payments System (JSAPS) which is a system maintained by the Benefits Agency and used by the Employment Service for the payment of unemployment related benefits. Each local office of the Employment Service has access to JSAPS and up-dates the database as new claims are received, claimant details change or claims terminate. Each day JUVOS receives files from JSAPS which record all the changes made to the claimant database in the previous day.

The variables held on JUVOS in respect of each claim include:

- National Insurance number of claimant
- Initials
- Surname
- Date of birth
- Postcode of residential address
- Marital status
- Claim start date
- Claim end date
- Claim end reason
- Sought occupation
- Usual occupation
- Type of benefit (notably JSA payments or NI credits)

Each month, three "output files" are produced before details of the claims which terminated before the relevant date for the month are removed from JUVOS. These files are (i) the Stock File which covers all claims current at a particular date during the month, (ii) the Off-flow file which covers claims which terminated in the month preceding that date, and (iii) the On-flow file which covers claims which started in the month. The Stock file does not however include name or NINO. The NINO and date of birth are included in the Off-flow and On-flow files.

There is also a JUVOS cohort - the 5 per cent of the population whose NINOs end in certain digits. Details of new claims involving these persons are added each month to the cohort file. Claims which have terminated are not deleted. The file contains details of all claims by the cohort since 1992. The data held include all the items listed above which are held on JUVOS.

Annex 18: Inland Revenue, United Kingdom

Note based on discussions with Graham Parker (Statistics and Economics Office) and John Borrás (Planning Division), Inland Revenue

Up-to-date tax returns are not sought from large numbers whose income tax liabilities are likely to be met by deductions at source. This reduces considerably the value of the information held by Inland Revenue as an up-to-date comprehensive, source of personal incomes for a substantial proportion of the publication. (It is for this reason that, in the Survey of Personal Incomes, tax returns are sent to those individuals selected in the 1 per cent sample of PAYE cases who have not recently completed a return. The survey is described in Chapter 3 of Inland Revenue Statistics.)

On the other hand, Inland Revenue data do contain much information that would be invaluable in the context of a register-based census. In particular:

(i) The self employed are likely to be covered more fully than many other groups under the new arrangements for self-assessment. Moreover, information collected under these arrangements is more readily accessible to Inland Revenue staff centrally than other data gathered by the Tax Offices. (The identification of the self-employed would be needed in the context of establishing that the person has been economically active as a self-employed person during the relevant year. This will not be apparent from the NI contribution records - nor will the level of earnings.)

(ii) The P14 forms completed each year by employers are submitted both to the DSS Contributions Agency and to Inland Revenue - who are to merge in April 1999. As described in Annex 16 above, one form is submitted from each employer for each employee. The form now includes the starting and finishing dates of employment, and the name, date of birth, NI number and residential address of the employee. It also includes the pay during the year. Since all the records for one person can be linked, it is possible to derive each person's total earnings as an employee during the year. .

Inland Revenue are also involved in inter-departmental plans to develop a "single business register", as reported also in Annex 19. This register is likely to include the self-employed, but initially at least this is likely to have its emphasis on the business (eg by using business names and addresses) rather than on the personal details of the self-employed. How the register will link to the NIRS system (holding details supplied of on P14s etc - see Annex 16) and to the data from self-assessment are matters to be resolved later in the development of the project.

The Taxes Management Act 1970 requires that release of information on identifiable taxpayers is expressly permitted by statute. At present the only legislation that specifically covers the transfer of information for statistical purposes is the Finance Act 1969. This allows the transfer to ONS of names and addresses of employers for use in the production of the Inter Departmental Business Register and of names and addresses of employers of the employees sampled in the New Earnings Survey.

Annex 19: Business Register, United Kingdom

Notes based on meeting with John Perry, Office for National Statistics, Newport, and subsequent discussions

Inter Departmental Business Register

The Inter Departmental Business Register is based on registrations for VAT purposes and the units paying employees liable to PAYE tax.

For VAT purposes the unit is generally a single legal unit (often a registered company), but there are exceptions. In some cases there are group registrations covering more than one distinct legal unit. Such units will be allocated "sub-VAT" numbers, but these do not form part of the VAT numbers. There are also some divisional registrations where the unit registered is only part of a legal unit. In all cases the address given should be a business address rather than, for example, a purely residential address for the proprietor. There are 1.6 million VAT traders.

In contrast with the VAT system the units of reporting under the PAYE system are not required to conform with a tight definition. Particularly in the public sector, one unit may cover the pay of employees in other organisations simply because of the arrangements adopted for administrative reasons. At the same time, both in the public and private sectors, employees of the same legal unit may be covered by separate pay schemes. However, for the private sector it is usually possible to combine separate PAYE reporting units to cover the whole legal unit. Inland Revenue are pushing for closer conformity between the coverage of PAYE returns and legal units. There are around one million PAYE schemes.

VAT and PAYE can be linked through the IDBR by PAYE and VAT numbers, but in practice name and address also have to be examined. The PAYE number is made up from the tax district and the employer number, which appears at least on the employee's annual tax return and P60. The VAT registration includes where appropriate the company number allocated on registration with Companies House, although this is not currently easily accessible. It is hoped in future to use a business' own internal numbering system to identify local units, and this number may appear on pay slips but needs to be checked.

The IDBR misses all self-employed persons (including partnerships) and charities without liability for VAT and without liability to collect PAYE tax from employees. Inland Revenue are not legally permitted to pass to ONS the names and addresses of the self-employed. (DSS also holds records of National Insurance contributions by the self employed, but the legal position there would need to be checked.)

The "statistical" units held on the register also include the "enterprise group" - the group of legal units under common ownership - and the "enterprise" - the smallest combination of legal units with a certain degree of autonomy within an enterprise group.

Of the 2 million enterprises on the IDBR, 100,000 have more than one local unit. Of these 30,000 have more than two units. In total the 100,000 enterprises have about 400,000 local units. Information on local units was collected in the 1993 Census of Employment and in the Annual Employment Surveys of 1995, 1996, 1997 and 1998, all of which focus to a degree on the businesses with more than one local unit. Information on local units is to be maintained in future through the Annual Register Inquiry which is intended to cover businesses with multiple units at least once every four years. It is assumed that a business with fewer than 10 employees has only one local unit. The information required on each local unit includes employment and the industrial classification. Within the Annual Employment Survey, form L1 is used for an initial inquiry about local units; form L8 is used for updates. (Copies of these forms were provided.) Similar forms will be used for the Annual Register Inquiry.

Identifying the individual with his or her place of work

Linking each employee with his or her place of work would in principle be possible by linking information on the P14 return(s) relating to the employee - which includes the works payroll number for the employee as well as the employer's Tax Office number and Reference - with possibly the local unit identified on the IDBR using the employer's system for referencing local units. For the self employed, however, it looks more difficult, even in principle. While the home address may be available from DSS records, it is not clear how to link these with the place of work. Without a VAT number it would not be feasible to match DSS contribution records with the registrations on the IDBR using just the name of the business. Information on the name and address of the business is required on the self-employment part on the personal tax returns to Inland Revenue, but these do not ask for the VAT number. They do though include the NI number of the person concerned. The various practical and other aspects of obtaining access to the various DSS and IR records involved - and the quality of the resulting data - would of course have to be explored thoroughly.

Single Business Register

The Contributions Agency, HM Customs and Excise and Inland Revenue have been looking at the possibility of developing a shared register of businesses for "compliance and law enforcement purposes". The idea of an interdepartmental, "single business register and business access gateway" is now being pursued in a wider inter-departmental grouping which also includes ONS, Companies House, DTI and the Central IT Unit. An "Invest to Save" bid is being put to the Treasury to develop the proposal.

Annex 20: Prisons, England and Wales

Note based on discussion with Chris Lewis, Home Office

Each local prison governor is required to maintain a standard Local Inmates Data System (LIDS). Data from these are transferred nightly, via a wide area network, to up-date the central Inmates Information System (IIS) held by the Prison Service. Home Office staff, including the relevant members of the Research and Statistics Division, needing information on persons in prison are able to access the system. The data included on each inmate includes full name, date of birth, gender, prison in which held and details of the sentence. The system includes many other fields, but these relate generally to the person's involvement with the criminal justice system rather than, for example, social characteristics. When required, such information has to be collected separately, probably on a sample basis.

Although there have been proposals to develop longitudinal records in any new system, the present system holds little by way of longitudinal data. It focuses essentially on the current situation of the 65,000 or so persons in prison at the time. Even in this respect, though, the data quality is not thought to be particularly good, notably because of delays in up-dating some records, eg when prisoners are moved or discharged. In principle, it would however be possible to derive from the system a list of prisoners released in a certain period - people whose NHSCR entries would not be up-dated at all promptly unless they registered with a GP soon after release.

Annex 21: Valuation Office, England and Wales

Based on meeting with Robin Manley-Williams, Valuation Office,

Role of the Valuation Office

The Valuation Office is responsible for compiling and maintaining both the Rating Lists and the Council Tax Valuation Lists. The lists are prepared and held in the 80 or so local Valuation Offices in England and Wales. Mixed residential and non-residential properties are included on both lists, and are marked as such with a composite indicator "C". The Valuation Office is concerned with the properties rather than with their occupants.

Copies of the lists are held by the relevant local authorities. The Rating Lists are available publicly. The Council Tax Valuation Lists are not released, though each local authority is obliged to make a copy of the list for its area available for inspection.

Council Tax Valuation Lists

The Council Tax Valuation Lists give the following details for each dwelling:

- Reference number for dwelling
- Full postal address, including postcode (if known)
- Council Tax Band
- Composite indicator (if appropriate)
- Date band became effective (1 April 1993; later for new buildings etc)

The Lists were created in 1993 from lists provided by the local authorities, and are believed to be comprehensive. They are up-dated twice a month with new bandings, addition of new buildings, and aggregations and disaggregations of existing dwellings. The information comes mainly from the local authorities, often their Planning Departments, and in respect of new buildings is usually provided when the building is nearly complete and can be "banded". The LAs clearly have an interest in keeping the lists for their areas up-to-date as they can charge Council Tax only if a dwelling is on the relevant Council Tax Valuation List. Under the Council Tax legislation, however, upward revisions of Bands can be made only when a dwelling changes hands, so the Band for a property is not necessarily a good guide to its current value, especially if the property has been modified substantially.

Details of modifications to dwellings are noted in a separate IT application, so that when information about a sale (or a lease of seven or more years) is received in

respect of the dwelling, a new banding assessment can be made. This may involve a new survey by the Valuation Office. The survey information held on each dwelling usually includes:

- number of rooms
- type of accommodation (eg bungalow, detached house, etc)
- availability of amenities
- central heating (though this information is likely to be especially incomplete)

Tenure is not available. Moreover, the survey details are held only in paper form, in the local Valuation Offices.

While the survey details are not computerised, local Valuation Offices are now adding to their computerised database a new "Dwellinghouse Coding". A copy of the guide to the coding (with photographs for each Group) has been provided. Three codes are being added for each dwelling:

Group (distinguishing over 40 different categories, eg pre-1919 un-renovated cottage type dwelling)

Description - or type (distinguishing 11 categories, eg detached house)

Area in sq metres (gross external area for houses and bungalows and gross internal area for flats and maisonettes)

In some districts the addition of the codes is complete. It is hoped that full coverage will be achieved within the next few years.

The details on the Council Tax Valuation Lists and the Dwellinghouse Coding (where available to date) are now accessible centrally through the Valuation Office's Central Database - though an amendment can be made only in the appropriate local Valuation Office. Ministers have not yet agreed, however, that the ONS can have access to the information which is included on the Council Tax Valuation Lists - as has been requested for the One Number Census work. At the time of the introduction of the Council Tax Ministers gave an undertaking that the information collected for the Valuation Lists would be used only for the purpose of collecting Council Tax. It would not be released for example to private sector commercial companies. The argument that ONS is not covered by this undertaking - especially as it is not interested in the Bands to which dwellings are allocated - is being considered by Ministers.

Property Transactions

The Valuation Office receives from solicitors, or from individuals acting on their own behalf, information on all sales of dwellings and other properties and of all leases of over 7 years. The details are received via the Stamp Office or the Land Registry and are usually provided immediately after the completion of the sale or the signing of the lease agreement. The information includes the address of the property, the name and address of the purchaser (or lessee) and of the vendor (or lessor), and the consideration, but the addresses of the purchaser and seller are not entered on the database. No information is available on whether the dwelling is purchased for owner occupation.

The information on property transactions is collected under the Finance Act 1931, and an amendment to that Act would probably be needed if ONS were to have access to it.

Rating Lists

The Lists are up-dated continually, and a new valuation is carried out every five years. The next will be Revaluation 2000 . The unit which is entered on the Lists is "the area of occupation by a single individual or company". The Lists may exclude non-domestic properties which are exempt from rating, eg places of worship (of all faiths), agricultural barns, and embassies. On the other hand, the Lists will include some "rateable hereditaments" which are not buildings, eg sporting rights and radio masts. The details included for each entry on the Rating Lists contain:

- Reference number
- Address
- Description (eg shop, office)
- Rateable Value
- Effective date (ie date latest valuation became effective)

The occupier's name will be recorded only if it is needed to identify the property.

Copies of the Lists may be purchased - on paper, microfiche, CD-ROM, or via the Internet. The Index, which includes the Rating List details for the whole of England and Wales, costs £7,500 on magnetic media. For one Council's list, on paper, the average cost is £60.

Annex 22: Local Government Management Board

Note based on meeting with Andrew Larner, Local Government Management Board

There have been substantial developments in information management involving the local government in recent months, particularly with the successful pilots of NLIS (National Land Information Service) in Bristol and of SCOTLIS, the Scottish counterpart, and the interest in rolling Electoral Registration in the context of electoral reform.

Development of British Standards for information

One of the objectives of the Information Management Work Programme of the LGMB is to develop standard models for the flow of information in support of LAs' functions. This includes the development and use of British Standards. NLIS is being developed in accordance with British Standard 7666. Part 1 of BS7666 relates to a National Street Gazetteer. The National Street Gazetteer is being developed by the Local Highway Authorities and Ordnance Survey, and will be completed by 15 November. The National Land and Property Gazetteer (NLPG) is to be ready by the middle of next year. It will draw on information from the Land Registry and Registers of Scotland, the Valuation Office and LA Council Tax Billing Lists (addresses only, which are more reliable than the VO lists). Part 2 of BS7666 sets out the appropriate standard for National Land property Gazetteers. The Gazetteer will give comprehensive information on the sub-division of land and property. Each property has a unique Property Reference Number. There would, for example, be one number for a block of flats, and also one number for each of the separate flats it contained. The Gazetteer would provide a comprehensive, definitive list of addresses and information about the property at the address. This would include information on ownership if ownership had been registered.

National Land Information Service

This is to be developed, with private sector participation, as a one-stop shop for access to land information in Great Britain. The partners involved in the pilots have now committed themselves to setting up a service with national coverage. The partners include LGMB, Ordnance Survey, the Land Registry, Registers of Scotland, and the Valuation Office. The pilots were developed around the processes involved in conveyancing, but a much wider range of uses of the NLIS is now envisaged. The plan is to establish the contracts necessary for the provision of data, including updating, and for the development of the service in the next twelve months, so that the service will become fully operational during 1999. OS has been asked by those participating to take the lead in co-ordinating the development of the NLIS and in marketing it. The National Land Information Service is described in more detail in Annex 23.

Information to up-date the NLPG is to come primarily from the LA Planning Authorities. Use will be made of the Land Property Change Model which has already

been developed and which has proved effective in handling automatically about 95% of the changes that occur.

Electoral Registration

A pilot involving three different registration areas has been established to explore the types of changes which occur, and particularly their relative frequency, when the Electoral Register is up-dated as soon as a change is notified.

A number of private sector agencies are already making extensive use of Electoral Rolls, including Experian which also provides credit ratings. (The two major credit rating agencies - Experian and Equifax both hold much up-to-date information on addresses.)

The Local Government Secure Intranet (LGSI), which is to be the subject of a design project from September to January, with a view to procurement in the following year, could be used to distribute Electoral Rolls. The other main priority at this stage is use in supporting the National Land Use Database which Ministers require to inform decisions about land for housing.

Exchange of data with central government

While the Cabinet Office has held discussions with LGMB, for example in the context of the Better Government initiative, not much thought has been given to the interfaces between central and local government, including the links between the GSI and the LGSI. In addition to the areas mentioned above - NLIS, Electoral Registration and Land Use - the other area most likely to become a priority is the integration of benefit provision by central and local government. Partnership between central and local government would offer the best prospect for the development and maintenance of the data links needed.

In addition to the technical infrastructure to exchange data, there are also numerous legal issues to be addressed. These include of course the questions of data protection, but they also include the question of whether, for the parties involved, the transfer of data which is envisaged is within the scope of the legal powers they have. It is essential that these matters are clarified especially if contractual arrangements have to be put in place. Legal issues have required a great deal of time and effort in the development of the NLIS.

Annex 23: National Land Information Service and Scottish Land Information Service

Based on meeting with Bob Smith, HM Land Registry, Plymouth,

The National Land Information Service has its origins in work by The Royal Institution of Chartered Surveyors supported by University College, London. Interest revived when the idea of simplifying access to land information using a computer based service was adopted as part of the Citizen's Charter in 1992. Following the success of the pilot project in Bristol - which went live in April 1998 - plans are now well advanced for developing a National Land Information Service.

National Land and Property Gazetteer

The NLIS will gradually incorporate more applications, or different services for users, of which the conveyancing application is the first to developed. At the hub of the service will be the National Land and Property Gazetteer (NLPG) which will make it possible to identify properties unambiguously, so that relevant information in various databases can then be accessed. The NLPG will comprise street indexes, identifiers of individual properties in various referencing systems (including a Unique Property Reference Number - UPRN - for each basic land and property unit), and the address(es) of the property. In particular, there would be one UPRN for a block of flats, and one for each of the flats it contains.

A British Standard, BS 7666, has been developed to cover the various aspects of the NLPG in Great Britain. Part 2 of BS 7666 sets out the definitions and concepts to be adopted, and the entities to be included, in the National Land and Property Gazetteer. A street index, called the Street Gazetteer, has to be provided by each local authority - an obligation under the Street and Road Works Act. These should be prepared in accordance with Part 1 of BS 7666. The Street Gazetteers of the local authorities together will form the National Street Gazetteer. Part 3 of BS 7666 sets out standards for the specification of addresses.

Addressable properties and their identifying characteristics are being obtained by merging information from the records of HMLR and of Ordnance Survey's Address Point. Both Agencies have utilised data from the Postcode Address File. Wherever possible use will also be made of information from local authorities. The NLIS business case requires approximately 100 local authorities to participate and these are being identified; urban areas are being targeted initially since it is in such areas that most land and property activity takes place. It is also hoped in due course to cover non-addressable properties.

Part 3 of BS 7666 is intended to facilitate the exchange and processing of address-based data. Clearly the more widely this standard is followed the easier it will be to link records from other sources.

National Land Information Service

The NLIS - covering England and Wales - is being developed under an Executive Board chaired by the Chief Land Registrar and including also the Chief Executives of Ordnance Survey, the Valuation Office, and the Local Government Management Board. The Board also includes representatives of DETR (Alan Oliver), the Cabinet Office (CITU), and Registers of Scotland. A Policy Committee is in the process of being set up to ensure appropriate co-ordination between NLIS and SCOTLIS, the Scottish counterpart. (It is possible that in due course both NLIS and SCOTLIS will develop as a single organisation.)

It has been agreed that Ordnance Survey should be responsible for the administration of the NLIS, including negotiation of licences for use of additional datasets, licensing of new applications (with private sector involvement as appropriate), marketing, fee collection, etc. Set-up costs are being shared between OS, HMLR and the Valuation Office, but thereafter the NLIS has to be self-financing.

OS will be the custodians of the National Street Gazetteer - to be completed by mid-November 1998 - and of the National Land and Property Gazetteer - to be completed by mid-1999. These will be held electronically (covering the whole of Great Britain) for access by, for example, NLIS applications; the data may also be made available, in whole or part, on CD-ROM.

The operation of the NLIS conveyancing pilot is centred on a server at HMLR which automatically accesses 12 data providers' computer sites. The datasets include the registrations of title to property held by HMLR. At present these cover about 85 per cent of residential properties, but this proportion is increasing, partly as a result of initiatives with local authorities to register their properties. Where ownership of a property is registered, the name and address of the owner will be available through the NLIS (though the address could be a previous address). Leases of 15 years are also registered and the details of these registrations too will be accessible. (Registrations with HMLR are all open to the public.)

Several other datasets are also to be accessible via NLIS, and others are planned including data held by the Environment Agency. Links are also being established with DETR's initiative - the National Land Use Database which will eventually cover all land uses in England (and will be fully compatible with the National Land and Property Gazetteer). It is not yet clear whether datasets held by the Valuation Office will be accessible through NLIS.

Annex 24: Electoral Registers, United Kingdom

An Electoral Register is compiled by each local authority in the United Kingdom. Forms are delivered to properties - in September or October - with an invitation to enter details of all those aged over 18 years and also, with the dates when they will become eligible to vote, those aged 16 or 17 years. The Registers are normally published in February of each year. They include, for each person eligible to vote in the following year, surname, first name and address. The Electoral Registers include some persons who would not be included in the UK population (eg persons living abroad) and omit others (eg foreigners who are ineligible to vote and non-responders). A small sample survey carried out by OPCS after the 1991 Census estimated that, among the household population, 92.9 per cent of the eligible residents in Great Britain were registered as electors at their usual address.

There are commercial companies who can supply copies of the electoral registers in computer readable form. "GB Accelerator" link the records with the Postcode Address file. "Experian" link information from successive Electoral Registers to provide, for example, information about length of residence at the same address.

Annex 25: Driver and Vehicle Licensing Agency, United Kingdom

Based on correspondence with Graham Pritchard, DVLA

Vehicle registration

How many live registrations are held?

In excess of 27 million

Do you know how many different owners are involved?

The current keeper is shown on the registration document. The number of previous keepers is recorded on computer record or kept on microfilm.

What information is held about each owner in addition to name and address?

More information is available on the enforcement database if the vehicle has been reported as unlicensed.

What proportion of addresses contain the postcode?

Over 90 per cent of postcodes recorded are accurate.

Is it possible to tell whether the address is a residential address, the address of a business, or perhaps some other address?

In some cases it is possible to tell, in others it is not.

Do you know how many of the addresses given are residential addresses?

No

When you receive notification of a change of address, how quickly is the amendment made to your records (days or weeks)?

95 per cent of address changes must be completed within 10-11 days depending on the type of form received for up-dating

How many changes of address are recorded each year?

Not recorded separately, but 8 million changes are recorded each year

How many changes of address come to light at the time the vehicle licence reminder is sent?

Unknown - there are no statistics kept

Is the previous address retained with the new address?

No

How many records is it easy to match? difficult? impossible? on change of address or change of owner?

None - only concerned with vehicle details not driver details

Would you know if the owner was not the main user of the car?

No

If two or more cars are owned by the same owner, would the records be linked in any way? If so, would addresses be up-dated in all the records at the same time?

No

When an owner changes cars are the two registrations linked in any way?

No

Driving licences

How many current licence holders are there?

There are over 37.5 million driver records

What information is held on each licence holder, eg name, address, date of birth, gender ?

All these and test pass details, date of provisional and first entitlements

What proportion of the addresses are outside the United Kingdom?

None

How many addresses are amended each year (i) on renewal of licence and (ii) in other circumstances?

Over 3 million licences ere renewed as replacements last year.

Do you know what proportion of the addresses held are current addresses?

All should be current addresses (as required by law).

When a licence is renewed or a change of address is notified, can it be assumed safely that the person lives at the address given?

Yes

Is there any information about the proportion of addresses given at the time of application (or renewal) which are the addresses where the licence holders live?

No

Annex 26: Arrangements in Scotland

Note based on discussions and correspondence with James Meldrum, Registrar-General, and David Orr, and others as indicated

Devolution

Responsibilities both for registration of vital events and for censuses of population are to be devolved to the Scottish Administration (the term for the Scottish Executive plus Statutory Officers such as the Registrar General and the Lord Advocate).

Registration of vital events

The registration service in Scotland is governed by the Registration of Births, Deaths and Marriages (Scotland) 1965 and the Marriage (Scotland) Act 1997. The Population (Statistics) Act 1960 applies to Scotland, as well as to England and Wales. This Act authorises the collection, on registration of births and deaths, of certain personal details in addition to those entered in the register.

An important difference between the information collected on registration is the inclusion in Scottish registers of the date and place of birth for each of the partners to a marriage. (Proposals to include these items on the marriage records in England and Wales have been put forward, but have not yet been implemented.)

There are separate computerised indices of registrations of births, deaths, marriages and recent divorces (ie in roughly the last 20 years). As a result of the GROSVENER project - GRO(S) Vital Events and Electronic Registration - 90 per cent of registration details, including statistical particulars, are being reported electronically by the Local Registration Officers to the General Register Office, with the remainder received clerically but converted to the same electronic format. Registration details are readily accessible to the public, and it has been suggested to other Government Departments that they might have on-line access to make the checks they wish to make eg when a false identity is suspected. In principle, it would be possible, using name and date of birth, to link records of parents and children, the records of partners to a marriage and the records of divorces to the records of the relevant marriages.

Community Health Indexes and NHSCR

In Scotland there are regionally based Community Health Indexes (CHIs) and a National Health Service Central Register.

The CHI system “contains a wealth of operational information to support” such services as childhood immunisation and breast screening. In 1997 the CHI system was up-graded to “implement nation-wide search and registration facilities. (In order to provide this service, it was however first necessary to remove the duplication which had developed in the CHI system. This was eventually achieved by the indirect means of matching each CHI with the NHSCR, as the latter had been carefully maintained to hold one record for each person, though it held “relatively little by way of operational information”. The procedures for matching used a combination of deterministic and

probabilistic techniques which achieved 98.8 per cent success in the sense that the match provided a sufficient degree of confidence for administrative purposes (35).

Work in recent years to remove duplication in the Community Health Indexes (CHIs), partly by matching them with the NHSCR, means that there is now a high degree of correspondence between them. The CHIs and the NHSCR are held on the same private sector computer installation. GRO(S) is running a prototype to see if the CHIs and the NHSCR can be used to produce reliable small area population estimates.

The NHSCR records for each person the name, date of birth, sex, and the Health Board with which the person is registered. For those born in Scotland the NHSCR also holds the Birth Registration Number, which is their NHS number. For others the NHS number is allocated later. An entry is created on the NHSCR as soon as a birth is registered. Arrangements are in place to handle moves between Scotland and other parts of the United Kingdom, with read only access from Scotland to the NHSCR in England and Wales, and vice versa. Cases which cannot be matched are investigated and, if appropriate, information is exchanged with the NHSCR in England and Wales and the Central Health Index in Northern Ireland. When the Central Register is informed by an Area Health Board that a patient is an immigrant, checks are made to see that the person has not resided previously in the United Kingdom before an NHS number is allocated.

An entry is up-dated with death details when the person's death is registered. The Social Security Administration Act 1992 places on the Registrars General the duty to notify DSS about deaths that are registered.

Addresses are not held on the NHSCR, but are held, with postcodes, on the CHIs. The CHIs retain entries for persons who have died, but there is also an indicator of current status which should show whether the person is still alive or known to have emigrated. GPs should report when a person on their lists is thought to have moved away (and in some cases, eg where the GPs are expected to achieve certain levels of screening, there is an incentive to the GP to ensure that the list is not inflated.) However, the inclusion of some persons on CHIs and the NHSCR as living in Scotland, but who have emigrated, and the omission of some who have migrated into Scotland are likely to be the major weakness in the data.

Education and Training (Colin Maclean and John Taylor, Scottish Office Education and Industry Department - SOEID)

Scottish Candidate Number

The Scottish Candidate Number (SCN) offers the main means for linking the various types of information held about individuals as they move from school to further education, to higher education and other types of training. The SCN was introduced for Scottish Certificate of Education examination candidates in 1993, but was used before that by SCOTVEC for the National Certificate modules and other vocational qualifications.. Any pupils who undertook SCOTVEC modules in the mid 1980s will

have been allocated SCNs. (In April 1997 SCOTVEC merged with the Scottish Examination Board to form the SQA)

School pupils

Since 1993 the Scottish Qualifications Authority (SQA) have operated a system of unique candidate numbering using the SCN. Once the SCN is issued to a pupil (this will usually occur when pupils are first presented for Standard Grade Examinations in S4), it is intended that this number should be used in all subsequent presentations. (Previously a completely new set of candidate numbers was issued for each year's examinations.) The examination results datasets sent by the SQA to the Scottish Office also contain data on surname, initial, sex and date of birth. These can be used for matching with other datasets where the SCN is not present.

A National Management Information System (NMIS) is being developed to enable all publicly funded primary and secondary schools, LAs and SOEID to exchange many types of information about schools and pupils, including attainment. By 1999, it is expected that all primary and secondary schools will be participating. Identifiers will include the SCN as well as other pupil identifiers allocated by the school. It may be possible to link primary and secondary records to track pupils when they move school.

Further Education

The SCN is also now being used as an identifier in further education. In 1996-97 the proportions of students with SCNs were 94 per cent among full-time students in the 21 or under age group and 91 per cent of those aged 22-30. Overall, there were SCNs for 71 per cent of all students; most of those without SCNs were part-time students - many on short courses. For students who arrive at colleges without an SCN (eg young people from England or people who sat exams before the SCN was introduced) the colleges will issue SCNs. The FE datasets also contain information on surname, first two initials, sex and date of birth.

Higher Education

All information on HE students held by SOEID is received from HESA. The SCN is included in this information, and the SCN is a compulsory data item for Scottish domiciled UCAS entrants. For most institutions the information is transferred electronically from UCAS, but it is required also from institutions who do not deal with UCAS. However, at present only 12.5 per cent of the student records for Scottish HE institutions include SCN numbers. It is expected that this proportion will increase markedly in the coming years as greater numbers of young people with SCNs enter higher education. At the same time, HESA have introduced HUSID, a number to be used to track students in HE institutions throughout the United Kingdom.

New Deal

The main database is held by the Employment Service, Sheffield. At present the Scottish Office do not have access to the basic data. The main identifier is the NINO. No links have been made with Scottish educational datasets.

Careers service

This is the main source of information on school leaver destinations in Scotland. The SCN is not used at present, but it has been suggested that the SCN should be collected. Information is collected on name, initials, sex and date of birth.

Scottish Enterprise and Highlands and Islands Enterprise

These bodies hold data on government training schemes, including training for work, skill-seekers and modern apprenticeships. Currently SOEID does not have access to these data. The Local Enterprise Companies have separate databases with identifiers unique to each LEC. Scottish Enterprise are working towards the development of a combined system which would be based around the NINO as the main identifier. There has not been much investigation so far into the possibility of including links with educational datasets.

Council Tax Registers

In Scotland the "levying" authorities (who keep the records of persons liable for the tax) are the 32 councils. In Scotland the responsibility for the Valuation Lists - which involves identifying and determining the value banding of dwellings to be included - rests with the 14 local assessors. (In England and Wales, in contrast, responsibility for the Valuation Lists rests with the Valuation Office, an agency of Inland Revenue, which is completely separate from the billing authorities.)

In Scotland, as in England and Wales, the Valuation Lists are available for public inspection, but the lists of those liable to pay the tax are not.

The preparation of the Valuation Lists in Scotland is thought to have been simpler in Scotland than in England and Wales because the regional assessors who are responsible for them were also responsible for the property database used for the community charge (as well as for the assessment of rateable values). The assessors considered that the Council Tax Valuation Lists achieved 100 per cent coverage from an early stage, though the coverage in England should soon, if not already, similarly complete.

More information on Council Tax Valuation and Billing Lists, covering England and Wales as well as Scotland, is given in a paper prepared by GRO(S) in 1995 as part of an investigation on the possible use of administrative records to improve coverage in the 2001 Census (47). This paper includes much useful information about the definition of dwellings used in compiling the lists, the treatment of houses in multiple occupation and of empty and second/holiday homes. A later paper (48) compares Council Tax Valuation Lists for five areas in Scotland with Royal Mail data as

sources for address lists. One of the conclusions which is particularly relevant to this report is that the Valuation Lists “offer a more comprehensive list of residential properties in areas where there is a significant proportion of sub-divided properties”.

Assessors (Mr W Johnson, Assessor City of Glasgow; Secretary, Scottish Assessors Association)

The 14 Assessors have a role in Scotland similar to that of the Valuation Officers in England and Wales. However, each works independently, though there is active co-operation between them particularly through the Scottish Assessors Association.. Each Assessor holds fully computerised records on each of the domestic properties in the relevant area. This information almost certainly covers most of the topics relating to the dwelling in the census, though it might not always be clear which is the lowest floor level of accommodation - a point requested in the census in Scotland. Coverage of changes since the introduction of Council Tax may also not be entirely. The information held by the Assessors is not released to the public.

Data Matching

In the context of the discussions of "Better Government" it might be appropriate for the Registrars General to pursue pro-actively the idea that they should provide the pivot for any arrangements, such as the matching of numbering systems used in different parts of government, and for holding the person's current (or latest known) address. Any arrangements to link data for statistical purposes were unlikely to be successful unless they drew on systems that were kept up-to-date for administrative purposes. At the same time, it would be necessary on data protection grounds to draw a clear distinction between the administrative activities and the data matching which was being undertaken purely for statistical purposes. It would also be necessary to consider carefully whether matching for administrative purposes would complicate statistical uses.

If it were decided to rely on administrative sources to replace the Census, there would be advantage in having legislation which set out clearly the powers, functions and restrictions on the Registrars General, and others involved. The criminal penalties written into Census legislation were among the most valuable safeguards of confidentiality. It would be desirable to seek legal advice to clarify the extent to which this Section 5 of the Census Act could be helpful in gaining access to administrative sources.

As there is a duty on people to inform DVLA when they change their address the Driving Licence Register could be a good source of up-to-date information on addresses.

Some local authorities, particularly those in the former Strathclyde Region, hold Voluntary Population Registers (enhanced Electoral Registers). Though there were problems with the information on communal establishments, these registers do provide information on household composition. They are not published.

Planning for the 2001 Census

The returns from the 2001 Census could be used to check the reliability of administrative records. If we were to rely on administrative records in 2011 it might also be necessary, as in Denmark, to draw some information, eg on educational qualifications and perhaps ethnicity, from the 2001 returns. In all these circumstances it would be necessary to match using name and date of birth. It would also be necessary in assessing the reliability of administrative records to check addresses, preferably in full rather than just the postcode. It is important that decisions to be made in the very near future about the data to be retained in computerised form do not preclude these possibilities. (A letter on this point was sent by fax to John Fox on 10 July; Graham Jones replied on 20 July.)

The 2001 Census would be enumerating students at their-term time address, which is the treatment in the mid-year population estimates. In the 1991 Census students were included in the returns from their parental addresses (as in 1981), but details were also requested in 1991 about term-time addresses. Local authorities had argued for term-time addresses in the context of resource allocation, but recently there have been arguments from users in favour of using parental addresses as well as term-time address for different aspects of grant distribution. The HESA data on HE students might provide the parental address and some indication of where the student stays in term-time, though this would require amendment to the current procedures. HESA at present requests the postcode of the home or permanent address at the time of enrolment (Annex 14)..

Annex 27: Arrangements in Northern Ireland

Note based on discussions and correspondence with Norman Caven (Registrar-General) and Robert Beatty, Northern Ireland Statistics and Research Agency, and other colleagues as indicated

Northern Ireland Assembly

Policy responsibility for registration and the census of population is to be transferred to the Assembly.

Registration of vital events

Statutory registration of vital events in Northern Ireland is undertaken by Registrars who are local authority employees acting as agents of the Registrar General who defrays the costs involved. Registration has been computerised since 1 January 1996. The details are entered on screens in the local Register Offices and then sent on disc to GRO(NI). Details of all births and deaths are supplied to the Central Services Agency to up-date the Central Health Index.

The data for deaths, births, marriages and divorces in recent years are held in computer databases as follows:

births	from 1974
deaths	from 1968
stillbirths	from 1974
marriages	from 1974
divorces	from 1983

Records of marriages go back to 1845 and of births and deaths to 1864. Indexes start from 1922 when Northern Ireland came into being. Indexes for registrations are held in earlier years are held in Dublin, but they refer to the records held in Dublin which are numbered differently from the records held in Belfast - those belonging to the local Registrars. Other indexing approaches for the pre-1922 records are being explored, but in any case this is unlikely to be a highly significant issue in relation to a Census in 2011. GRO(NI) also plans to look at possibilities for computerising the historic records themselves.

Central Health Index (Renee Greer, Norma Magee)

The Central Health Index for Northern Ireland is maintained by the Central Services Agency of the Northern Ireland Health and Social Services. It is based on registrations with General Practitioners, and the CSA deals directly with the GPs. There are no intermediary area health authorities as there are elsewhere in the United Kingdom. The CSA liaises with its counterparts in England and Wales and in Scotland on persons known to have migrated between Northern Ireland and other parts of the United Kingdom.

The CHI has a population of 1.7 million people, excluding persons who have emigrated, transferred to Great Britain, are institutionalised, enlisted in HM Forces, are known to have died, or whose whereabouts are unknown. This compares with a mid-year population estimate of 1.65 million. A report on a recent, detailed study of list inflation was provided (49). Work involving both CSA and NISRA is continuing work to understand the discrepancies more fully. It is however now fairly clear that the population estimates (based on census figures) understate the numbers of persons aged 90 or more. On the other hand, delays in registration with doctors seem to lead to under-coverage of the very young in the CHI. The CHI is also thought to include some people, particularly males in the ages 25-44, who have left Northern Ireland for Great Britain and who have not registered with a GP there. It is also thought to be inflated by residents in the areas bordering the Republic of Ireland by persons from the Republic who wish to use health services in Northern Ireland.

When a birth is registered with a Local Registrar the parent is given a card to present to the GP (copy of card provided). The registration number entered on this card becomes the child's NHS number. When the child is registered with a GP the card is sent on to the CSA. The child is added to the CHI and a Medical Card for the child is sent to the address of the child. When a death is registered, the GRO inform the CSA who in turn amend the CHI and notify the GP.

When a person changes GP, the Medical Card should be given to the receiving GP, who then notifies the CSA. The latter will then amend the CHI and issue a new Medical Card. There are appropriate arrangements with other parts of the UK to cover persons moving to or from Northern Ireland. If a person wishes to register with GP and does not have a Medical Card, or in respect of an infant, a Registration Card, a longer form (HS 22X, copy provided) has to be completed and signed by a suitable witness. On receiving such applications CSA would attempt to find a duplicate entry. Details about migrants are also received from the immigration authorities via Southport. In some cases an approach might also be made to the DSS. When satisfied that a new Health Service registration is justified the appropriate number is issued by the CSA.

The CHI is computerised and there is a pilot study on automating links with GPs. Copies of display screens from the CHI have been provided. The contents of the CHI include full name, date of birth, full address and postcode. A code H indicates persons known to be institutionalised, but little information has been received in recent years on the prison population. Notification is received about those joining the Armed Services. When they eventually left the Services, the CHI would be up-dated when they registered with a GP.

Information on marital status is not held for men.

There are plans to replace the NHS number with a ten digit number in a format like that of the new NHS number elsewhere in the UK - the Unique Patient Client Identifier (UPCI). The question of who will allocate the new UPCI has yet to be decided. It may be the Registrar of Births or it could be the staff in the hospital maternity unit where the baby is born.

Department of Education Northern Ireland (Ivor Johnston, Martin Thompson)

The Department holds, in computerised form, the following datasets of individual records

Secondary School Census
School Leavers' Survey
GNVQ database
GCE/GCSE database
FE Statistical Record
FE Leavers' Survey
HESA student database
HESA staff database

There is also a primary school census but the returns are on paper at present and do not give information on each pupil separately. The primary school census is likely to be computerised at some stage, but probably not in the next couple of years.

Information from secondary schools is obtained on the Computerised Local Administrative System for Schools (CLASS). All public sector secondary schools are on the system, but not private schools. (The private sector is however very small.) DENI receive census information once a year from the schools, in November. It includes details for each pupil, including date of birth, Admission Number to the school, and postcode of residence. (DENI supplied a list of data items on the various files involved, including the Main Census File and the Examination File.) DENI do not receive the name of each pupil. Names and addresses are however held on CLASS by the schools, to whom the data belong. If names and addresses were to be required, the legal and data protection issues involved would have to be explored carefully.

There are also GCE/GCSE and GNVQ databases held as part of UK databases obtained from the examination boards and processed by Bath University under contract to DfEE, which DENI use. The GCE/GCSE database includes surname, forenames, gender and date of birth and the grade achieved.

The GNVQ courses are being taken mainly by 16-18 year olds in schools and FE colleges. The GNVQ database does not hold names, but it does hold school (or college) reference number, student reference number, student's sex and date of birth.

The FE Statistical Record received by DENI from each of the 17 FE institutions in Northern Ireland includes the surname and initials, sex and date of birth of each student enrolled on any course (full or part time) on 1 November (list of data items provided). It contains country of domicile (LEA/counties for GB), but not address. It is hoped to include the postcode in future - academic year 1999-2000 is the earliest

possible. The FE Leavers' Survey is similar, but includes outcome on main qualification being sought.

DENI receives from HESA the Student Record covering all students in HE institutions in the United Kingdom, but this does not include names.

When a person moves to another school a new Admission Number is allocated. Nor is there any link with the FE and HE datasets. Consideration is being given to the introduction of a Unique Pupil Identifier which a pupil would retain on moving through the educational system (cf Annex 13).

Social Security Agency, Northern Ireland (Stephen Donnelly, Paddy Hannigan)

The Agency receives databases on the following

- Family Credit
- Disability Working Allowance
- Disability Living Allowance
- Attendance Allowance
- Jobseeker's Allowance
- Unemployment Benefit
- Incapacity Benefit
- Income Support
- Retirement Pension
- Child Support Agency
- Housing Benefit

Details of frequency and coverage (mostly 100 per cent) are set out on a table provided. In most cases the databases are obtained from the ITSA mainframe system used by DSS for benefits administration; others are obtained through the DSS General Matching Service. Housing Benefit is administered in Northern Ireland by the Housing Executive, who supply to the Social Security Agency the database on Housing Benefit recipients. A database covering Child Benefit recipients throughout the United Kingdom is currently under development.

The datasets provide information on each recipient of the relevant benefit in Northern Ireland. Details of the fields included in each database are shown in the documentation supplied at the time of the visit. They include the NINO, full name, date of birth, full address and postcode.

As described in a note provided by Stephen Donnelly, the information is used within a GIS to look at claimant behaviour and benefit growth trends. Datasets with information on the elderly have also been linked, providing what is virtually a census of the elderly population.

Valuation and Lands Agency (David Beattie)

The Agency has three main business areas:

- (i) the maintenance of the Valuation List for rating purposes and, periodically, the preparation of a new Valuation List;
- (ii) the provision of a property valuation, estate management and data services to the public sector in Northern Ireland;
- (iii) the provision, by the Central Advisory Unit, of a more proactive approach to estates management aimed at improving estate management practice and performance of all operational property assets in the public sector.

In Northern Ireland the rateable values of both domestic and non domestic properties are still assessed on the basis of Net Annual Value, in contrast to elsewhere in the United Kingdom where domestic property is subject to Council Tax based on Capital Value.

VLA has just completed a revaluation of all non-domestic properties. The List in respect of the 70,000 non-domestic properties is now available on the Internet (paper copies of sample entries were provided) and the plan is to up-date the details regularly and to add the 630,000 domestic properties.

The property details and Valuation List for domestic and non-domestic properties have been computerised since the early 1990s, as has been the case history of each property. The history includes details of all inspections and the Particulars Delivered supplied by the Stamp Office following a sale or lease of the property. About 40,000 inspections are carried out each year as part of the maintenance of the full Valuation List.

The Agency receives information about new buildings or changes to existing buildings from the DOE Planning Service, District Councils' Building Control Offices, the NI Housing Executive, the Rates Collection Agency (RCA) or the owner/occupier. The VLA has a service level agreement with the RCA for the provision, on magnetic tape, of the Valuation List and the up-dates arising from the on-going inspection programme. The agreement includes targets for timeliness in relation to back-dating of rates.

The information about the "occupiers" in the Valuation List relates to the person or body responsible for payment of rates (under rating legislation, known as the "rateable occupier"). In the case of rented property, this could be either the owner or the tenant depending on the terms of the lease. Moreover, this information is not always kept up-to-date as it is not essential to the assessment of value. Inspections are normally based on physical changes to the property, not transfer of ownership.

The Valuation List contains one entry for each rateable property. Under Northern Ireland legislation, ten bed-sits could all be included as a single property. in the List, if each is not capable of separate rateable occupation (eg because of shared access, cooking, or bathroom facilities). However, in a block of flats, each flat will be shown in the Valuation List as a separate property.

In the Agency property database, the detailed information for each property includes the address to identify the property, the appropriate property division and classification, with the related “distinguishments” (eg domestic, exempt, industrial). Examples of the wide range of descriptive details are shown in the booklet provided by the Agency's Property Data Service and the property classifications for domestic properties. The details include those collected on housing in the 1991 census - and many others, including floor area and year of construction.

Rates Collection Agency

The Rates Collection Agency (RCA) hold an up-to-date database of domestic properties which includes a “tenure” field. This field can be used to identify whether properties are:

- owner-occupied
- Northern Ireland Housing Executive housing
- rented - landlord
- rented - agency
- vacant

Ordnance Survey (Northern Ireland)

The Census Office are actively working with Ordnance Survey Northern Ireland (OSNI) for the supply of maps and address lists for enumeration in the 2001 Census. This will involve listings of all addressable locations in Northern Ireland, with grid references. The Valuation and Lands Agency (VLA) is one of the key sources to update the OSNI database. VLA data also inform the domestic rating database which is used as the sampling frame for government household surveys.

[The Central Postcode Directory (CPD) is owned by the ONS. It is a look-up table which gives a grid reference (in principle the centroid) and the administrative area(s) for each post-code. Data from the CPD are used in the Postcode Address File (PAF). The Northern Ireland component is maintained by NISRA.]

Northern Ireland Electricity

There is only one supplier of electricity in Northern Ireland, the Northern Ireland Electricity, and no piped distribution of gas, so the company has details of virtually all residences, usually with names of occupants.

Inter-Departmental Business Register

The Northern Ireland component of the IDBR, derived by merging information from the VAT and PAYE systems, was developed before the IDBR for the whole of the United Kingdom. The NI register now forms part of the IDBR maintained by ONS. ONS supplies samples to the Department for Economic Development in Northern Ireland, who alone are empowered to conduct statutory business inquiries in Northern Ireland. The only UK-wide business surveys conducted by ONS are voluntary surveys.

30 September 1998