United Nations Economic Commission for Europe

Conference of European Statisticians Recommendations for the 2010 Censuses of Population and Housing

Prepared in ccoperation with the
Statistical Office of the European Communities (EUROSTAT)

UNITED NATIONS

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PREFACE

Purpose for the Conference of European Statisticians (CES) member states

1. The main objectives of the *CES Recommendations for the 2010 Round of Population and Housing Censuses* are: (i) to provide guidance and assistance to countries in the planning and conducting of their population and housing census; (ii) to facilitate and improve the comparability of the data at regional level through the selection of a core set of census topics[1] and the harmonization of definitions and classifications.

2. The recommendations set out in this document are based on the work carried out between 2004 and 2006 under the programme of work of the Conference of European Statisticians (see para. 3), and were adopted by the Conference of European Statisticians at its fifty-fourth plenary session in June 2006. The CES recommendations will also be used as the general framework for the European Union census program for the 2011 Population and Housing censuses[2].

Preparation of the CES Recommendations

3. The CES Recommendations have been developed by the Statistical Division of UNECE in close collaboration with Eurostat. The method used to develop the 2010 CES recommendations was based around a highly participative approach where all member countries were given ample opportunity to be involved in developing material or commenting on proposals. The UNECE Committee on Human Settlements was also regularly consulted with regard to the part of the recommendations on housing. The UNECE and Eurostat jointly managed the process. In order to coordinate such a diverse undertaking, a steering group consisting of a number of member states as well as the UNECE and Eurostat was established in May 2003. In addition, 11 task forces were established to produce chapters for each of the areas covered by the publication. These task forces had a designated leader (see para. 4) and their membership comprised expert members from across the region and from relevant international organisations. To ensure each country had opportunity to participate in discussion on the content, various meetings[3] were held to which all ECE countries were invited. Most countries attended and a number provided written submissions. The organisers were particularly appreciative of the UNFPA and Eurostat who funded the attendance of members from a number of countries.

Acknowledgments

4. The CES wishes to acknowledge the contributions of the about 100 census experts of National Statistical Institutes, the United Nations Statistics Division and other International

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[1] The term "topic" refers to the subject regarding which information is to be sought for each unit enumerated in the census (person, household, dwelling or building).

[2] Once official documentation about the Population and Housing Census 2011 in the European Union becomes available it shall be accessible via the Eurostat website at: http://www.europa.eu.int/comm/eurostat/

[3] See http://www.unece.org/stats/archive/04.03a.e.htm

Organisations who participated in the preparation of the recommendations. In particular, the CES would like to thank Rosemary Bender (Canada), Chair of the Steering Group on Population and Housing Censuses, and the Leaders of the Task Forces:

- Jay Keller (United States), Task Force on Census Methodology
- Paul Williams (Australia), Task Force on Census Technology
- Aidan Punch (Ireland), Task Force on Geographical characteristics
- Gabor Rozsa (Hungary), Task Force on Demographic characteristics
- Werner Haug (Switzerland) and Katerina Kostadinova-Daskalovska (The Former Yugoslav Republic of Macedonia), Task Force on Migration and Ethno-cultural characteristics
- Robert Pember (ILO), Task Force on Economic characteristics
- Richard Morrison (United Kingdom), Task Force on Education characteristics
- Jennifer Madans (Washington City Group on Disability Statistics), Task Force on Disability
- Nico Keilman (Norway), Task Force on Families and Households
- David Marshall (FAO), Task Force on Agriculture
- Ian Máté (United Kingdom), Task Force on Housing

5. The CES would also like to acknowledge the contributions of: Angela Me and Paolo Valente of the UNECE Statistical Division; Michail Skaliotis, David Thorogood and Gregor Kyi of Eurostat; and Pierre Turcotte (Canada), Ian White (United Kingdom) and Peter Gardner who edited the text of the recommendations.

INTRODUCTION

Content of the publication

6. The first part of the publication (Part One) presents two chapters on census methodology and technology. The objective is not to recommend a specific method or a technology, but rather to present the different approaches with their advantages and disadvantages and guide countries to make the best choice that fits their national circumstances. These chapters are complemented by additional material presented in various appendices.

7. The second and third part of the publication present respectively population topics (Part Two) and housing topics (Part Three). The Recommendations aim to describe the different census topics that are relevant for the region presenting not only definitions and standards but also analyzing their relevance and their comparative advantage in relation to other census topics and other data collection activities outside the census. The topics are presented using a structure by theme (demographic, migration, ethno-cultural characteristics, etc.) to facilitate a broader view in the description of the content of a census.

8. Topics are divided into "core" and "non-core". It is highly recommended that countries collect information with respect to "core topics". "Non-core" topics are optional and recommendations are included on these topics for guidance for those countries that decide to include them in their census.

9. The document does not include census tabulations or recommendations on the census output program. A census tabulation program is being developed by the European Union, and at the global level, by the United Nations Statistics Division (UNSD).

Relation to the 2010 UN World Programme

10. The process that led to the *CES Recommendations* was conducted in parallel to the process that led to the revision of the United Nations *Principles and Recommendations for Population and Housing Censuses* that encompass all world regions and that are adopted by the United Nations Statistical Commission at the beginning of each census decade as a major international standard and guidance (the revised Principles and Recommendations for the 2010 round of censuses expected to be adopted in 2007); these recommendations are often referred to as "World Census Recommendations". This simultaneity enabled close and direct interaction and exchange of experiences and opinions in the process. Thus, countries are encouraged to use the two sets of census recommendations in a complementary manner. The *CES Recommendations* reflect the reality and specificity of the CES countries and they can channel the work carried out at world level into more specific needs of the region where countries are less diverse. In general the two sets of Recommendations are consistent, but if the World recommendations are broader in scope, the *CES Recommendations* are more specific in the use of some definitions and classifications[4].

[4] See http://unstats.un.org/unsd/globalcensusforum/

11. At the time of preparation of this publication, the United Nations Statistics Division (UNSD) was in the process of producing the world –wide census tabulation program. Within this tabulation program, core topics will be identified. Efforts have been made to reconcile the list of core topics presented in this publication with those presented in the global recommendations. However, minor differences are likely to remain because of the different needs of the CES region.

PART ONE: CENSUS METHODOLOGY AND TECHNOLOGY

Chapter I. METHODOLOGY

Introduction

12. Chapter I provides a broad overview of the methodology suggested for the 2010 round of population and housing censuses in the ECE region. It looks at the aims and objectives of a census as well as methodological issues associated with the different phases of census. More detailed information can be found in the UN Principles and Recommendations for Population and Housing Censuses (revision 2)[5]. Another chapter, Emerging Census Technology, is designed to look at some of the technologies that have not been traditionally used in population censuses, but which are now being seriously investigated by some member countries. The chapters in Part One are a description as to how countries conduct censuses. While these chapters are not designed to provide recommendations, they do give some guidance.

Aims and objectives of a census

Role in national statistical systems

13. The objectives of a census are specific to individual countries and differ according to the local circumstances. Its unique role depends on the demand of statistics existing in a country and by the content and structure of the existing statistical system.

14. The population and housing census represents one of the pillars for the data collection on the number and characteristics of the population of a country. The population and housing census is part of an integrated national statistical system, which may include other censuses (for example agriculture), surveys, registers and administrative files. It provides at regular intervals the benchmark for the population counting at national and local levels. For small geographical areas or sub-populations it may represent the only source of information for certain social, demographic and economic characteristics. For many countries the census also provides a unique source for a solid framework to develop sampling frames.

15. In July 2005 the United Nations Economic and Social Council (ECOSOC) adopted a resolution[6] urging "Member States to carry out a population and housing census and to disseminate census results as an essential source of information for small-area, national, regional and international planning and development; and to provide census results to national stakeholders as well as the United Nations and other appropriate intergovernmental organizations to assist in studies on population, environment, and socio-economic development issues and programmes".

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[5] See http://unstats.un.org/unsd/demographic/sources/census/default.aspx.
[6] ECOSOC Resolution 2005/13. See http://www.un.org/docs/ecosoc

16. Some countries rely on registers to produce population and housing statistics. In these countries there is an opportunity to provide an integrated view of the country where social, demographic and economic characteristics are linked together.

Non-statistical functions of a census (implications and risks)

17. One of the Fundamental Principles of Official Statistics states that "individual data collected by statistical agencies…are to be used exclusively for statistical purposes[7]". While the use of census data for administrative purposes would violate this Fundamental Principle some countries use the census operations infrastructure not only to collect statistical information for the census but also to collect information on individuals or households for the creation or updating of population registers. Countries who use the census operations in this way should:

a) Clearly explain to respondents the dual purpose of the census operations and that the census information collected will remain confidential and used only for statistical purposes;
b) Use two separate forms for the two purposes;
c) Ensure there is a separate legislative framework for each of the operations; and
d) Assign to a different agency (that is not a National Statistical Office) responsibility for updating information required for administrative purposes.

Definitions, essential features and phases of a census

Background

18. Traditionally, the definition of a census has been based on the basic enumeration features of individual enumeration, simultaneity, universality, and defined periodicity . In the last few years different methods have emerged in the ECE region where the census has assumed a wider concept. In some countries the traditional methods based on the field enumeration of all individuals has moved to the use of data included in administrative registers. More recently the priority of universal enumeration of individuals and their characteristics shifted toward the need for more frequent and relevant data for the total population and the smallest local areas. At this time, a common definition of a population and housing census for the ECE region is based on the output produced rather than on the methodology used.

Definition

19. The population census is defined as the operation that produces at regular intervals the official counting (or benchmark) of the population in the territory of a country and in its smallest geographical sub-territories together with information on a selected number of demographic and social characteristics of the total population. This operation includes the process of collecting (through enumeration or registered-based information) and aggregating individual information and the evaluation, dissemination and analysis of demographic, economic and social data. In order to plan for, and implement, economic and social development policies, administrative activity or scientific research, it is necessary to have reliable and detailed data on the size,

[7] see Appendix III

distribution and composition of population. The population census is a primary source of these basic benchmark statistics, covering not only the settled population but homeless persons and nomadic groups as well. Data from population censuses may at times be presented and analysed in terms of statistics for a wide variety of geographical units ranging from the country as a whole to individual small localities or city blocks.

20. The housing census is defined as the operation that produces at regular intervals the official counting (or benchmark) of all housing stock and their occupants in the territory of a country and in its smallest geographical sub-territories together with information on a selected number of characteristics of housing. This operation includes the process of collecting (through enumeration or registered-based information) and aggregating information related to housing, and the evaluation, dissemination and analysis of data related to the living quarters and their occupants. The census must provide information on the stock of housing units together with information on the structural characteristics and facilities that have a bearing upon the maintenance of privacy and health and the development of normal family living conditions.

21. The population and housing census is the process that produces at the same time the information related to the population and the information related to the housing stock as described above. This operation has the advantage of obtaining information on two universes (population and housing) using the same process of enumeration. In relation to the population census, the population and housing census is also able to provide information on the living conditions of the population. The outputs of a census process related to the total population and housing stock are indispensable for providing statistics on the population, family, household and housing situation on a uniform basis for small areas and population sub-groups. The characteristics of the population include geographic, demographic, social, economic, and household and family characteristics. For many countries, the outputs obtained through a census process are vital for providing such information since the census is the only source available and there are no other viable alternatives.

Essential features of a Population and Housing Census

22. The essential features that distinguish a population and housing census from other data collections in the ECE region are the following:

a) Individual enumeration
Information on each enumerated person is obtained so that their characteristics can be separately recorded. This also applies to the housing census. This allows cross-classifying the various characteristics and obtaining data by more than one characteristic.

b) Simultaneity
Information obtained on individuals and housing in a census should refer to a well-defined and unique reference period. Ideally data on all individuals and living quarters should be collected simultaneously. However, if data are not collected simultaneously, adjustment should be made so that the final data have the same reference period.

c) Universality
The population and housing census should provide data on the total number of persons, households and housing within a precisely defined territory of a country.

The counting (or benchmarking) of the population should include every person residing in the defined territory of a country. The data provided by the census of the counting of the basic units should be validated with an independent coverage check.

d) Small-area data
The census should produce data on the number and characteristics of the population and housing related to the smallest geographic areas of the country, and to small population groups, consistent with protecting individual confidentiality.

e) Defined periodicity
The census should be taken at regular intervals so that comparable information is made available in a fixed sequence. It is recommended that census data be produced at least every ten years.

Strategic objectives and criteria for the selection of census topics

23. Given the costs required and the massive involvement of the population, the content and the methods used in a census should be carefully scrutinized to make sure that all the aspects of collection operations and the dissemination of results comply with the highest standards of relevance, quality, confidentiality, privacy and ethics. The content of a census should be decided after looking into: (i) the demand for data at national and local levels, (ii) the availability of data from other statistical sources and (iii) the constraints of a census for data collection where only a limited number of questions can be asked on single topics and sensitive or more complex topics that require extended modules and specialized training of interviewers can be covered only to a limited extent.

24. Each census topic should meet a number of key user requirement criteria:

a) The topic carries a strong and clearly defined user need;
b) There are no other means than the census to collect data on the topic;
c) Data on the topic are required for small population groups and/or at detailed geographical levels;
d) The topic is of major national importance and relevant at the local level;
e) Data on the topic are expected to be used in multivariate analyses with other census topics; and
f) The content does not differ drastically from previous censuses and where appropriate a new or modified topic can still provide comparison with previous censuses.

25. The user requirement for data should be balanced against a number of other factors when evaluating what topic can be collected from the census. A topic should NOT be included in a census if:

a) It is sensitive or potentially intrusive, or requires lengthy explanations or instructions to ensure an accurate answer;
b) It imposes an excessive burden on respondents, or seeks information not readily known or that people are unlikely to remember accurately;
c) It enquires about opinions or attitudes; or
d) It is likely to present major coding problems or extensive processing or significantly add to the overall cost of the census.

26. In addition to these factors, the census should be considered as an exercise carried out purely for statistical purposes, and should not, therefore, be used to collect data that will deliberately promote political or sectarian groups, or sponsor particular causes.

27. In optimising the limited space available on the questionnaire the design and size of a question will also be an important factor in deciding whether certain data can be collected.

28. The inclusion of new topics should always be tested to ensure successful collection and production of reliable results. In general, population and housing census should be seen as part of an integrated programme of data collection and compilation aimed at providing a comprehensive source of statistical information for economic and social development planning, for administrative purposes, for assessing conditions in human settlements, for research and for commercial and other uses. The value of either a population or a housing census is increased if the results can be employed together with the results of other investigations.

29. A list of proposed topics can be found in Appendix I. The list is divided between core and non-core topics and reflects the recommendations contained in chapters III-XIII. Core topics are those considered to be of basic interest and value to CES members and it is recommended that these countries cover these topics in their 2010 round of population and housing censuses. Non-core topics are those topics that countries could select based on their national priorities. Criteria for the selection of these topics are presented in paragraph 24. Some topics are referred to as derived topics. Derived topics are those for which information is obtained from other topics, and therefore are not required to be collected separately. The derived topics are presented in general after the topics from which they are derived, and are identified by means of italics.

Census phases

30. Censuses with field enumeration do not follow a uniform pattern among CES member countries, but they have certain major common elements. In general, census operations can be divided into seven phases which are not entirely separate chronologically or mutually exclusive: involvement of stakeholders, preparatory work (including testing and outsourcing), enumeration, data processing, dissemination of the results, evaluation of the coverage and analysis of the results. It is important that appropriate quality assurance strategies (see paragraphs 69-77) be applied in all these phases to make sure that all aspects of data quality (relevance, accuracy, timeliness, accessibility, interpretability, coherence) are taken into consideration, and that each choice made in all census phases is the best trade-off that "fits-the-purpose".

The relation between censuses and sample surveys

31. While population censuses go back at least 6000 years, as suggested by clay tablets found in ancient Babylon, the history of modern censuses can be traced to the mid-17th century. Sampling, in turn, is a much more recent technique, dating back a mere three quarters of a century.

32. Censuses started out as pure enumeration of people. Over the years they grew in size and scope as requests started to be made for information on other areas of social and economic life in

addition to basic demographic characteristics. Consequently, as new issues emerge, there are pressures to ask more census questions. Allowing for too many extra questions may result in exceedingly large census forms. This can cause concern for the quality of all of the information collected. Indeed, "the advantages of simultaneous investigation of several topics may be offset to some extent by the additional burden on the respondent and on the enumerator resulting from the increased amount of information that must be collected at one time."[8]

Use of long and short forms

33. In order to reduce the burden on the respondent when information is collected on many census topics, "the data collection could involve both a short form (with selected questions) and a long form (with more questions for specific topics). The long form is completed for a sample of dwellings, households or people".

34. The use of long and short forms has made it possible to collect more information while keeping planning, training and field operations relatively simple, and costs in check. However, in view of the ever increasing demand for information, this strategy may lead to new compromises since the number of questions comprising the long form cannot itself keep growing for reasons already explained. Should "simultaneity" become an overriding principle, countries may wish to consider data collection involving both a short form and two or more longer forms (with more questions for one or more specific topics) and with each long form being completed for a separate sample of households or people. However, having more than one form introduces complexities in terms of keeping track of forms and weighting results to the total population. It also introduces restrictions for multivariate analysis.

The census as benchmark and frame

35. The value of either a population or a housing census is increased if the results can be used in connection with the results of other data collections. These could take the form of use of the census data as a basis or benchmark for statistics in the same field, or to furnish the information needed for conducting other statistical investigations. It can, for example, provide a statistical frame for other sample surveys or an agricultural census. The population census is also important in developing the population estimates needed to calculate vital rates from civil registration data. In addition, these censuses are a major source of data used in official compilations of social indicators, particularly on topics that usually only change slowly over time.

36. The purposes of a continuing coordinated programme of data collection and compilation can best be served, therefore, if the relationship between the population census, the housing census and other statistical investigations is considered when census planning is under way and if provision is made for facilitating the joint use of the census and its results in connection with such investigations.

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[8] Principles and Recommendations for Population and Housing Censuses, United Nations, New York, 2006.

37. An essential ingredient of sample design is the existence of a complete, accurate and up-to-date sampling frame. A sampling frame is defined essentially as comprising the materials from which a sample is selected. It may be a list of structures, addresses, households, or persons. The census can be used to construct either type of frame, or both. Indeed, most countries use their census for such purposes. The census frame is almost always the departure point for the design of a household sample survey.

38. It is important to recognize that any census – even one that is only one or two years old—will be out of date and may not be suitable as a frame. In such cases, it is essential to update the census frame with current fieldwork or from administrative records before using it as a frame for a household sample survey.

39. Population and household counts for the enumeration areas, taken from the census, are a highly useful ingredient to establish measures of size for the selection of first- or second-stage sampling units, or to help in various stratification schemes. Whenever the census captures socio-economic information, this can be used to complement such stratification schemes.

Intercensal surveys

40. Regardless of whether or not information on a wide number of topics was collected simultaneously, the rapidity of current changes in the size and other characteristics of populations and the demand for additional detailed data on social, economic and housing characteristics that are not appropriate for collection in a full-scale census has maintained the need for continuing programmes of intercensal household sample surveys.

41. The population and housing census can provide the frame for scientific sample design in connection with such surveys; at the same time, it provides benchmark data for evaluating the reasonableness of the overall survey results as well as a base against which changes in the characteristics investigated in both inquiries can be measured. To permit comparison of census and survey results, the definitions and classifications employed should be as nearly alike as possible, while remaining consistent with the aims of each investigation.

The relation between population and housing census and the agricultural census

42. While the population and housing censuses have a close inter-relationship, their relationship with the agricultural census is less well defined. However, as the result of increasing integration within programmes of data collection, the relationship between the population and housing census and the agricultural census is now far closer than in the past, and countries are increasingly looking at new ways to strengthen this relationship.

43. One issue in relating the two censuses is that they use different units of enumeration. The unit of enumeration in the agricultural census is the agricultural holding, which is the techno-economic unit of agricultural production, while the unit of enumeration in the population census is the household and the individual within the household. However, in many developing countries, most agricultural production activities are in the household sector and households and agricultural holdings are very closely related, often in a one-to-one relationship. Establishing links between the two censuses is particularly relevant for such countries.

44. The agricultural census collects various household/individual data for members of the agricultural holder's household. The World Programme for the Census of Agriculture 2010[9], recommends the collection of data on household size and limited data on demographic characteristics and economic activity of members of the holder's household, as well as some limited information on persons working as employees on the holding. Users may find some agricultural activity data from the agricultural census more comprehensive than from the population census because the latter normally investigates only the principal economic activity of each person during a short time-reference period and this may not identify persons connected with agricultural activity on a seasonal or part-time basis. On the other hand, the population census provides data on agricultural employment and agricultural population that is not available from the agricultural census because it only covers households associated with agricultural holders. To get a complete picture, agricultural data users will need both agricultural census data and data from the population census.

45. In planning the population and housing census, every opportunity for developing the relationship between this census and the agricultural census should be explored. This can take several forms. Definitions used in the population and housing censuses should be compatible with those used in the agricultural census so that meaningful comparisons can be made between the two data sets. The population and housing census can also be of use in the preparation of the agricultural census, such as in the demarcation of enumeration areas, the preparation of the frame for the agricultural census or, if applicable, the sample design.

46. In planning the National Census Programme, consideration should be given to the possibility of collecting additional agricultural information as part of the population and housing census that would facilitate the preparation of the frame of agricultural holdings in the household sector, for a subsequent agricultural census. This could be done as part of the pre-census cartographic work and/or listing exercise or by adding an additional question to the census questionnaire. In the later case, an additional item at the household level could be included on whether any member of the household is engaged in own-account agricultural production activities. Alternatively, additional data at the individual person level could be collected to identify persons involved in agricultural activities during a longer period, such as a year. These new items are included in the present recommendations as non-core topics (see Chapter XII). Where countries choose to adopt this approach of using the population and housing census to establish a frame for the agricultural census, the agricultural census should be synchronised with the population and housing census, and conducted as soon as possible after the population and housing census, while the frame is still up-to-date.

47. The opportunity of linking population and agricultural census data should also be explored. This could add considerable analytical value to data sets from both censuses and save on data collection costs. Much of the demographic and activity status data collected in the population census are also collected in the agricultural census. If data from the two censuses could be linked, it would no longer be necessary to collect these data again in the agricultural census.

48. Some countries conduct the data collection for the population and agricultural censuses as a joint field operation. Normally, each census retains its separate identity and uses its own questionnaire, but field operations are synchronized so that the two data collections can be done

[9] FAO Statistical Development Series No. 11 (Rome, 2005)

at the same time by the same enumerators. Occasionally, the two censuses are merged into one. This may have a number of advantages, but its effect on field operations and data quality needs to be carefully considered.

Methodology approaches in the ECE region

49. There are four primary approaches to conducting a census, based on the method of data collection:

a) The traditional method of universal enumeration based on field operations at a given moment, either with an exhaustive collection of all characteristics or an exhaustive collection of basic characteristics with a collection of selected characteristics on a sample basis (long form/short form);
b) Traditional enumeration with yearly updates of characteristics on a sample basis;
c) The method of using registers and other administrative sources; and
d) A combination of registers and other administrative sources and surveys (complete enumerations or sample surveys).

50. These and other approaches, such as the combination of register-based and traditional methods, and a "rolling" census, are described in Appendix II. Necessary conditions, advantages and disadvantages, implications for the phases of census taking, and implications for content are addressed for each approach.

51. Registers and other administrative sources are an alternative to the traditional census as far as they contain the relevant topics, use similar definitions and classifications and cover the entire population. Sample surveys used alone cannot provide equivalent data but they can be used in combination with a census or to supplement census information on specific topics.

52. There are other alternative approaches to traditional and register-based population and housing censuses that may not meet all essential census features but aim to provide a comprehensive set of statistical information similar to that provided by traditional and register-based approaches.

53. Whichever method of data collection/data provision is to be used should take into account a wide range of issues such as:

a) Users' needs;
b) Quality of the data;
c) Completeness of the count;
d) Data protection and security;
e) Comparability of the results between the countries and over time;
f) Burden on the respondents;
g) Timeliness of outputs;
h) Financial and political implications; and
i) Public understanding and acceptance

54. The results of the Questionnaire on Population and Housing Censuses, sent to ECE member countries in Spring 2004, show a shift away from the traditional census approach that was adopted by the clear majority of countries in the 2000 round (and is fully explicated in the United Nations' Principles and Recommendations for Population and Housing Censuses) towards increasing use of administrative registers, either exclusively or supplemented with information from questionnaires or surveys. Though the majority of countries still intend to do so, ten fewer countries report that they are planning for a traditional population census in the 2010 round.

55. Of those that are abandoning the traditional approach, the majority plan to use existing administrative registers supplemented with survey or questionnaire-based information.

56. Even among those countries planning to continue with a fundamentally traditional approach, several reported that they would introduce significant methodological changes that will utilize additional sources of administrative data to develop information to support a conventional enumeration.

57. Most countries will continue to collect information on both each individual person and on housing through the same operation.

58. It is expected that more or less the same extent of use of enumerator and self-completed form will be adopted in 2010, as was the case in the 2000 round. There will still be a greater emphasis on enumerator collection compared with use of mail-back. However, a number of countries have indicated that they are considering using the Internet as one of a number of possible modes of data collection in the next round (see paragraphs 119-125 in Chapter II). The use of the Internet, or other emerging data collection technologies such as hand-held devices (see paragraphs 130-134 in Chapter II) may provide cost-effective solutions for some countries.

Confidentiality and security

Confidentiality principles

59. The Census collects information on each person and household in the country. In its uses it is not concerned with facts about individuals as such. Its purpose is to provide statistics about the community, and groups within the community, as a whole. The public, therefore, has a right to expect, and needs to be assured that, personal information provided in confidence will be respected. Names, addresses and PINs should be separated from other data as soon as possible in the census process, and not released, so that the data output contains no personal identifiers. The confidentiality requirement encompasses the whole census operation, ranging from the security of the completed census questionnaires both in the field and during processing to the protection of the information contained in the outputs and made publicly available.

60. Assurances should been given to the public that all the information given will be treated in strict confidence by the census authorities and any person who is employed by, or provides a service to, the census authority for the purposes of carrying out the census. Many countries will have domestic legislation that protects such information in the form either of specific census legislation or of more general legislation relating to data protection and freedom of information.

61. The following additional principles should govern the treatment of the information given in the census returns:

a) Only persons under the management of the census authorities, or agents acting on their behalf, should have access to personal census information.
b) Completed questionnaires should be collected or returned in such a way that will not reveal information to other members of the public. Additionally, individual household members should, if they wish, be able to give personal information on a separate questionnaire in a way that will not reveal it to others in their household or establishment, or to the enumerator.
c) All members of the census organisation and outside agents providing services to the census authority in connection with the census should be given strict instructions, and be required to sign legal undertakings, about confidentiality. They should be liable to prosecution for any breaches of the law.
d) The physical security of census documents containing personal information held by the census authorities, by field staff or by authorised agents should be strictly enforced and, if felt necessary, independently reviewed.
e) The computer systems handling census data should have strict safeguards to prevent unauthorised access to the information.
f) In releasing statistics from the census, all possible steps should be taken to prevent the inadvertent disclosure of information about identifiable individuals and households. Special precautions may apply particularly to statistical output for small areas. Measures to ensure disclosure control may include some, or all, of the following procedures:

    i) Restricting the number of output categories into which a variable may be classified, such as aggregated age groups rather than single years of age;
    ii) Where the number of people or households in an area falls below a minimum threshold, suppressing statistical output – except, perhaps, for basic headcounts – or amalgamating it with that for a sufficiently large enough neighbouring area;
    iii) In the case of micro-data or public use samples, removing all information from databases relating to name, address and any unique characteristics that might permit the identification of individual respondents. Statistical disclosure methods should also be applied to ensure the confidentiality guarantee.

Public access to closed census records

62. Many National Statistical Offices receive requests from time to time from genealogists, social historians and individual members of the public, to allow public access to, or reduce the period of closure for, census records for the purpose of researching family histories.

63. The period of closure of census records in many countries is prescribed specifically by statute but may vary from country to country. Other countries may rely on more general provisions within data protection and/or freedom of information legislation to keep confidential records closed until such a time that minimises the risk of disclosure of information about living individuals. Some countries, however, may choose to destroy the census forms once processing of the data has been completed.

64. While national Governments may recognise both the sociological and commercial value of historical census records, they should also recognise that the ability of National Statistical Offices to collect information from the general public may be seriously compromised if assurances given about the confidentiality of the information collected were not honoured. Public confidence in the security and confidentiality of the information given in the census should be regarded, therefore, as paramount.

Metadata

65. A metadata system provides supplementary information on characteristics of surveyed and published data. Each National Statistical Office uses its own metadata system based on international standards but corresponding at the same time to the specifics of the national effort. Since a population census and its results are connected with other areas of statistical activities, it is recommended that the metadata system of a population census in each country should use the same elements as the entire metadata system of the particular NSO. What is also needed, however, is that the metadata system of a population census contain some elements that are used only for that census. The metadata system of a population census should also ensure the widest possible data comparability internationally.

66. The population census for the 2010 round has to ensure comparability with data from the previous population censuses while at the same time including new elements relevant for any development that has taken place during the time since the previous census. Thus, the metadata system of the population census should follow the metadata system from the previous population census (see: *Recommendations for the 2000 Censuses of Population and Housing in the ECE Region*) with an update in line with the needs resulting from the development since the previous population census. The metadata systems of individual National Statistical Offices should also reflect the extent to which they use administrative data sources and their metadata systems.

67. A metadata system should contain definitions of terms, classifications, and nomenclatures. For indicators for which international standard classifications have been created, the international classifications should be used. For indicators that cannot be classified by international standards, new nomenclatures may need to be created.

Integrity

68. In the context of the population census, integrity is the strict adherence to all *Fundamental Principles of Official Statistics* throughout the various stages of the census operations by all institutions and persons involved. The task of the National Statistics Office (NSO) is to set the standards of integrity and to make sure that these standards are observed by its regular staff, its temporary staff especially recruited for the census, and staff of any other (public or private) organisation to which certain parts of the operations may be assigned or sub-contracted. *The Fundamental Principles of Official Statistics* are discussed in Appendix III.

Quality assurance

Plans for the quality assurance and improvement programme

69. The product of any census of population and housing is information, and therefore confidence in the quality of that information is critical. The management of quality must therefore play a central role within the overall management of a country's census. Thus a quality assurance programme must be an element in the overall census programme and should touch on all activities during planning, the development period, operations like data collection and processing through to evaluation and dissemination of results. A major goal of any quality assurance programme is to build in quality from the beginning through the sound application of knowledge and expertise by employees at many levels. It will also include reactive components to detect errors so that remedial actions can be taken during census operations. Further, a quality assurance programme should also be viewed as a quality improvement programme. Without such a programme, the census data when finally produced may contain errors, which might severely diminish the usefulness of the results. If data are of poor quality then decisions based on these data can lead to costly mistakes. Eventually the credibility of the entire census may be called into question.

70. The quality assurance and improvement system should be developed as part of the overall census programme, and integrated with other census plans and procedures. The system should be established at all phases of census operations, including planning, pre-enumeration, enumeration, document flow, coding, data capture, editing, tabulation and data dissemination. Establishing a quality assurance and improvement system at the planning stage is crucial to the success of the overall census operations.

Need for a quality assurance and improvement programme

71. Because of the size and complexity of census operations, it is likely that errors of one kind or another may arise at any stage of the census. These errors, whether in planning, development or in operations, can easily lead to serious coverage or content errors, cost overruns or major delays in completing the census. If not anticipated and controlled during design and implementation they can introduce non-sampling error to the point of rendering results useless. To minimize and control errors at various stages of a census, it is good practice to devote a part of the overall census budget to quality assurance and control programmes.

72. Every national census organization should establish a system of quality assurance and improvement as an integral part of its census programme. The primary objective of such a programme should be to ensure that quality is appropriately considered in all phases of the census work. The dimensions of quality, outlined in paragraph 76 below, are overlapping and interrelated and each must be adequately managed if information is to be fit for use. Each phase in executing a census may require emphasis on different elements of quality.

73. Achieving an acceptable level of quality is the result of addressing, managing and balancing the various dimensions of quality with due attention to program objectives, major uses of the information, costs and other factors that may affect information quality. Actions taken to address one dimension of quality may affect other dimensions. Decisions and actions aimed at

achieving an appropriate balance of quality dimensions are based on knowledge, experience, reviews, feedback, consultation and judgement.

74. Quality evaluations and measurements from previous censuses can be valuable to indicate priorities and focus in the development of plans and procedures. It may be desirable to ascertain the quality level that was achieved in previous censuses and use that information to establish standards for the next census.

75. The quality control and improvement system should be seen as an important component of the overall census programme. As such, it must be fully integrated with other census plans and procedures. There is no single standard quality control and improvement system that can be applied to all censuses or even to all steps within a census. Census designers and administrators must keep in mind that no matter how much effort is expended, complete coverage and accuracy in the census data are unattainable goals. However, efforts to first detect and then to control errors should be at a level that is sufficient to produce data of a reasonable quality within the constraints of the budget and time allotted.

Defining information quality

76. It is generally accepted that there are six dimensions of quality:

a) The *relevance* of statistical information reflects the degree to which it meets the needs of users. The challenge for a census programme is to balance conflicting user requirements so as to go as far as possible in satisfying the most important needs within resource constraints. This dimension of quality is particularly important in census content development and in dissemination.

b) The *accuracy* of statistical information is the degree to which the information correctly describes the phenomena it was designed to measure. It is usually characterized in terms of error in statistical estimates and is traditionally broken down into bias and variance. In a census context, variance only applies in situations where a longer, more detailed, questionnaire is used for a sample of persons or households, or where only a sample of records is processed. Accuracy can also be described in terms of major sources of error (for example coverage, sampling, non-response, response, data capture, coding)

c) *Timeliness* refers to the delay between the time reference point (usually census day) to which the information pertains and the date on which the information becomes available. Often for a census there are several release dates to be considered in a dissemination schedule. Typically there is a trade-off against *accuracy*. T*imeliness* can also affect *relevance*.

d) The *accessibility* of statistical information refers to the ease with which it can be obtained. This includes the ease with which the existence of information can be ascertained, as well as the suitability of the form or medium through which the information can be accessed. Even though censuses are conducted primarily to meet the needs of central government, the data obtained are of great value to many secondary users including local administrations, private organizations and the public at large. To maximize the benefit of the information obtained, it should be widely accessible to all of these potential users. Consequently, censuses often provide a mix of free products, standard for cost products and a user pay service for ad hoc

commissioned products. The strategy adopted and the cost of the services also affects *accessibility*.

e) The *interpretability* of statistical information reflects the availability of supplementary information and metadata necessary to interpret and use it. This information usually covers the underlying concepts, definitions, variables and classifications used, the methodology of data collection and processing, and indications of the accuracy of the information.

f) *Coherence* reflects the degree to which the census information can be successfully brought together with other statistical information within a broad analytic framework and over time. The use of standard concepts, definitions and classifications – possibly agreed at the international level – promotes coherence. The degree of quality on *coherence* can be assessed via a programme of certification and validation of the census information as compared to corresponding information from surveys and administrative sources.

77. Quality assurance framework and implementation are fully described in Appendix IV.

Ensuring quality in an outsourcing environment

78. Some countries may wish to outsource certain parts of census operations. The motivations and considerations for outsourcing are discussed more fully in Chapter II. In the context of quality assurance, the outsourcing of components of census operations still requires the census agency to take full responsibility for, and manage the quality of the census data. This aspect should never be delegated. Automated data capture, repair and coding systems both increase greatly, and introduce a different set of risks to, data quality compared with traditional census processing approaches. If not properly monitored and managed, data quality problems can remain undetected until late in the process when cost and timing constraints limit the options for any corrective activity. This has implications for the way outsourcing is undertaken (see Chapter II).

79. In setting up outsourcing arrangements, the census agency needs to ensure that it continues to have the ability to both understand and manipulate those elements that contribute to final data quality. This requires that census agency staff have an understanding of how such systems as recognition engines and coding algorithms work and have the ability to change the tolerances or parameters of these systems at little cost and in a timely manner during processing. Varying these parameters will allow the census agency to determine and manage the appropriate balance between data quality, cost and timeliness as processing progresses.

80. Some methods of measuring data quality from data capture processes, such as substitution rates or measures of key entry errors, are, on their own, inadequate as these forms of monitoring simply measure the overall incidence of errors but not the significance of the errors. Indeed this approach could lead to considerable extra expenditure for the correction of trivial errors that lead to no appreciable gain in quality. For this reason, data quality should be measured at the topic response level rather than at the individual character/numeral level. This should be done in two ways: independently processing a sample of records using manual processes and comparing the results for each of the records with those obtained through the automated systems; and in aggregate by comparing the overall data for an area with the expected results based on other information for that area (for example from the previous census or other data sources).

81. This process should be undertaken continuously during processing with a focus on early detection of quality problems and an understanding of any systems or processes that have contributed to these. The amount of error that is acceptable and the degree of intervention and systems or process changes undertaken will depend on the assessment by the census agency of the overall fitness of purpose of the output and the overall cost and timeliness impacts. This will vary from topic to topic. For example, it would be expected that there would be a greater focus on the quality of key demographic variables compared with other data items collected on the census form.

82. Some approaches to outsourcing put an emphasis on "turn key" arrangements – in which contractors deliver systems according to a set of predetermined client specifications with the expectation that the client focuses solely on the outputs and not the internal workings of the system. This assumes that the census agency completely understands and can fully anticipate all data quality issues that might arise during the census and has included these in the specifications. The client is not expected to have any understanding of how these systems work or how they might contribute to the final outputs. Any changes to the system typically require cumbersome processes to determine contract responsibilities and heavy financial costs. This sort of approach effectively hands over the quality of the census data to the contractor, while the risks associated with intervention remain with the census agency. It removes any flexibility and greatly restricts the ability of the census agency to react to quality problems that emerge during processing. This "turn key" approach is not recommended.

Evaluation of census content and coverage

Purpose of census evaluation

83. It is generally recognized that a population census is not perfect and that errors can, and do, occur at all stages of the census operation. Most errors in the census results are classified into two major categories - coverage errors and content errors. Coverage errors are errors that arise due to omissions or duplications of persons or housing units in the census enumeration. Content errors are errors that arise in the incorrect reporting or recording of the characteristics of persons, households, and housing units enumerated in the census. A third type of error is classified as operational errors. These can occur during field data collection or during data processing.

84. Many countries recognize the need to evaluate the overall quality of their census results and employ various methods for evaluating census coverage as well as certain types of content error. A comprehensive evaluation program should, however, also include assessments of the success of census operations, in each of its phases. Countries should ensure, therefore, that their overall census evaluation effort addresses the census process (hereafter referred to as operational assessments), as well as the results (referred to as evaluations). Together, operational assessments and evaluations tell us "How well we did." A third component of a comprehensive research program includes experiments. Experiments tell us "How we can do better."

a) Operational assessments document final volumes, rates, and costs for individual operations or processes, using data from production files and activities; quality assurance files and activities; and information collected from debriefings and lessons learned. Operational assessments can include some discussion of the data, but do not involve explanation of error. The final volumes, rates and costs can be broken out by

demographic, geographic level, and housing unit and/or person-level data at intermediate stages of operations or processes. Operational assessments may also document operational errors, although they won't necessarily include an explanation of how those errors affect the data;

b) Evaluations analyze, interpret, and synthesize the effectiveness of census components and their impact on data quality and coverage using data collected from census operations, processes, systems, and auxiliary data collections; and

c) Experiments are quantitative or qualitative studies that must occur during a census to have meaningful results to inform planning of future censuses. The census provides the best possible conditions to learn about the value of new or different methodologies or technologies and typically involve national surveys with multiple panels.

85. In addition to conducting operational assessments, evaluations, and experiments during the census, pre-census tests provide a useful vehicle for planning and developing the actual census. Census tests can be conducted as a national sample (useful for testing content, mail and/or Internet response, and other questionnaire-related features of the census) or as a site test (useful for testing operational procedures). Other pre-census testing could involve cognitive testing of the questionnaire, research and testing of the automated processes for address list development, questionnaire addressing and mail out, data collection, data capture, and data processing, and conducting innovative research into the use of administrative records, improved cost modelling, and improved methods of coverage measurement.

86. Prior to conducting the actual census, a dress rehearsal provides an opportunity to test the full array of operations, procedures, and questions, much like a play's dress rehearsal provides an opportunity to "fix things" before the real event.

87. Evaluation efforts focused on census results should generally be designed to serve one or more of the following main objectives:

a) To provide users with some measures of the quality of census data to help them interpret the results;

b) To identify as far as is practical the types and sources of error to assist the planning of future censuses; and

c) To serve as a basis for constructing a best estimate of census aggregates, such as the total population, or to provide census results adjusted to take into account identified errors.

88. Evaluations of the completeness and accuracy of the data should be issued with the initial census results to the extent possible. Additional results can be issued after the initial results are published. A number of methods exist for carrying out census evaluations, and in practice, many countries use a combination of such methods to fully serve these objectives. These methods are described in Appendix V.

Consultation

89. In undertaking such a vast and complex exercise as a census of population and housing, census takers need to be assured, through consultation and public engagement, that the broad strategic aims can be met. Countries will wish to consider how consultation can ensure that:

a) The question content is appropriate to meet the demonstrated information requirements of users;
b) Practicable questions, and the means to collect the data, can be devised, which are sufficiently accurate to meet users' requirements;
c) Output products and services meet users' needs within agreed quality standards and timetable; and
d) That all aspects of the census data collection operation and the dissemination of results are acceptable to the public.

90. Thus a comprehensive programme of communications for a census should cover three distinct audiences:

a) Users of census data (both the experienced and specialist user and the more occasional generalist);
b) Persons and institutions participating in the census enumeration; and
c) The general public.

91. Though participation is usually a statutory obligation, the census is a national activity that is almost entirely dependent for its success on the co-operation and assistance of the general public and many government and local organisations. It is essential therefore that a communication strategy be developed which is co-ordinated with other substantive preparations for the census. Good communication is valuable not only for providing the census authorities with early and continuing information about the requirements of users, but also in assessing public reaction to the census plans and activities in various parts of the country. Details on the scope and design of consultation programs are provided in Appendix VI.

Dissemination

92. A census is not complete until the information collected is made available to users in a form, and to a timetable, suited to their needs. Thus in disseminating the results of the Census much emphasis should be put on responsiveness to users and on high standards of quality in the production of statistics. Census results should be disseminated simultaneously to all users, and the greatest care should be exercised to avoid the inadvertent disclosure of information about identifiable individuals. To protect confidentiality, various statistical measures should be applied (see paragraphs 59-61 above).

93. There are several ways of making the results of a census available to the user:

a) As printed reports containing standard and pre-agreed tabulations, usually at the national, regional or local district area level, that may be obtained from government agencies or directly from booksellers;
b) As unpublished reports (often referred to as abstracts) comprising standard tables but produced for either smaller geographies or population sub-groups not otherwise included in the published reports – these may often be requested by users who may have to contribute towards a proportion of the marginal costs of their production;
c) As commissioned output produced from a database, comprising customised cross-tabulations of variables not otherwise available from standard reports or abstracts; and

d) As micro-data, usually available in restricted format only and supplied under strictly controlled conditions.

94. Due to their ever increasing production costs, printed publications may become less the preferred choice for the dissemination of the main census results, though paper still provides a media that does not readily deteriorate and does not require the user to have any particular hardware, software or technical skills. Concurrent release of outputs may, however, be made possible only by distribution through the use of high capacity electronic media. However, when data are provided in electronic form, special attention should be given to providing users with easy means of data retrieval. The options for obtaining the outputs and relevant metadata should be accessible in standard formats as well as in common database and spreadsheet format for easy retrieval and manipulation.

95. With the growing importance of the use of the Internet, on-line facilities for ordering, specifying, and receiving census tabulations and public use samples should be developed wherever possible, ensuring that appropriate measures are in place to protect statistical confidentiality of the data and the security of transmission.

96. A range of products should be available to meet the changing requirements of users. There is likely to be a need for:

a) National, regional and local authority summaries;
b) Reports on key findings on particular topics, supplemented detailed results and analyses either in a standard form for areas down to the more local geographic levels, or more detailed statistics on particular topics;
c) Local and minority and small population profiles;
d) Spatial and graphical analyses; and
e) Supplementary metadata covering definitions, classifications, and coverage and quality assessments.

97. The main national and local results should be released, to a pre-announced timetable, as speedily and over a short period of time as is possible once processing is completed and the total population of the country has been determined.

98. Charges, where they are necessary, should be set to make access to the results affordable to all types of users, and there may need to be a print-on-demand service to supply any of the material in electronic supplements to users who prefer paper copies.

99. Products should be developed which will allow statistical and geographical information to be delivered together with Geographical Information Systems (GIS) to meet as widespread an interest, and with as much flexibility, as possible, commensurate with assurances on confidentiality. By having associated graphing and mapping capabilities, databases will greatly increase their usefulness. Ideally users should, themselves, be able to generate graphs and/or maps easily, and then to print or plot them or make the images available for other uses. Several census agencies have produced this kind of product, sometimes in co-operation with a commercial company.

Publicity and information campaign

100. In recent years, due to the complexities of collecting information from the population, the issue of effectively informing the population of the forthcoming census and explaining its purposes and tasks have become a basis for census quality and the collection of reliable information.

101. The main task is the explanation of the importance of the forthcoming population and housing census for the depiction of the society, prospects of development of the country, and the updating of social, regional and national demographic information. The census has a large cultural and historical meaning, not only to the country, but also on a global scale. The campaign should highlight the fact that the census is an integral part of the country's official statistics program.

102. The main practical goal is the formation of positive attitude of the society to the census, prompting the inhabitants of the country to participate and give reliable information about themselves.

103. Important messages about when and how the census is going to be held, what is expected from the public, and how the public can find out more about the census need to be communicated. Public understanding of these aspects of the census will contribute to the smooth conduct of collection operations. The implementation of a publicity and information campaign—before, during, and after data collection—is described in detail in Appendix VII.

Chapter II. EMERGING CENSUS TECHNOLOGY

Introduction

104. Technology has been used to assist in all phases of population censuses for many years. The focus of this chapter is on new technologies that might be used for direct census collection, processing and dissemination activities. These technologies have not been widely used in past census activity and are presented here to provide a review of possible options to countries. There is no doubt that emerging, or yet to be discovered, technologies will impact on future census taking.

105. Well-established technologies such as key-entry systems are not covered because these systems are already well understood and documented. Countries interested in traditional technologies should refer to *Principles and Recommendations for Population* and *Housing Censuses* United Nations, New York 1998 and *Handbook on Census Management for Population and Housing Censuses*, United Nations, New York 2001. These well established approaches and technologies might continue to be the most viable option for many countries. Adoption of new technology or approaches should only be considered where there is a sound understanding of them and where their developments can be managed. There should also be a clear understanding of both the risks and the benefits.

106. The feasibility of the adoption of any technology that is untested in a census environment should be carefully evaluated in advance, taking into consideration the national context and in particular factors such as the size of the country, the relative costs of these technologies compared to traditional solutions, the work needed to develop and test the technologies, and the potential implications of the adoption of the technologies on the overall organisation of the census operations. Potential effects on the quality of census results as well as the impact on the general population need to be carefully considered.

107. This chapter also does not focus on ancillary systems that are required to conduct a census. Census operations involve a range of administrative processes that are common to other large-scale projects. For example, planning of a complex operation such as the census may be assisted by use of appropriate project planning software. Many countries may require systems and processes to recruit and pay large numbers of temporarily employed census enumerators. The National Statistics Office should also consider how technology might assist in improving the efficiency and effectiveness of these operations. This can contribute both to containing the cost of the census as well as improving the overall quality of the census by allowing resources to be focused on the primary tasks of enumeration, processing and dissemination rather than on administrative processes such as paying staff.

Drivers for technological innovation

108. Technology has the potential to greatly reduce the cost and improve the quality of censuses. In the short term, however, introduction of new technology can actually increase costs. Census agencies need to consider how the new opportunities provided by technological innovation may contribute to improving the relevance, quality and timeliness of the census. For example, with reductions in processing cost, it may be possible to expand the content of the

census or increase sampling rate for sampled questions to improve the quality of data for small population groups and small geographic areas. Any content expansion, however, needs to be balanced against the impact on respondents.

109. The demand for evidence-based policy and planning generates a demand for census data from a wider range of users beyond the traditional government users. Output systems therefore need to be able to cope with a diverse range of users who may have limited knowledge of census data and who may no longer be content with the limited tabular output that may have been traditionally available.

110. In some countries there is a legislative requirement that governments should permit citizens to conduct government business electronically. Even without such provisions, growing use of the Internet in the community generates expectations that this is the way to do business. It should be noted that in the census context, it is likely, that the use of the Internet, at least in the initial stages, will increase the overall cost of the census.

Determining what systems are appropriate

111. Census agencies need to undertake an evaluation to determine what systems and processes are appropriate for their own situation. Issues to be considered include:

a) The relative costs of staff and clerical based processes compared with costs of possible computer systems and associated infrastructure;
b) The technological capability and infrastructure within both the census agency and the country as a whole; and
c) The capacity of the census agency to manage complex and sophisticated systems development processes.

Outsourcing

112. The complexity of much of the new software and the infrastructure required for many of the new and emerging technologies go beyond the current technical capabilities of most census agencies. It is likely that significant components of any solution will need to be outsourced. As with the adoption of any new technology, outsourcing should only be considered if the census agency has sufficient skills to manage the process.

113. The decision to outsource will depend on the requirements of the census agency (including those of confidentiality and security), whether the skills are available in-house, and the ability of the census agency to manage complex system development projects. There may be a gradation from total outsourcing of the census processing system or discrete components of the system, through to systems that involve a combination of outsourced components, external service providers working as contractors on specific projects and in-house developments.

114. Total outsourcing can be simpler to manage than for a mixed approach. However, a clear understanding of requirements is needed before the project commences so that these can be specified unambiguously to the contractor. These include understanding the objectives of the project, the outputs to be achieved and the standards these outputs must meet (quality, timeliness,

cost). Specifications must allow for the possibility of requirements changing over the life of the project. How these changes are agreed and approved by the census agency and the provider need to be determined.

115. Timetabling, including milestones for key deliverables linked to payment schedules, needs to be agreed with the contractor. Regular monitoring on a routine basis needs to be undertaken at an operational level. Also, processes should be established to allow senior staff to monitor progress and to deal with any major issues that cannot be resolved at the operational level.

116. A mixed approach to systems development is one in which the overall system may consist of outsourced systems, systems developed by external contractors working alongside census agency staff, and systems developed in-house. This approach can have many advantages such as greater flexibility to adapt systems as more is learnt through the systems development and testing program and actual census processing operations. This can lead to improved data quality and savings in processing costs as systems are optimised. However, management becomes much more complex. The census agency must be skilled in the management of complex projects, have a clear understanding of business processes and manage carefully the integration of both the technological and clerical processes. Team based working, where external contractors work very closely with census agency staff is essential, if this method of systems development is to be successful.

117. Detailed discussion of outsourcing and evaluation and acquisition of software and hardware can be found in *Handbook on Census Management for Population and Housing Censuses*, United Nations, New York 2001.

Census collection

118. The following three collection technologies are considered: Internet return of census forms, telephone interviewing and hand held devices. New technology allows collection and processing for some steps to be done simultaneously. The opportunities that new technologies offer for managing better the collection operations are also discussed.

Internet return of forms

119. Using the Internet as a collection method means that the census collection methodology will need to be self-enumeration rather than interview based. The Internet option can be incorporated into any of the traditional methods of delivering and collecting census forms (for example drop-off/pick-up, mail-out, mail back). The key factor is managing collection control operations – that is ensuring that every household and individual is counted once and once only. This requires the ability to provide each household and individual with a unique code linked to a geographic location. An added complication for those countries where forms are collected by census enumerators (rather than mailed back) is to have adequate and timely feedback to enumerators so that they can update their own collection control information so that they do not visit households that have already returned forms.

120. The potential level of take-up of an Internet option should be considered by assessing the proportion of the population who can access the internet from home, the proportion who use

broadband services and the general use of the Internet for other business purposes (for example on-line banking, filing tax forms, shopping). The use of the Internet is likely to increase the cost of the census, at least initially. As it is not known in advance who is likely to use the Internet, there will be a need to deliver a paper form to every household including those who will subsequently use the Internet. Systems and processes that allow for Internet return of census forms will also need to be developed. These will increase costs. On the other side there are potential savings in data capture costs. However, scanning and Intelligent Character Recognition are in themselves cost efficient. Therefore, savings in data capture costs are likely to be considerable less than the costs of developing and implementing the internet system.

121. Security is an important consideration. Industry standard encryption (SSL128) offers two-way encryption (that is it encrypts data flowing both from and to the user's computer) and has been accepted by nearly all countries as adequate to protect the census information. Security should be a key consideration in designing the infrastructure. A physically separate infrastructure should be set up to collect the census information. Completed individual census forms should be moved behind firewalls and then into infrastructure that is completely separate from the collection infrastructure.

122. A downloadable on-line form requires much less infrastructure than for forms that are completed on line. However, downloadable forms require a greater level of computer literacy than on-line forms. They will not necessarily work in thousands of different computer configurations and there will be an expectation that the census agency will be able to deal with each individual problem. From the respondents' point of view, they are much more likely to prefer completing the form on-line. For these reasons it is expected that most countries will adopt on-line completion of census forms.

123. An electronic form offers the possibility of interactive editing to improve response quality that is not possible on a paper form. People using electronic forms have a certain level of expectation that a certain amount of guidance will be offered – at a minimum that they will be sequenced through the form and not asked questions that are not relevant to their situation. How far other editing or on-line coding is built in to the form needs to be carefully considered. Some limited studies indicate that forms returned by the Internet are of higher quality than paper forms. More work is required in this area to determine whether this is a function of the type of people using the Internet or the technology itself.

124. Providing an Internet option may contribute to the improving the quality of the census by making it easier for some hard-to-enumerate groups to respond. Most countries report difficulties in enumerating young adults and people living in secured accommodation where access is restricted. Some people with disabilities will also find it easier to complete an Internet form than a paper form. These groups are also more likely to be using the Internet and, if available, this option should be promoted to these groups as a means of encouraging participation in the census.

125. Provision of sufficient infrastructure provides one of the major challenges for offering an Internet option. The census occurs over a relatively short period of time and affects the whole population of a country, and it is unlikely that the census agency will have adequate infrastructure to cope with the peak demands of a census. It is therefore likely that this component, at least, of the Internet solution will be outsourced. It may be necessary for collection procedures to be modified to constrain demand. For example, requiring people outside predetermined target populations/areas to contact the census agency before they can use the

Internet form may be a means of restricting use of the Internet form. Census agencies need to assess how they wish to promote the use of the Internet. Promotion of the Internet option should be determined by the capacity of the service to handle the expected load and should be coordinated with the collection procedures. The public relations strategy will need to encompass assurance about security of information supplied via the Internet. Assuming that the Internet option is targeted to the whole population, the public relations strategy should encompass managing public expectations about the ability to access the site during periods of peak demand. Simple messages advising people to use the internet option at "off peak" times should be prepared and used if necessary on the census internet site itself and through the census telephone inquiry service, radio and print.

Automated telephone interviewing

126. Automated telephone interviewing may be a cost-effective solution in some situations – and in particular for countries that have a "short form" census questionnaire requiring only the capture of basic family and demographic information.

127. As with the Internet solution, each household would need a unique code to enable proper collection control.

128. Voice recognition software can be used to lead the respondent through the census form with either voice recognition or the phone keypad used as the response mechanism. Confirmation that important census variables such as date of birth or age have been captured correctly would need to be provided.

129. The user friendliness of such systems decreases greatly as either, the number and complexity of the questions increase, or the number of people in the household increases.

Hand held devices

130. The increasing sophistication and the reduction in unit costs for hand held devices means that these may be a cost-effective solution for some aspects of census collection. Possible applications for such devices include the replacement of enumerator paper maps, address registers and lists as a means of data capture in the field. They have application in the full range of census collection methodologies from drop-off/pick up through to census form collection.

131. Hand held devices have the advantage of being able provide real time two-way management information. Census managers can be informed of the progress of the collection operations as the enumerators deliver and collect completed census forms. Likewise census managers can provide the enumerator, via the hand held devise, with updates on forms received and which households need to be followed-up. Census managers can identify, in real time, areas where the enumeration is falling behind or not meeting quality standards and undertake appropriate interventions.

132. Several technical issues need to be considered in using these devices. Storage capacity is related to the cost of the devices, but is of itself not now a limitation on their use. Many of these devices can hold up to 20 gigabytes of data. Battery life remains a significant problem however.

Given the intensive use that these devices would be subject to during census enumeration, the battery may last less than a day and a replacement battery would need to be available. Uploading of data should not be a problem especially if this was done over night.

133. There is also a range of security issues with respect to hand held devices. These are far more likely to be stolen or lost compared with paper forms. Regular uploading of the data from the hand held devices should minimise the need to re-enumerate areas if the devices are lost. Measures are also needed to protect the confidentiality of any data either on the device in case of loss of the device or in transmission of the data. Data on hand held devices should be encrypted and only accessible through password protection. Transmission of the data also needs to be secured through encryption and use of secure channels. There are several commercial software packages that can be used for these purposes. These security measures will add to the support costs. Security software has to be loaded to the hand held device and must be compatible with the other applications on the hand held device. Security software and passwords add an extra level of complication in use, for example the additional processes that need to be employed when an enumerator forgets their password. It is estimated that these supports costs can be up to four times more than for a similar device used within a controlled office environment.

134. Training and technical support for enumeration staff is an important issue. It cannot be assumed that the people who are likely to be recruited for enumerator tasks are technically competent. These factors become increasingly complex and difficult to manage as the size of the enumerator work force and the physical distances increase. In larger countries, enumerators will be relying on training, and technical support delivered remotely via the Internet or phone.

Managing field operations

135. At a basic level, multi-modal collection operations require that timely information be provided to census enumerators so that they do not visit households that have already submitted a census form. This is both an efficiency issue and a public relations issue. Also, the new technologies provide opportunities to improve the management of field operations and thus the quality of the census itself.

136. While the key issue is the flow of timely information to the census enumerator, the same systems set up to ensure this can also provide for a close to real time two-way flow of information between census managers and enumeration staff. Timely monitoring of enumerator work will allow for more timely interventions where census collection is having problems.

137. It is unlikely that the census agency will have the knowledge or capacity to develop and run these systems in-house and will need to rely on external organisations for key parts of the solution. An integrated field communication system can use and build on already existing infrastructure present in most developed countries. The following contains a brief description of a possible solution that uses a combination of census agency developed systems and processes, call centres and mobile (cell) phone technology. It also presumes that the census agency has a central register of all enumerators, their enumeration areas and their mobile (cell) phone number.

a) The census agency needs to establish an electronic central register of forms received either by mail or by the Internet. This register will contain the unique identification number (“census reference number”). This census reference number will allow the

identification of the enumerator responsible for that enumeration area and ultimately a physical address (for doorstep collections the actual address may only be known at this stage by the census enumerator).

b) Most census agencies establish some form of telephone inquiry service to handle queries form the public during the census collection period. Call centres use technologies that can be readily adapted to meet census requirements. The call centre systems record callers' "census reference number" or derive the census reference number from the address supplied by the caller. The call centre also records what action is required for the enumerator (for example census form needs to be picked up, assistance is required in completing the form, a form has not been received etc).

c) The information from the electronic register and the call centre are sent to the enumerator as a Short Messaging Service (SMS) (or text) message. This message only need contain the census reference number and a code to indicate the action required on the part of the enumerator.

d) The solution is cost-effective as it relies on readily available commercial infrastructure (call centres) in a highly competitive industry (and most of this cost is not a new requirement for censuses) and the fact that most enumerators are likely to own their own mobile phones. The cost of SMS messaging is small. The census agency needs to develop the electronic register and manage the integration of the various systems.

e) Alternative arrangements will need to be made for the small number of enumerators who do not have mobile phones. While voice mail to a fixed line phone is an alternative, people find it more difficult to receive and record numeric information provided by voice mail than by written SMS messages.

Processing

138. The last decade has seen significant improvements in intelligent character recognition, data repair, imaging and automated coding technologies that have reduced the cost of census processing, and improved data quality. These trends are likely to continue.

Data capture methods

139. Several data capture technologies have traditionally been used such as key entry and optical mark recognition (OMR).

140. Key entry requires simple software and low-end computing hardware. However, it requires many more staff than other automated methods of data entry and is likely to take more elapsed time to complete. The cost-effectiveness of this method is dependent on the relativities between staff costs and hardware/system development costs required for other methods.

141. OMR can be a cost-effective option where the census form contains only tick-box responses. Additional means of data capture/computer assisted coding operation are required to handle write-in responses. However, OMR has largely been superseded by intelligent character recognition (ICR) technologies.

142. For most countries, the most cost-effective option is likely to be a combination of digital imaging, ICR, repair and automated coding. This process is briefly described below.

a) The census forms are processed through scanners to produce an image. Recognition software is used to identify tick box responses and translate handwritten responses into textual values. Confidence levels are set to determine which responses are of acceptable quality and which responses require further repair or validation.
b) Automated repair is designed to reduce the need for operator intervention and typically involves the use of dictionary look-up tables and contextual editing. The dictionaries are tailored according to the census question being processed. Thus the dictionary for country of birth question would only contain names of countries.
c) Operator repair can be undertaken on images not recognised. This is only cost-effective for those questions where there is a high probability that the repaired data can then be automatically coded.
d) Automatic coding uses computerised algorithms to match captured responses against indexes. Those responses that cannot be matched are then passed to a computer assisted coding process. To further contain costs and improve quality, responses that are not coded should be analysed for common responses. These responses could be either, added to the coding indexes and resubmitted through automated coding, or some other form of bulk coding be undertaken.

143. The combination of ICR/automatic coding/imaging technology described above is likely to prove the most cost-effective solution for most countries. Staffing can be reduced through automatic coding and use of these systems. Use of images greatly reduces the need to move paper forms and it has been shown that referring to images for follow up coding of responses that cannot be automatically captured is much more efficient than referring to paper forms.

144. Importantly, this methodology offers the opportunity to improve the quality of the data. The consistent treatment of identical responses can be guaranteed. However, the quality of the automated capture and coding need to be carefully monitored during processing to ensure that the system is functioning as specified. Character substitution rates should be monitored closely and for critical questions or parts of questions (such as the year of birth as compared with the day of birth) may require more stringent confidence rules that require higher level of inspection and quality assurance than other fields or values. Numeric values in particular may require extra scrutiny as there may be no contextual information that can be used to automatically check their validity.

145. There should be ongoing quality assurance of the final outputs of the system – such as manually recoding from the images a sample of the responses and comparing them with the automatically captured and coded responses. This should allow a proper balancing of the quality/cost equation including the reducing the amount of manual repair and not therefore wasting resources for marginal improvements in quality.

146. For this reason, it is vital that even if these systems are outsourced, that census managers have a good understanding of quality/cost equation implicit in the confidence levels being implemented in the ICR/data repair software, their affect on the substitution rate and the ultimate quality of the census data. Contracts should allow ready adjustments of these parameters to meet the quality and the operational requirements of the census agency. This issue is considered in further detail in paragraphs 112 -117.

147. Census agencies need to consider how the data are going to be held through the processing stream. Traditionally, census processing has been conducted using a flat file that gets progressively updated with the earlier version of the file retained for backup and recovery processes. Typically this has been allied with batch processing where a discrete group of forms (typically for an enumeration area) are processed together. Thus the forms will be data entered, edited and coded as a group. This allows a high degree of workload control. Databases allow information to be held and processed at the individual field level. This provides a greater degree of flexibility as once census data is electronically captured it easily organised to maximise both processing efficiency and quality as similar responses can be readily grouped and coded together. However, holding the census data in a database requires more complex systems to manage and deliver work. Consideration also needs to be given to backup and recovery mechanisms.

148. These systems typically require far more extensive systems development and testing than traditional census processing system. There are a number of factors that need to be considered through the systems design and integrated into the systems development such as the work organisation of the remaining clerical processes.

149. Adequate network capacity is critical because of the large number and size of the files associated with images – as technique such as form drop-out, where only needed information is image can greatly reduce the size of the files.

Output

150. Traditionally, census output has been conceived in terms of generating tabulations – usually for sophisticated clients well acquainted with the census data, with how the data are structured and presented as well as the Meta data. Less sophisticated users traditionally relied on static products such as publications that generally contained a limited range of data.

151. Internet dissemination allows for: the design of appropriate products to meet the needs of different types of census data users from novice users to sophisticated users; the cost-effective dissemination of a much wider range of census data; and improved usability of the census data.

152. Functionality and data content can be targeted to satisfy the different levels of users. This functionality should be seamless from simple to sophisticated with the clients being lead by the nature of the query or analysis they are wishing to undertake through the different products.

153. The main purpose of the census in a developed statistical system is to complement the information provided by other data collection methods such as surveys with a focus on small domain statistics – that is information for small geographic areas and for small population groups (both social and economic). Internet dissemination can support both types of use of the data. For small geographic areas, GIS technology can be used as means for both defining areas of interest in searching for data and for mapping of the outputs of the search. There is a range of packages that can be used to hone in on populations of interest from large pre-defined matrix tables.

154. The Internet dissemination system should provide freedom for clients to specify the form of the output – whether as hard copy or a data file that can be exported into a range of commonly available statistical analysis, tabulation or mapping packages.

155. Some countries may wish to consider providing access to clients to submit tabulations directly off-line or on-line to be run against the census unit record file.

156. Protecting the confidentiality of the census data is a prime consideration in such systems. As well as implementing statistical disclosure procedures (see paragraph 61), there may be a requirement to limit the size of tabulations that can be submitted through this method.

PART TWO: POPULATION TOPICS

Chapter III. POPULATION TO BE ENUMERATED

Introduction

157. The recommendations and conventions set out in this chapter have been drafted with a view to ensuring that each person should have one, and only one, place of usual residence. This is important in an international context in order to avoid persons either being counted in the usually resident populations of more than one country or not being counted at all. The same principle applies in a national context. While for previous censuses, recommendations may have allowed a degree of latitude in the interpretation of some of the conventions relating to place of usual residence, the current recommendations attempt to be stricter.

Place of usual residence (core topic)

158. Place of usual residence is the geographic place where the enumerated person usually resides. This may be:

a) The place where he/she actually is at the time of the Census; or
b) His/her legal residence; or
c) His/her residence for voting or other administrative purposes.

159. Only those persons:

a) who have lived in their place of usual residence for a continuous period of at least twelve months before Census Day; or
b) who have arrived in their place of usual residence during the twelve months before Census Day with the intention of staying there for at least one year

should be considered as usual residents of the relevant geographic or administrative subdivision. Children born in the twelve months before Census Day should be included in the usually resident population of the relevant geographic or administrative subdivision where they live. Persons who have been temporarily absent for a short period from their place of usual residence over the previous twelve months for reasons such as work or holiday travel should be included.

160. A person's country of usual residence is the country in which the place of usual residence is located. This will be straightforward for the vast majority of the population. For people who move frequently between countries, however, this concept may be difficult to understand. The definition and recommendations for international migrants are discussed in Chapter VIII.

161. For short-term international migrants[10] the country of departure should continue to be the country of usual residence of the international migrant during his/her stays abroad. For long-term

[10] Short-term migrants are those who move to a country other than their country of usual residence for a period of at least three months but less than a year. Excluded are cases where the movement is for the purpose of recreation, holiday, visits to friends or relatives, business, medical treatment or religious pilgrimage. See Recommendations on Statistics of International Migration, United Nations, New York, 1998.

migrants[11] the country of destination should become the country of usual residence of the migrant.

162. The general rule governing usual residence is that a person's place of usual residence is that at which he/she spends most of his/her daily night-rest. For most persons the application of this rule will not give rise to any major difficulty. However, problems may be encountered in a number of special cases. The recommended conventional treatment of these cases is as follows:

a) Persons who work away from home during the week and who return to the family home at week-ends should consider the family home as their place of usual residence regardless of whether their place of work is elsewhere in the country or abroad;
b) Primary and secondary students who are away from home during the school term should consider their family home as their place of usual residence regardless of whether they are pursuing their education elsewhere in the country or abroad;
c) Third level students who are away from home while at college or university should consider their term-time address as their place of usual residence regardless of whether this is an institution (such as a boarding school) or a private residence and regardless of whether they are pursuing their education elsewhere in the country or abroad[12]. As an exceptional measure, where the place of education is within the country, the place of usual residence may be considered to be the family home;
d) The institution should be taken as the place of usual residence of all inmates who at the time of the census have spent, or are likely to spend, twelve months or more in the relevant institution. Examples of inmates of institutions include patients in hospitals or hospices, old persons in nursing homes or convalescent homes, prisoners and those in juvenile detention centres;
e) Where a person regularly lives in more than one residence during the year, the one where he/she spends the majority of the year should be taken as his/her place of usual residence regardless of whether this is located elsewhere within the country or abroad;
f) The general rule in relation to where the most of the daily night rest is spent applies to persons in compulsory military service as well as to members of the armed forces who live in military barracks or camps;
g) The place of enumeration should be taken as the place of usual residence of homeless or roofless persons, nomads, vagrants and persons with no concept of usual residence;
h) A child who alternates between two households (for instance after his or her parents have divorced) should consider the household where he or she spends the majority of the time as his or her place of usual residence. Where an equal amount of time is spent with both parents the place of usual residence should be the place where the child is found at the time on census night.

[11] Long-term migrants should comprise either those international migrants who have lived in the country of destination for a continuous period of at least twelve months before Census Day; or those international migrants who have arrived in the country of destination during the twelve months before Census Day with the intention of staying there for at least one year.

[12] Note that for National Accounts purposes third level students living away from home while at college or university are included at their home address and not their term time address.

163. Objective rules should be formulated for dealing with each of these cases. These rules should be clearly set out in the census instructions and described in the various census reports.

164. The place of usual residence topic is included in order to obtain the information needed to determine the total usually resident population of a country and in order to classify the population by territorial divisions and by household status.

165. Where possible, separate information should be collected for each household and for each person in a household, and for each person in an institutional household concerning:

a) Persons usually resident and present at the time of the census;
b) Persons usually resident but temporarily absent at the time of the census; and
c) Persons temporarily present at the time of the census that are usually resident elsewhere (including their address of usual residence).

166. Information on place of usual residence should be collected in enough detail to enable tabulations to be made for the smallest geographic or administrative subdivisions required to meet users' needs for information on this topic.

Temporarily absent persons

167. On the basis of the definition of the place of usual residence, persons usually resident in the enumeration place but absent, or expected to be absent, at the time of the census for less than one year should be considered as *temporarily absent persons* and thus included in the total population.

168. In contrast, persons living or expected to live outside the enumeration place for one year or more should not be considered as temporarily absent persons and should therefore be excluded from the total population. This is regardless of the length of visits that these persons may pay to their families from time to time[13].

169. The group of *absent persons living abroad* (relatives of the members of a household that live or are expected to live in another country for one year or more) can be particularly important in countries experiencing high emigration. If data on absent persons living abroad is to be collected through the census, their information (in terms of counting and characteristics) should be distinguished from the information collected for the total resident population.

Temporarily present persons

170. Persons enumerated but not meeting the criteria for usual residence in the enumeration place, that is not living or not expecting to live in the enumeration place for a period of at least 12 months, are considered as temporarily present persons and should therefore not be counted in the totally usual resident population. The census may not be the best vehicle to identify short-term migrants. However, in situations where countries use the census to measure short-term migrants, they will need to determine their country of usual residence, reason for migration and duration of stay.

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[13] These persons differ from those specified in paragraph 162a).

Total population (derived core topic)

171. A total usually resident population count for each territorial division would normally be compiled by adding persons who are usually resident and present and persons who are usually resident but temporarily absent. However, it is not always possible to collect information about persons absent from their place of usual residence, particularly if a whole household is temporarily absent at the time of the census. Provision must therefore be made to collect information about such persons at the place where they are found at the time of the census, and if necessary "transfer" them to their place or territorial division of usual residence.

172. The composition of the figure compiled for the total usually resident population (and other population totals based on other concepts) should be described in detail in the census report. As a general rule, the total usually resident population should include all persons who have their usual residence in the relevant territorial division (see paragraphs 158 -160) regardless of their legal status.

173. The total usually resident population should usually include the following groups of persons:

a) Nomads;
b) Vagrants;
c) Persons living in remote areas;
d) Military, naval and diplomatic personnel and their families, located outside the country;
e) Merchant seamen and fishermen resident in the country but at sea at the time of the census (including those who have no place of residence other than their quarters aboard ship);
f) Civilian residents temporarily working in another country provided they have not been living abroad for one year or more;
g) Civilian residents who cross a frontier daily to work in another country;
h) Civilian residents (other than those in categories (d) to (g)) temporarily absent from the country provided they are not long-term immigrants of the destination country.

174. Persons who may be illegal, irregular or undocumented migrants should be included in the resident population and should follow the same rules of usual residence as for other persons. The intention is not to distinguish these persons separately, but rather to ensure that they are not missed from the enumeration. In this context it is important that the usually resident population should not be confused with the legal (as distinct from illegal) population. For most users of census data, especially those responsible for planning and providing health care, education and other public services, it is important to know the size of the total population, which could potentially utilise these services regardless of their immigration status. It is recognised that this is a sensitive issue and that it may be difficult or impossible to ensure that persons with illegal status are covered by the census enumeration. However, in the overall design of the census, efforts should be made to try to ensure that all persons are covered regardless of the legality of their immigration status.

175. Asylum-seekers and persons who have applied for or been granted refugee status or similar types of international protection should be included in the resident population if the duration of stay in the country is, or is expected to be, at least twelve months as for the rest of the

population. This also applies when persons are granted temporary protection in situations of mass displacement but where a formal status of protection has not yet been granted due to practical considerations. As in the previous paragraph, the intention is not to distinguish these persons separately, but rather to ensure that they are not missed from the enumeration.

176. The following categories of temporarily present persons should not normally be considered part of the total usually resident population. However, countries may wish to collect data on them to produce alternative counts of the population for whom services will have to be provided:

a) foreign military, naval and diplomatic personnel and their families, temporarily located in the country;
b) foreign civilians temporarily working in the country;
c) foreign civilians who cross a frontier daily to work in the country;
d) foreign civilians other than those in groups (b)and (c) temporarily in the country for example tourists.

177. If feasible, the magnitude of groups in paragraphs 173 and 176 should be shown.

178. Each country should compile a figure for the total usually resident population, and the detailed tabulations should in general be provided on this basis. In those countries where the total population figure has been corrected for under- or over-enumeration (usually measured by use of a post-enumeration survey or by comparison with other sources), both the enumerated figure and the estimated corrected population figure should be shown and described. The detailed tabulations will, however, normally be based only on the population that was actually enumerated.

179. Some countries may wish to compile figures for national purposes on one or more additional population bases such as the total present-in-area population, the legally resident population, the day time population or the population working in the area. The present-in-area population (sometimes referred to as the de facto population) can be classified by the relevant geographic or administrative subdivision in which they were enumerated during the census operation.

Chapter IV. GEOGRAPHIC CHARACTERISTICS

Introduction

180. One of the distinguishing features of Censuses of Population and Housing is the extent to which a comprehensive classification of geographic characteristics can be undertaken. Once the population basis has been determined it is then possible to examine how this population is geographically located. This aspect is considered in this chapter.

Locality (derived core topic)

181. For census purposes, a locality is defined as a distinct population cluster, that is, the area defined by population living in neighbouring or contiguous buildings.

182. Such buildings may either:

a) Form a continuous built-up area with a clearly recognizable street formation; or
b) Though not part of such a built-up area, comprise a group of buildings to which a locally recognized place name is uniquely attached; or
c) Though not coming within either of the above two requirements constitute a group of buildings, none of which is separated from its nearest neighbour by more than 200 metres.

183. In applying this definition certain land-use categories should not be regarded as breaking the continuity of a built-up area (and accordingly should not be counted in applying the 200-metre criterion above). These categories are: industrial and commercial buildings and facilities, public parks, playgrounds and gardens, football fields and other sports facilities, bridged rivers, railway lines, canals, parking lots and other transport infrastructure, churchyards and cemeteries, etc.

184. This definition is intended to provide general guidance to countries in identifying localities and in determining their boundaries, and it may need to be adapted in accordance with national conditions and practices. The population not living in clusters as defined above may be described as living in scattered buildings. The definition of a locality adopted for the census should be given in detail in the census report and or metadata.

185. Localities as defined above should not be confused with the smallest civil divisions of a country. In some cases, the two may coincide. In others, however, even the smallest civil division may contain two or more localities. On the other hand, some large cities or towns may contain two or more civil divisions, which should be considered only segments of a single locality rather than separate localities.

186. Countries are recommended to develop their census statistics for localities in accordance with national needs and possibilities. In doing so, they should try to approach as closely as possible the concept of the population cluster as defined above. Countries which tabulate statistics only for civil divisions should, as a minimum, endeavour to compile data on the total

population of each part of a civil division containing a population cluster, or part of a population cluster, of at least 2,000 inhabitants and so provide a basis for making a more clear-cut distinction between urban and rural areas and populations (see paragraph 190 below).

187. It is recommended that the population be classified by size of locality according to the following size-classes:

(1.0) 1,000,000 or more inhabitants
(2.0) 500,000 - 999,999 "
(3.0) 200,000 - 499,999 "
(4.0) 100,000 - 199,999 "
(5.0) 50,000 - 99,999 "
(6.0) 20,000 - 49,999 "
(7.0) 10,000 - 19,999 "
(8.0) 5,000 - 9,999 "
(9.0) 2,000 - 4,999 "
(10.0) 1,000 - 1,999 "
(11.0) 500 - 999 "
(12.0) 200 - 499 "
(13.0) Population living in localities with less than 200 inhabitants or in scattered buildings

(13.1) Population living in localities with 50 to 199 inhabitants
(13.2) Population living in localities with less than 50 inhabitants or in scattered buildings

188. This classification could also be applied to other relevant areas such as the economically active population, households, families and dwellings.

Urban and rural areas (derived non-core topic)

189. For national purposes, as well as for international comparability, the most appropriate unit of classification for distinguishing urban and rural areas is the locality as defined in paragraphs 181-182. However, it is left to countries to decide whether to use the locality or the smallest civil division as the unit of classification.

190. It is recommended that for purposes of international comparisons, countries define urban areas as localities with a population of 2,000 or more, and rural areas as localities with a population of less than 2,000 and sparsely populated areas. Some countries might also wish to consider defining urban areas in other ways (for example in terms of administrative boundaries, of built-up areas, of the area for which services such as shops, educational facilities, recreational facilities, employment, etc., are provided, or in terms of functional areas). Whatever approach is taken should be clearly described in the relevant census report and/or metadata.

191. Countries that use the smallest civil division as the unit are encouraged to endeavour to obtain results, which correspond as closely as possible to those obtained by countries, which use the locality as the unit. The approach to be adopted to achieve this aim depends mainly on the

nature of the smallest civil divisions in the countries concerned. In some countries the smallest civil divisions are relatively small in area and in average number of inhabitants and generally do not contain more than one population cluster (or part of a larger population cluster). If it is not feasible for some of these countries to use the locality as the unit, they are encouraged to make use of the concept of the multi-communal agglomeration (that is to treat as single units groups of two or more contiguous minor civil divisions which form part of the same population cluster). It is also suggested that minor civil divisions at the periphery of such an agglomeration be included in the agglomeration if the major part of their resident populations live in areas belonging to the continuous built-up area of the agglomeration, and that minor civil divisions containing one or more isolated localities be classified according to the number of inhabitants of the largest population cluster within the unit.

192. The situation is different, however, in the case of countries in which the smallest civil divisions are relatively large in area and in average number of inhabitants and often contain two or more population clusters of varying sizes. If it is not feasible for some of these countries to use the locality as the unit, they should endeavour to use units smaller than minor civil divisions for this purpose, for example parishes, enumeration districts, grid squares, etc. They should endeavour to use these smaller units as building blocks and to aggregate them so as to correspond as closely as possible with the boundaries of localities in the same way as described above in the case of multi-communal agglomerations. If it is not feasible for some countries to adopt this approach, they should endeavour to develop new approaches to the classification of entire minor civil divisions in ways which will yield results that are as comparable as possible with those obtained by using the locality as the unit.

193. It is recommended that localities or similar units be grouped into the following five categories:

(1.0) Less than 2,000 inhabitants
(2.0) 2,000 to 9,999 inhabitants
(3.0) 10,000 to 99,999 inhabitants
(4.0) 100,000 to 999,999 inhabitants
(5.0) 1,000,000 or more inhabitants

194. Countries are also encouraged to develop typologies of localities or similar areas based on additional criteria that could be used to distinguish different types of areas within particular categories of the suggested classification. For example, some countries may wish to subdivide category (1.0) (and in some cases category (2.0) as well) to distinguish agricultural localities from other types of small localities. Some countries may wish to subdivide one or more of the intermediate categories to distinguish market towns, industrial centres, service centres, etc. Some countries may wish to subdivide the large urban agglomerations included in categories (4.0) and (5.0) to distinguish various types of central and suburban areas. Extensions of the classification in these and other ways would enhance its analytical usefulness.

Commuting

195. The following topics examine issues associated with commuting from home to workplace, school, college or university. Accurate commuter flows are important for a whole raft of reasons including transport planning, housing development and economic development.

Location of place of work (core topic)

196. The location of place of work is the precise location in which a "currently employed" person performs his/her job, and where a "usually employed" person currently performs or last performed the job[14]. The location should be coded to the smallest possible civil division[15].

197. The main reason why place of work information is collected is to link it with place of usual residence in order to shed further light on commuter flows in addition to that provided by mode of transport to work, distance travelled and time taken. The place of work should be coded to the smallest possible civil division in order to establish accurate commuter flows from the place of usual residence to the place of work. Persons who do not have a fixed place of work but who report to a fixed address at the beginning of their work period (for example bus drivers, airline pilots and stewards, operators of street market stalls which are not removed at the end of the workday) should provide information on this address. This group may also include individuals who travel to work, on a regular basis, across the border to a neighbouring country. To devise an appropriate coding procedure for places of work abroad to which respondents travel regularly, it is recommended to use geographic reference files from the neighbouring countries.

Location of school, college or university (non-core topic)

198. By including this topic in their census, countries can extend the scope of their data on commuting patterns to cover pupils and students in addition to the coverage of the employed provided by place of work. In order to maintain comparability with the place of work variable, the location of school, college or university should be coded to the smallest possible civil division.

Mode of transport to work (non-core topic)

199. Mode of transport to work relates to the daily journey made. For people making several journeys or using more than one mode of transport, the mode of transport used for the greatest distance in the daily journey should be indicated.

200. The following classification is suggested:

(1.0) Rail
- (1.1). National/international rail network
- (1.2). Metro/Underground
- (1.3). Tram/Light railway

[14] This topic relates to all the categories distinguished in paragraph 300 relating to type of place of work.

[15] It is recognised that where the location of place of work is outside the country it may not be possible to code it to the smallest possible civil division of the country concerned.

(2.0) Bus, minibus or coach
(3.0) Car or van[16]
  (3.1). Driver
  (3.2). Passenger
(4.0) Other
  (4.1). Motorcycle
  (4.2). Pedal cycle
  (4.3). Walk
  (4.4). Boat or ferry
  (4.5). Other

Mode of transport to school, college or university (non-core topic)

201. As for the mode of travel to work topic the mode of transport to school, college or university relates to the daily journey made. For people making several journeys or using more than one mode of transport, the mode of transport used for the greatest distance in the journey should be indicated. The classification set out in paragraph 200 above applies in this case also.

Distance travelled to work and time taken (non-core topic)

202. Countries may wish to collect information on the distance travelled to work on a daily basis and the time taken with a view to monitoring the extent to which persons are living at greater distances from their work places and the impact which traffic congestion has on the time taken to get to work. When collecting this information, consideration should be given to the address from which the journey commenced.

Distance travelled to school, college or university and time taken (non-core topic)

203. By asking these questions countries will be in a position to monitor the extent to which students may be undertaking longer journeys to school, college or university on a daily basis with consequent increases in the time taken to undertake these journeys. When collecting this information, consideration should be given to the address from which the journey commenced.

[16] At the two digit level countries may wish to distinguish persons who drive alone and those who go in cars or vans containing 2,3,4,5,6 etc persons. Such a classification would enable the extent of car pooling to be monitored.

Chapter V. DEMOGRAPHIC CHARACTERISTICS

Introduction

204. The demographic characteristics of sex, age and marital status are core variables, which are often used to classify or base other information from the census to help in the understanding of various issues. In the case of sex and age, it is considered important that this information be available for every person for whom census information has been collected. It is therefore recommended that where this information is incomplete it be derived for census purposes.

Sex (core topic)

205. The sex of each person should be recorded in the census. Sex is, together with age, the census topic that is most frequently cross classified with other characteristics of the population. Therefore, it is fundamental that information on sex is as complete and accurate as possible. If information on sex is missing, an imputation based on other individual or household entries should be made.

206. Many countries in the region have identified the need for further development in gender analysis. It is therefore important that countries ensure that the various definitions and classifications for data on educational attainment, economic activity status, occupation, position in the family and household, etc. are appropriately used in the census. The same data for both men and women should be provided for all appropriate topics.

Age (core topic)

207. To obtain information on age, it is recommended that information on date of birth is collected. Collecting information on the date of birth allows the tabulation of data in two ways: by year of birth and by completed years of age. Given that age is one of the most important variables collected in a census, used in many tabulations and analyses, it is fundamental that information on age is as complete and accurate as possible. Particular attention should be given to the older ages. If information on age is missing, imputation based on other individual or household entries should be made.

208. Many countries in the region have identified children, the youth and the elderly as particular population groups for which various types of census data will be required The types of data on children and youth that are likely to be of interest include topics such as family type (two-parent or one-parent family), family income, economic activity of parents, and school attainment and/or educational attainment of parents. For the elderly, data on marital status, economic activity status, position in the family and household and type of living quarters are illustrations of some of the topics cross classified by age and sex, that are likely to be of interest to countries. It is recommended that countries ensure that the definitions and classifications planned to be used in the census for these and other topics of interest are appropriate for the dissemination of those data on children, youth and the elderly that will be required. Attention needs to be paid to the accuracy of the information, particularly for the elderly.

Legal marital status (core topic)

209. Marital status is defined as the (legal) conjugal status of each individual in relation to the marriage laws (or customs) of the country (that is de jure status).

210. Information on the legal marital status of each person should be collected at least for persons aged 15 and over. However, since the minimum legal age (or the customary age) for marriage varies between countries and since the population may also include young persons who have been married in other countries with lower minimum ages, it is recommended to collect the data for all persons.

211. The following classification of the population by marital status is recommended:

(1.0) Never married
(2.0) Married
(3.0) Widowed and not remarried
(4.0) Divorced and not remarried

212. It should be noted here that insofar as this recommended classification of legal marital status is concerned, all persons living in consensual unions should be classified as never married, married, widowed or divorced in accordance with their de jure (legal) status.

213. In countries with legal provision for registered/legal partnership (for opposite-sex couples and/or same-sex couples) or where same-sex couples can legally marry, additional categories may either be included in the category of the "married", or the above classification may be expanded to include them explicitly (for example: (5.0) Person living in a registered/legal partnership; (6.0) Person living in a registered same-sex partnership). However, it is suggested that a thorough testing program be conducted prior to introducing this possibly sensitive latter category.

214. A separate category for "legally separated" could be considered in countries where the legislation includes provisions for this status, as different from "married" or "divorced".

215. In countries where the group of persons whose only, or latest, marriage has been annulled is substantial in size, a separate category may also be considered for this group. When a separate category is not considered for this group, the individuals should be classified according to their marital status prior to the annulled marriage.

De facto marital status (non-core topic)

216. Countries which have experienced increases in the number of persons living in consensual unions may wish to collect information not only on the de jure status but also on the de facto status. In some countries it is already possible to identify registered partnerships, as this category may have status equivalent to legal marriage.

217. De facto marital status is defined as the marital status of each individual in terms of his or her actual living arrangements within the household enumerated. It is suggested that information on this topic be collected for persons of the same age categories as those for whom information on the legal status was collected.

218. The suggested classification is:

(1.0) Person living in a consensual union
(2.0) Person not living in a consensual union

219. Two persons are taken to be partners in a consensual union when they have usual residence in the same household, are not married to each other, and have a marriage-like relationship to each other.

220. An optional distinction within category (1.0) between (1.1) "Person living in an opposite-sex partnership" and (1.2) "Person living in a same-sex partnership" should be considered by countries that would like to collect data on same-sex partnerships.

221. It is to be noted that information on de facto marital status can also be derived from information collected on topics related to household and family characteristics of persons, characteristics of family nuclei and characteristics of private households, based on the relationship to the reference person question or the full household relationship matrix in countries where the matrix is used. Where such matrix is not used, a separate question would need to be asked.

Total number of children born alive (non-core topic)

222. Information on total number of children born alive can be collected in the census by countries that plan to use it to calculate estimates of fertility based on indirect techniques. If this topic is included in the census, it is suggested that information on total number of live-born children be collected for all women.

223. The data collected on total number of live-born children should, in principle, include all children born alive during the lifetime of the women concerned up to the census date (that is excluding foetal deaths). The number recorded should comprise all live-born children whether born of the present or prior marriage(s), whether born of consensual or other unions or by a single mother, and regardless of whether or not such children are living at the time of the census, or where they may be living. It is recognized that it may not be possible to specify in the enumeration instructions that all children including those not born in a marriage or in a consensual union should be included.

Date(s) of legal marriage(s) of ever-married women: (i) first marriage and (ii) current marriage (non-core topic)

224. Information on dates/duration of marriage is valuable for fertility statistics and extends the knowledge that can be derived from data on number of live-born children. In the case of women who have been married more than once, information may be obtained on the dates of both the first marriage and the current marriage.

Date(s) of the beginning of the consensual union(s) of women having ever been in consensual union : (i) first consensual union and (ii) current consensual union (non-core topic)

225. Information on dates/duration of consensual union, as well as information on dates/duration of marriage, is valuable for fertility statistics and extends the knowledge that can be derived from data on number of live-born children. In the case of women who have been in consensual union more than once, it is suggested to obtain information on the dates of both the first and the current consensual union. Information on dates/duration of consensual union(s) can be combined with the information on the date(s) of legal marriage(s).

Chapter VI. ECONOMIC CHARACTERISTICS

Introduction

226. Statistics on the economic characteristics of persons are needed from population censuses for many reasons. Information on the number and characteristics of the employed, unemployed and economically inactive persons are needed in detail at the same reference point of time that other demographic and social items are being measured so that a comprehensive picture of the socio-economic situation is available. Such statistics might be obtained from other sources such as a household-based labour force survey or administrative records, but these other sources have certain limitations. Data obtained from labour force surveys are subject to sampling error and, therefore, rarely provide reliable estimates for small areas, or for detailed groups of industries and occupations. Administrative records may not have the same quality of occupational and industry coding, or not the same comprehensiveness in population coverage. Other personal, household and dwelling characteristics that are included in the range of census topics (such as education, income level, type of dwelling, etc) are strongly related to economic activity of the household members. It is, therefore, desirable to collect information on the economic characteristics of household members in the census so that cross-relationships between these data items can be examined.

227. The population census provides benchmark information to which statistics from other sources can be related. Population censuses also provide the sample frames for most household-based surveys. It is therefore useful to include as many data items as possible in the benchmark information or sample frames. There may be problems in reconciling information from different sources due to differences in scope and coverage, concepts and definitions, classifications, statistical units, reference periods, precision, measurement errors, etc. When presenting census results, it is suggested that any such differences be highlighted and explained in footnotes to tables and in metadata as well as in any textual analysis.

Economic activity of persons

228. The "economically active" population comprises all persons who provide the supply of labour, as employed or as unemployed, for the production of goods and services[17].

229. Economic activities, that is production, in the present context, include: (i) the production of all individual or collective goods or services that are supplied to units other than their producers, or intended to be so supplied, including the production of goods or services used up in the process of producing such goods or services (intermediate inputs); (ii) the production of all goods that are retained by their producers for their own final use (final consumption or gross fixed capital formation); and (iii) the production of domestic and personal services by employing paid domestic staff.

230. In principle, the production of all goods falls within the System of National Accounts (SNA) production boundary, irrespective of whether the goods are intended for supply to other

[17] System of National Accounts 1993, ST/ESA/STAT/SER:F/2/Rev.4, United Nations, Sales No. E.94.XVII.4 Brussels/Luxembourg, New York, Paris, Washington, D.C. 1993

units or for the producers' own final use. In practice, the production of a good for own final use within households should be recorded only if the amount of the good produced by households for their own final use is believed to be quantitatively important in relation to the total supply of that good in a country. Examples of common types of household production include the production of agricultural products and their subsequent storage; production of dairy products such as butter or cheese; weaving cloth; dress making and tailoring; and construction of dwellings, and major renovations (for example: re-plastering walls, repairing roofs) or extensions to dwellings. . The preparation of meals for immediate consumption is excluded. For more details, see System of National Accounts, 1993[18]. According to the 13th International Conference of Labour Statisticians, persons engaged in the production of goods for own final use within the same household should be considered as economically active only if such production comprises an important contribution to the total consumption of the household.

231. Domestic or personal services provided by unpaid household members for final consumption within the same household are excluded from the production boundary and, hence, are not considered to be economic activities in the census context. (Examples are: (a) the cleaning, decoration and maintenance of the dwelling occupied by the household, including small repairs of a kind usually carried out by tenants as well as owners; (b) the use, cleaning, servicing and repair of household durables or other goods, including vehicles used for household purposes; (c) the preparation and serving of meals; (d) the care, training and instruction of children; (e) the care of sick, infirm or old people; and (f) the transportation of members of the household or their goods). Persons engaged in such activities may be included among providers of unpaid services, (see paragraph 262 below).

232. Information on activity status should be collected for each person at or above a minimum age set in accordance with the conditions in each country. The minimum school-leaving age should not automatically be taken as the lower age limit for the collection of information on activity status. Countries in which many children participate in agriculture or other types of economic activity (for example mining, weaving, petty trade), will need to select a lower minimum age than countries where employment of young children is uncommon. Tabulations of economic characteristics should at least distinguish persons less than 15 years of age and those 15 years of age and over. Countries where the minimum school-leaving age is higher than 15 years and where there are a significant number of economically active children below this age should endeavour to collect data on the economic characteristics of these children with a view to achieving international comparability at least for persons 15 years of age and over. Use of a maximum age limit for measurement of the economically active population is not recommended, as many people continue to be engaged in economic activities beyond their normal retirement age and because the numbers involved are likely to increase as a result of factors associated with the "ageing" of the population. Countries may, however, wish to balance the cost of collecting and processing information relating to the economic activity of elderly persons (those aged 75 years or more) and the additional response burden imposed on them against the significance and reliability of the information provided.

233. Two concepts of the "economically active" population can be distinguished: (a) the "currently active" population (or, equivalently, the "labour force"), measured in relation to a

[18] System of National Accounts 1993, ST/ESA/STAT/SER:F/2/Rev.4, United Nations, Sales No. E.94.XVII.4 Brussels/Luxembourg, New York, Paris, Washington, D.C. 1993

short reference period such as one week or one day; and (b) the "usually active" population measured in relation to a long reference period such as a year.

234. To compile a complete set of data compiled on both the currently active population and the usually active population has advantages for a number of important uses, but this may be difficult in a census because of expense, limitations of questionnaire space and the burden of coding, processing and reporting. It is recommended that countries collect information based on current activity first and, if possible, supplement this information with data based on usual activity. Countries using the concept of "usual activity" should endeavour to also obtain data on the "labour force" during a one-week reference period.

235. The "not economically active" population comprises all persons, irrespective of age, including those below the age specified for measuring the economically active population, who were not "economically active" as defined in paragraphs 228-231 above.

236. Some “not economically active” persons may be classifiable to more than one category of the population not economically active. In such situations it is recommended that priority be given to the categories listed in paragraph 250 below.

Current activity status (core topic)

237. “Current activity status” is the current relationship of a person to economic activity, based on a brief reference period such as one week or one day. The use of the "current activity" concept is considered most appropriate for countries where the economic activity of people is not influenced much by seasonal or other factors causing variations over the year, and it is recommended that countries in the ECE region collect information in the census on activity status based on this concept (that is, the "labour force" concept). A time-reference period of one week rather than one day should preferably be used, which may be either a specified recent fixed calendar week (the preferred option), or the last complete calendar week or the last seven days prior to enumeration.

The "currently active population" (that is the labour force)

238. The "currently active population" (the "labour force") comprises all persons who fulfil the requirements for inclusion among the employed or the unemployed as defined in paragraphs 239 - 249 below. Even within a reference period as short as one week, persons may have more than one economic status. It is however inherent to the framework for measurement of the currently active population (the labour force framework) that a single activity status is ascribed to each person and that, in doing so, priority is given to the economic status of “employed” over “unemployed” and to the status of “unemployed” over “economically inactive”. More details of the international standards are given in *the Resolution concerning statistics of the economically active population, employment, unemployment and underemployment*, adopted by the 13th International Conference of Labour Statisticians (1982).[19]

[19] Available in ILO: *Current international recommendations on labour statistics, 2000 edition* (Geneva, 2000) and at http://www.ilo.org/public/english/bureau/stat/download/res/ecacpop.pdf.

Employed persons

239. ”Employed” persons comprise all persons above the minimum age specified for measurement of the economically active population who during the short reference period of preferably one week:

a) Performed some work for pay or profit, in cash or in kind, or
b) Were temporarily absent from a job in which they had already worked and to which they maintained a formal attachment, or from a self-employment activity such as a farm, a business enterprise or a service undertaking.

240. ‘Work’ means engagement in economic activities as defined in paragraphs 228-229 above. The census documentation and tabulations should clearly indicate the working time limit chosen as cut-off for considering persons to be 'at work'. According to the present international recommendations, the notion of 'some work' should be interpreted as work for at least one hour during the reference period. The one-hour criterion follows from the priority rules of the labour force framework and ensures that unemployment is defined as a situation of total lack of work (zero hours of work). Moreover, it is a prerequisite for the consistency of employment statistics with national accounts data on production. Countries concerned about the use of the one-hour criterion should classify employed persons by 'time worked', following the recommendations of paragraphs 241-244 below.

241. Employees temporarily not at work should be considered as in paid employment provided they had a formal job attachment. Such temporary absences might be because of:

a) Illness or injury;
b) Holiday or vacation:
c) Strike or lock-out;
d) Educational or training leave;
e) Maternity or parental leave;
f) Reduction in economic activity;
g) Temporary disorganization or suspension of work due to such reasons as bad weather, mechanical or electrical breakdown, or shortage of raw materials or fuels; or
h) Other temporary absence with or without leave.

242. The formal job attachment should be determined on the basis of one or more of the following criteria: a continued receipt of wage or salary; an assurance of return to work following the end of the contingency, or an agreement as to the date of return; or the elapsed duration of absence from the job which, wherever relevant, may be that duration for which workers can receive compensation benefits without obligations to accept other jobs[20].

[20] For guidance in respect of long-term absences see "*Guidelines concerning treatment in employment and unemployment statistics of persons on extended absences from work*", endorsed by the Sixteenth International Conference of Labour Statisticians (October 1998) available in ILO: *Current international recommendations on labour statistics, 2000 edition* (Geneva, 2000). Also available at http://www.ilo.org/public/english/bureau/stat/download/guidelines/exleave.pdf

243. Self-employed persons (excluding contributing family workers) should be considered as "employed" and "with an enterprise, but not at work" if their absence from work is temporary and their enterprise meanwhile continues to exist.

244. The *Guidelines concerning treatment in employment and unemployment statistics of persons on extended* absences *from work,* endorsed by the Sixteenth International Conference of Labour Statisticians, (October 1998)[21] provide standards on the economic status classification of the following groups of persons on extended absence from work:

a) "Women on maternity leave, who have an assurance of a return to work following the end of the leave, should be classified as employed if, during the reference period, they are in receipt of all or a significant part of their wage or salary from the employer or an equivalent payment from other sources received by virtue of being an employee. Women on maternity leave, who have an assurance of a return to work following the end of the leave, should also be considered as being employed during the compulsory period of leave stipulated by national legislation to ensure that mothers before and after childbirth have sufficient rest, or for a period to be specified according to national circumstances. In countries where they are not classified as employed according to these criteria, women on maternity leave should be classified as unemployed or not economically active, depending upon their current availability for work and recent job-search activity";

b) Employees on unpaid leave initiated by the employer: (including leave paid by the government or social security funds) should only be classified as employed if they have an agreed date for return to work and if the elapsed duration of their leave falls within a time-limit to be specified according to national circumstances. All other employees on unpaid leave initiated by the employer should be classified as unemployed or economically inactive, depending upon their expectation of returning to work in the near future, current availability for work, recent job-search activity and the reason for not seeking work. The notion of expectation of returning to work "in the near future" should be specified in the light of the national circumstances and economic situation of each country;

c) Employees on other types of extended leave such as parental leave or educational or training leave, who have an assurance of a return to work with the same employer following the end of the leave, should be classified as employed if the employer continues to pay all or a significant part of the wage or salary of the person on leave, or if the duration of the leave does not exceed a time-limit to be specified according to national circumstances. Persons, who do not meet these criteria, should be classified as unemployed or not economically active, depending upon their current availability for work and recent job-search activity;

d) Seasonal employees not engaged in any kind of work during the off-season should be classified as employed if they have an assurance of a return to work with the same employer at the beginning of the next season, and the employer continues to pay all or a significant part of their wage or salary during the off-season. Seasonal

[21] Also available at http://www.ilo.org/public/english/bureau/stat/download/guidelines/exleave.pdf. For further details see general report at http://www.ilo.org/public/english/bureau/stat/download/16thicls/report4.pdf

employees not at work during the off-season, who do not meet these criteria, should be classified as unemployed or not economically active, depending upon their current availability for work, recent job-search activity and the reason for not seeking work;

e) Seasonal employers, own-account workers, members of producers' cooperatives and contributing family workers not engaged in any kind of work during the off-season when the enterprise ceases to exist should not be considered as employed. It is assumed that seasonally-operated enterprises (such as ice cream shops, fruit stalls, beach restaurants) cease to exist during the off-season, if their owners do not continue to do any work in them. (Thus, there is consistency between this point and paragraph 243 concerning self-employed persons "with an enterprise but not at work".) If the enterprise continues to exist in the off-season (such as a farm), a self-employed person (excluding contributing family workers) not at work can be classified as employed provided that the period of absence from work is sufficiently short for the absence to be considered temporary.

245. The following treatment of specific groups of employed persons is recommended:

a) Contributing family workers should be considered to be at work on the same basis as other "self-employed" persons, that is irrespective of the number of hours worked during the reference period. Countries which prefer for special reasons to set a minimum time criterion for the inclusion of contributing family workers among the "employed" should identify and separately classify those who worked less than the prescribed time, to be able to provide internationally comparable data. As contributing family members do not have an enterprise of their own, they cannot be "with an enterprise but not at work". Accordingly, contributing family workers who were not at work during the reference period should not be considered as employed;

b) Persons engaged in economic activities in the form of production of goods for own final use within the same household should be considered as in "self-employment" (and classified as "own account workers") if such production comprises an important contribution to the total consumption of the household (see paragraph 230 above);

c) Apprentices and trainees who received pay in cash or in kind should be considered in paid employment and classified as "at work" or "not at work" on the same basis as other employees;

d) Participants in job training schemes are considered to be "employed" if the training takes place within the context of an enterprise and in connection with its production, or if the participants retain a formal job attachment to an enterprise in which they had formerly been employed, even if the training is outside the context of the enterprise or without connection to its production. Other participants in job training schemes are to be classified as unemployed or not economically active, depending upon their current availability for work and recent job-search activity. In particular, if the job training scheme implies a definite commitment to employment at the end of the training, participants who are currently available for work should be considered unemployed even when they are not actively seeking work (see paragraph 248 a) below).

e) In accordance with the priority rules of the labour force framework, students, homemakers, pensioners, registered unemployed persons and others mainly engaged in non-economic activities during the reference period, who at the same time were in "wage employment" or "self-employment" as defined above should be considered as employed on the same basis as other categories of employed persons;

f) All members of the armed forces should be included among employed persons and classified as “employees”. The "armed forces" should include both the regular and the temporary members as specified in the most recent revision of the International Standard Classification of Occupations (ISCO)[22].

g) “Requital” workers (that is persons who work for friends, neighbours, etc. as part of a mutual exchange of work as but not money) should be considered as employed because the remuneration that they receive in kind in exchange for their economic activity is the provision of labour inputs by someone else (barter of work).

h) Persons who provide community work (building bus shelters, village administration, etc) for pay in cash or kind should be considered as employed.

i) Volunteers (without any pay in cash or kind) who produce goods for any enterprise/institution/household or who produce services for a market enterprise should also be considered as employed (see paragraph 239-240). However, volunteers (without any pay in cash or kind) who produce services for another household or for non-profit organizations are not considered to be employed (see also paragraph 262).

j) Similarly, persons who provide unpaid labour inputs to produce goods for any enterprise/institution/household or to produce services for a market enterprise should also be considered as employed (see paragraph 239-240). However, such persons who provide unpaid labour inputs to produce services for another household or for non-profit organizations are not considered to be employed (see also paragraph 262).

246. Information should be given in the census reports and/or relevant metadata describing how these groups and any other specific groups were treated. Consideration should also be given to the desirability of identifying some of the groups (for example working students) separately in tabulations.

Unemployed persons

247. The "unemployed" comprise all persons above the minimum age specified for measurement of the economically active population who during the reference period were:

a) "Without work", that is were not in wage employment or self-employment as defined above in paragraphs 239-246;

b) "Currently available for work", that is were available for wage employment or self-employment during the reference period [23]; and

[22] "Members of the armed forces are those personnel who are currently serving in the armed forces, including auxiliary services, whether on a voluntary or compulsory basis, and who are not free to accept civilian employment. Included are regular members of the army, navy, air force and other military services, as well as conscripts enrolled for military training or other service for a specified period, depending on national requirements. Excluded are persons in civilian employment of government establishments concerned with defence issues; police (other than military police); customs inspectors and members of border or other armed civilian services; persons who have been temporarily withdrawn from civilian life for a short period of military training or retraining, according to national requirements, and members of military reserves not currently on active service)." See International Standard Classification of Occupations (ISCO-88), International Labour Office, Geneva, 1990. p. 265.

[23] In EU countries, current availability for work is interpreted as availability during the reference week and the subsequent two weeks).

c) "Seeking work", that is had taken specific steps in a specified recent period to seek wage employment or self-employment. (The specific steps may include: registration at a public or private employment exchange (for the purpose of obtaining job offers); application to employers; checking at work sites, farms, factory gates, market or other assembly places; placing or answering newspaper advertisements; seeking assistance of friends or relatives; looking for land, building, machinery or equipment to establish own enterprises; arranging for financial resources; and applying for permits and licenses, etc).

248. Treatment of specific groups: Some groups of persons require careful treatment to be properly included among the "unemployed". The following treatment is recommended:

a) Persons without work and currently available for work who had made arrangements to take up wage employment or undertake self-employment activity at a date subsequent to the reference period should be considered as "unemployed", irrespective of whether or not they recently continued to seek work;
b) Persons temporarily absent from their jobs with no formal job attachment who were currently available for work and seeking work should be regarded as "unemployed" in accordance with the standard definition of "unemployment". Countries may, however, depending on national circumstances and policies, prefer to relax the seeking work criterion in the case of persons temporarily laid-off. In such cases, persons temporarily laid-off who were not seeking work but classified as "unemployed" should be identified as a separate sub-category of unemployed persons;
c) In accordance with the priority rules of the labour force framework, persons mainly engaged in non-economic activities during the reference period (for example students, homemakers, pensioners), who satisfy the criteria for unemployment laid down in paragraph 247 above should be regarded as "unemployed" on the same basis as other categories of "unemployed" persons and be identified separately, where possible.

249. Information should be given in the census reports and/or relevant metadata describing how persons in these and any other specific groups were treated.

The population not currently active (that is persons not in the labour force)

250. The “population not currently active” or, equivalently, “persons not in the labour force", comprises all persons who were neither "employed" nor "unemployed" during the short reference period used to measure "current activity", including persons below the minimum age specified for measurement of the economically active population. It is recommended that this population be classified into the following four groups[24]:

[24] The terminology for the groups who are currently economically inactive differs in the international standards from the terminology for the groups who are usually economically inactive (see later). The preferred terminology for the currently economically inactive groups are (i) attending an educational institution, (ii) engaged in household duties, (iii) retired or old age, and (iv) others.

a) "Students": persons not "currently economically active", who for most of the reference period attended any regular educational institution, public or private, for systematic instruction at any level of education. (See also non-core topic 'School attendance', paragraphs 348-352.);
b) "Pension or capital income recipients": persons, not "currently economically active", who receive income from property or investments, interests, rents, royalties or pensions from former activities;
c) "Homemakers": persons, not "currently economically active", who for most of the reference period were engaged in unpaid household duties in their own home, for example, housewives/-men and other relatives responsible for the care of the home, children or elderly people. (Domestic and personal services produced by domestic employees working for pay, however, are considered as economic activities in line with paragraph 229 above);
d) "Others": persons not "currently economically active" who are receiving public aid or private support, and all other persons not falling into any of the above categories (for example children not attending school).

Usual activity status (non-core topic)

251. "Usual activity status" is the usual relationship of a person to economic activity based on a long reference period such as a year.

252. In countries where the economic activity of people varies widely over the year and where people are likely to be engaged in more than one type of economic activity during the year or to be temporarily unemployed, the "current activity" concept may not be considered as appropriate for use in population censuses. In such countries, it may be more useful for population censuses to measure the economic activity of people with reference to a longer period that is on the basis of the "usual activity" concept rather than on the basis of the "current activity" concept only. If the concept of "usual activity" is chosen, a specified twelve-months period should be used as the reference period. Such a reference period will provide information on the year as a whole and thereby provide an opportunity for collecting information needed not only on the principal activity but also on secondary activities, if any. It is also possible to obtain useful information on the intensity of activity over the year and relate it to household income for that period (if collected). The main drawback of the "usual activity" approach is that it is susceptible to recall errors. Another drawback is the problem of ascertaining the principal *occupation* and *industry* over a long period such as a year, unless an appropriate question or series of questions are introduced to identify a main job, which may be defined in terms of time worked or income earned.

The usually active population

253. The "usually active population" comprises all persons above the minimum age specified for measurement of the economically active population whose main activity status, as determined in terms of number of weeks or days during a long specified period (such as the preceding 12 months) was "employed" and/or "unemployed" as defined in paragraphs 239 -248 above with respect to the current activity during a short reference period.

254. In applying the above definitions of employment and unemployment in respect of the usual activity during a long reference period, it is necessary to determine the "main activity status" of each person above the specified minimum age. For this purpose, a person's main activity status is conceived as a summary measure of the variable statuses of the person during the 52 weeks or the 365 days of the 12-months reference period. The main activity status could be different (as pointed out in the paragraph 260) depending on whether it is based on weeks or days as the unit of measurement.

255. In countries where employment is mostly of a regular and continuing nature and hence a week of employment generally means a week of full-time employment or, at any rate, employment for a major part of the working time, it is suggested that the main activity status be based on weeks of employment or unemployment. The main activity status could also be determined on the basis of days of employment or unemployment, and this might be considered more appropriate for countries where employment is largely of an irregular nature and where a week of employment does not generally mean a week of full-time employment or even employment for a major part of the working time.

256. Two procedures may be followed to determine the main activity status of each person. One is to interpret it as that status, usually active or not usually active, which prevailed over most of the 52 weeks (or most of the 365 days) of the reference year. Another is to set a specific number of weeks (or days) as the cut-off point and classify anyone with at least that many weeks (or days) of employment and/or unemployment as belonging to the "usually active population".

257. Where the concept of "usually active population" is considered useful and feasible, the "usually active population" may be subdivided as "employed" and "unemployed" in accordance with the situation which prevailed most of the time, that is "usually active" persons should be classified as "employed" if the number of weeks (or days) of employment is larger than or equal to the number of weeks (or days) of unemployment, and as "unemployed" if the number of weeks (or days) of employment is smaller than the number of weeks (or days) of unemployment. As the subdivision as "employed" and "unemployed" is made among "usually active persons", the resulting classification by usual activity status may differ from a classification directly by main activity status during the reference year (that is when the distinction between "employed", "unemployed", and "not economically active" is made directly). It is therefore recommended that the census questionnaire be designed in a way that makes it possible to distinguish between "usually active" and "usually inactive" persons and among the former between "usually employed" and "usually unemployed" persons.

The population not usually active

258. The "population not usually active" comprises all persons whose main activity status during the long reference period used to measure usual activity was neither employed nor unemployed, including persons below the minimum age specified for measurement of the economically active population. It is recommended that this population be classified into the following four groups:

a) "Students": persons not "usually economically active", who for most of the reference period attended any regular educational institution, public or private, for systematic instruction at any level of education;
b) "Pension or capital income recipients": persons not "usually economically active", who receive income from property or investments, interests, rents, royalties or pensions from former activities;
c) "Homemakers": persons not "usually economically active", who for most of the reference period were engaged in unpaid household duties in their own home, for example, housewives/-men and other relatives responsible for the care of the home, children and elderly people. (Domestic and personal services produced by domestic employees working for pay, however, are considered as economic activities in line with paragraph 229 above.);
d) "Others": persons not "usually economically active", who are receiving public aid or private support, and all other persons not falling into any of the above categories (for example children not attending school).

259. Where considered useful, separate sub-categories may be introduced to identify (i) persons engaged in unpaid community and volunteer services (see paragraph 262) and (ii) other persons engaged in activities that fall outside the boundary of economic activities.

Difference between main and usual activity status

260. It follows from paragraphs 253-257 above that the usual activity during a long reference period is not the same concept as main activity during the period, assessed directly. A person who spends 20 weeks inactive, 18 weeks unemployed and 14 weeks employed during the last year would be classified as active by usual activity status, for which the period of employment and the period of unemployment are summed. He/she would then be classified as usually unemployed, because the number of weeks unemployed exceeds the number of weeks employed. By main activity status assessed directly, the same person would however be classified as inactive, because inactivity was the largest spell during the last year.

Recommended classification by activity status (current or usual)

261. It is recommended that in presenting the total population according to activity status (current or usual) the following categories should be used:

(1.0) Economically active
  (1.1). Employed
  (1.2). Unemployed, of which
    (1.2.1) Unemployed, never worked before[25]
(2.0) Not economically active
  (2.1). Students
  (2.2). Pension or capital income recipients
  (2.3). Homemakers
  (2.4). Others

[25] Tabulations of the unemployed by occupation, industry, etc of previous job should exclude or separately identify those who are “unemployed, never worked before”.

Providers of unpaid services, volunteers (non core topic)

262. Countries may wish to identify separately the persons who provide social and personal services to their own household, other households or to voluntary, non-profit organizations on an unpaid basis, either for a short reference period or for a longer one. Such persons may be sub-divided either according to types of services provided or according to type of recipient.

263. Unpaid services are a significant area of human activity. Information about unpaid services helps in understanding how individuals and families balance their paid work with other important aspects of their lives, such as family and community commitments. The information is important in measuring the characteristics of groups with special needs such as the elderly, children and people with disabilities. Areas covered may include unpaid domestic activities, unpaid care, unpaid care of children and unpaid voluntary work. Time use surveys are the key source of data on people's use of time, including activities such as unpaid work. However, being sample-based, information is not usually available at a small area level.

264. It should be noted that the provision of non-paid services to other households and to voluntary, non-profit organizations is outside the production boundary as defined by the national accounts, and thus not considered as an economic activity, notwithstanding the general rule given in paragraphs 228-229. Such persons should be classified as unemployed or not economically active (see "Current activity status" above), depending upon their current availability for work and recent job-search activity. If classified as inactive, then separate sub-categories of the inactive may be introduced to identify them, where considered useful.

Selection of "job" to be classified by descriptive variables

265. The descriptive variables "occupation", "industry", "status in employment" and "sector" should apply to either current or usual activity, depending on the choice of the main concept for the measurement of economic activity in the census. Individuals can be classified according to these variables only through their relationship with a job. This means that they must have been identified as being either "employed" or "unemployed" through the questions on "economic activity". Whether "economically active" according to the "current activity" ("labour force") concept or according to the "usual activity" concept, a person may have had more than one job during the reference period. For "employed" persons it is therefore recommended that the main job held in the reference period is first established and then, possibly, the second job or (if more than two jobs) the second most important job. It is recommended that each country should use the same criterion when ranking all jobs held in the reference periods. The criterion might be either on the basis of the hours usually worked (the preferred option) or on the basis of the highest income in cash and kind. Hence, using the first criterion, the "main" job would be the job at which the person usually worked most of the time among all the jobs held during the reference period, and the second (most important) job should be the job at which the person usually worked most of the time among the other jobs held during the same period. When ranking jobs held during the reference period, it is important to consider also jobs from which the person is temporarily absent during the reference period.

266. An "unemployed" person should be classified by "occupation", "industry", "status in employment" and "sector" on the basis of the last job, which he/she had. The collection of data on characteristics of the last job (if any) of the unemployed is particularly important for users to have information on the characteristics of the unemployed in order to identify the specific areas of the economy or particular skills and occupations of unemployed people. The collection of these data is also relevant to countries applying ILO Convention No 160 which requires the preparation of statistics on the structure and distribution of the economically active population (that is, the employed and the unemployed) that are representative of the country as a whole.

267. However, such data is of only limited relevance in respect of unemployed people who change jobs frequently or for the unemployed who last worked a long time ago. For the first group, it may be better to ask the characteristics of the type of job in which the person most frequently worked and for the second group, it might be better to set a time limit for past work experience (for example during the last 10 years) and only seek information on the characteristics of the last job if it was held within the time limit.

268. It is important to design the census questionnaire or the census information taken from registers in a way, which will ensure that the variables "occupation", "industry", "status in employment" and "sector" are measured for the same job. This should be a central concern also for countries, which rely on the use of administrative registrations for the capturing of the correct values of these variables.

269. Some countries may want to describe in more detail the type of secondary work carried out by respondents engaged in more than one job during the reference period, in particular if those countries would like to be able to describe the extent and structure of employment in the informal sector. In this case the questionnaire should allow for the identification of a second, and perhaps even a third, job for which information about "occupation", "industry", "status in employment", "sector" and, if desired, "time worked" and “place of work” might be collected and coded, recognizing the resources that would be required for this additional collecting and processing.

Occupation (core topic)

270. "Occupation" refers to the type of work done in a job. "Type of work" is described by the main tasks and duties of the work.

271. For purposes of international comparisons, it is recommended that countries prepare tabulations in accordance with the latest revision of the *International Standard Classification of Occupations (ISCO)*. At the time the present set of census recommendations was approved, an update to ISCO was in progress for consideration by the 18th International Conference of Labour Statisticians (ICLS) in 2008. Hence, the latest revision available at this time (2005) was the one that was developed by the 14th *ICLS* in 1987 and adopted by the Governing Body of the

International Labour Organisation (ILO) in 1988[26]. Countries belonging to the European Economic Area should refer to ISCO-88 (COM).[27]

272. Countries should code the collected occupational data at the lowest possible level supported by the responses. To enhance data quality, it would be useful to ask for both the occupational title and a brief description of tasks and duties performed on the job by each economically active person.

273. Countries coding "occupation" according to a national standard classification can establish correspondence with ISCO either through double coding or through "mapping" from the detailed groups of the national classification to ISCO.

Industry (branch of economic activity) (core topic)

274. Industry" (branch of economic activity) refers to the kind of production or activity of the establishment or similar unit in which the job(s) of the economically active person (whether employed or unemployed) was located[28]. For those who work in fixed places of work (see paragraph 301.), it is recommended that the name and address of the enterprise or establishment be collected in order to permit a check on the reporting (and to assist in the coding) of the "industry" variable, recognizing that this may be sensitive in some countries).

275. For purposes of international comparability, it is recommended that countries compile the industrial characteristics of economically active persons according to the latest revision of the *International Standard Industrial Classification of All Economic Activities (ISIC)* available at the time of the census. At the time the present set of census recommendations was approved, the third edition of ISIC, adopted by the *United Nations Statistical Commission* at its twenty-fifth session in 1989, was the latest revision available[29] although this was being revised. Countries belonging to the European Economic Area should refer to NACE Rev.1.[30]

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[26] International Labour Office: International Standard Classification of Occupations (ISCO-88), ILO, Geneva, 1990.

[27] ISCO-88, Definitions and Structure, Eurostat, February 1993, gives a list of occupational groups identified for EU-wide occupational statistics. The descriptive text is limited to the differences between ISCO-88(COM) and ISCO-88.

[28] For those persons who are recruited and employed by one enterprise but who actually work at the place of work of another enterprise (called “agency workers” or “seconded workers” in some countries), there would be user interest in gathering information about the industry of the employer as well as the industry of the place of work. However the collection of both would be more appropriate in a labour force survey rather than in a population census. The industry of the actual place of work may provide more reliable reporting of the “industry” variable in a population census.

[29] International Standard Industrial Classification of All Economic Activities, Statistical Papers, Series M, No. 4, Rev. 3, United Nations, New York, 1990.

[30] NACE Rev.1, Statistical Classification of Economic Activities in the European Community, Eurostat, Luxembourg 1996.

276. Countries should code the collected industry information at the lowest possible level supported by the responses.

277. Countries coding "industry" according to a national standard classification should establish correspondence with ISIC either through double coding or through "mapping" from the detailed groups of the national classification to ISIC.

278. For those who work in fixed places of work (see paragraph 301), it is recommended that the name and address of the enterprise or establishment be collected in order to permit a check on the reporting (and to assist in the coding) of the "industry" variable. However, this is only feasible in a country where a statistical register exists that links business units to industry codes. Furthermore, it is recognized that, in some countries, the collection of the business name and address may be sensitive.

Status in employment (core topic)

279. "Status in employment" refers to the type of explicit or implicit contract of employment with other persons or organizations, which the person has in his/her job. The basic criteria used to define the groups of the classification are the type of economic risk, an element of which is the strength of the attachment between the person and the job, and the type of authority over establishments and other workers, which the person has or will have in the job. Care should be taken to ensure that an "economically active" person is classified by "status in employment" on the basis of the same job(s) as used for classifying the person by "occupation", "industry" and "sector".

280. It is recommended that the economically active population be classified by status in employment as follows[31].

(1.0) "Employees", among whom it may be possible to distinguish "employees with stable contracts" (including "regular employees")
(2.0) "Employers"
(3.0) "Own-account workers"
(4.0) "Contributing family workers"
(5.0) "Members of producers' co-operatives"
(6.0) "Persons not classifiable by status"

281. It is also recommended that "Owner-managers of incorporated enterprises" should be separately identified so that they may be classified either as a separate group or among "employees", depending upon the descriptive and analytical purposes of the statistics.

[31] For further details see "*Resolution concerning the International Classification of Status in Employment (ICSE)*" of the 15th International Conference of Labour Statisticians. Available in ILO: *Current international recommendations on labour statistics, 2000 edition* (Geneva, 2000) and at http://www.ilo.org/public/english/bureau/stat/download/res/icse.pdf

282. In the ILO international standards, the term “self-employed” refers to all categories (2.0) to (5.0) in paragraph 280. A "self-employment" job is a job where the remuneration is directly dependent upon the profits (or the potential for profits) derived from the goods and services produced (where own consumption is considered to be part of the profits). Eurostat uses the term “self-employed” to refer to only own-account workers (category (3.0) in paragraph 280). Eurostat’s classification does not distinguish members of producers’ co-operatives but includes them in the category of “self-employed”. In the presentation of these Recommendations, ILO terminology has been followed.

283. An "employee" is a person who works in a "paid employment" job, that is a job where the explicit or implicit contract of employment gives the incumbent a basic remuneration, which is independent of the revenue of the unit for which he/she works (this unit can be a corporation, a non-profit institution, government unit or a household). Persons in "paid employment" jobs are typically remunerated by wages and salaries, but may be paid by commission from sales, by piece rates, bonuses or in-kind payment such as food, housing or training. Some or all of the tools, capital equipment, information systems and/or premises used by the incumbent may be owned by others, and the incumbent may work under direct supervision of, or according to strict guidelines set by the owner(s) or persons in the owners' employment. "Employees with stable contracts" are those "employees" who have had, and who continue to have a contract of employment, or a succession of such contracts, with the same employer on a continuous basis. "Regular employees" are those "employees with stable contracts" for whom the employing organisation is responsible for payment of relevant taxes and social security contributions and/or where the contractual relationship is subject to national labour legislation. "Owner-managers of incorporated enterprises" are workers who hold a job in an incorporated enterprise in which they: (a) alone, or together with other members of their families or one or a few partners, hold controlling ownership of the enterprise; and (b) have the authority to act on its behalf as regards contracts with other organizations and the hiring and dismissal of "employees", subject only to national legislation regulating such matters and the rules established by the board of the enterprise.

284. An "employer" is a person who, working on his or her own account or with a small number of partners, holds a "self-employment" job and, in this capacity, on a continuous basis (including the reference period) has engaged one or more persons to work for him/her as "employees". The incumbent makes the operational decisions affecting the enterprise, or delegates such decisions while retaining responsibility for the welfare of the enterprise. In this context, "enterprise" includes one-person operations. Some countries may wish to distinguish "employers" according to the number of persons they employ (see paragraphs 314-315 on non-core topic “number of persons working in the local unit of the establishment”).

285. An "own-account worker" is a person who, working on his/her own account or with one or a few partners, holds a "self-employment job" and has not engaged, on a continuous basis, any "employees". (Note that an own-account worker, who during the reference period has engaged one or more "employees" on a short term and non-continuous basis, should not be classified as "employer".) Members of families whose only activity is the cultivation of privately owned ancillary plots or the care of privately owned livestock for own consumption by their households should be included in this category rather than “contributing family workers”. It is recommended that countries where the number of persons exclusively engaged in the own-account production of goods for own final use by their households is significant should identify such persons separately among own-account workers.

286. A "contributing family worker" is a person who holds a "self-employment" job in a market-oriented establishment operated by a related person living in the same household, and who cannot be regarded as a partner (that is an employer or own account worker) because the degree of commitment to the operation of the establishment, in terms of working time or other factors to be determined by national circumstances, is not at a level comparable to that of the head of the establishment. Where it is customary for young persons, in particular, to work without pay in an enterprise operated by a related person who does not live in the same household, this requirement may be relaxed.

287. A "member of a producers' co-operative" is a person who holds a "self-employment" job in an establishment organised as a co-operative, in which each member takes part on an equal footing with other members in determining the organisation of production, sales and/or other work, the investments and the distribution of the proceeds among the members. Note that "employees" of producers' cooperatives are not to be classified to this group but should be classified as ""employees". Members of informal cooperatives (see paragraph 296) should be classified as "own-account workers" or "employers", depending on whether or not they employ any employees on a continuous basis.

288. "Persons not classifiable by status" include those "economically active" persons for whom insufficient information is available, and/or who cannot be included in any of the preceding categories (for example unpaid workers assisting a family member in the completion of a "paid employment" job).

289. In most census questionnaires the information concerning "status in employment" will be captured through pre-coded alternatives where only a few words can be used to convey the intended meaning of each category. This may mean that classification of some of the situations on the borderline between two or more categories will be according to the subjective understanding of the respondent rather than according to the intended distinctions. This should be kept in mind when presenting the resulting statistics. Countries, which rely on the direct use of administrative records for the classification of persons according to "status in employment", may find that the group "contributing family workers" cannot be separately identified. Those who would have been classified to this group when using a questionnaire may either be excluded from the "economically active population" or be classified to one of the other groups.

Type of sector (institutional unit) (non-core topic)

290. "Type of sector (institutional unit)" relates to the legal organisation and the principal functions, behaviour and objectives of the enterprise with which a job is associated.

291. Following the definitions provided in the *System of National Accounts (SNA),* distinction should be made between the following institutional sectors:

a) "Corporations sector", consisting of non-financial and financial corporations (that is incorporated enterprises, private and public companies, joint-stock companies, limited liability companies, registered cooperatives, limited liability partnerships, etc.) and quasi-corporations;
b) "General government sector", consisting of central, state and local government units together with social security funds imposed or controlled by those units;

c) "Non-profit institutions serving households sector" (for example, churches, professional societies, sports and cultural clubs, charitable institutions, aid agencies) that provide goods or services to households free or at prices that are not economically significant;
d) "Households sector" (including unincorporated enterprises owned by households).

292. Countries collecting information on this topic may wish to consult the UN Technical Report on the Collection of Economic Characteristics in Population Censuses where further details can be found.

293. Where informal sector activities play an important role in employment creation and income generation, some countries of the ECE region may wish to consider collecting information on the number and characteristics of persons employed in the informal sector[32]. Because of the complexity involved in collecting information on employment in the informal sector, surveys would be the most ideal medium to use for collecting such data. However, if countries intend to attempt to collect information on this sector through their population census, they are encouraged to consult the UN Technical Report on the Collection of Economic Characteristics in Population Censuses where additional useful advice is given.

Informal employment (non-core topic)

294. The 17th International Conference of Labour Statisticians (November 2003) established *Guidelines concerning a statistical definition of informal employment* [33]. Under these Guidelines, "informal employment" comprises all informal jobs as defined below, whether carried out in formal sector enterprises, informal sector enterprises, or households, during a given reference period.

295. Informal employment includes the following types of jobs:

a) Own-account workers employed in their own informal sector enterprises;
b) Employers employed in their own informal sector enterprises;
c) Contributing family workers, irrespective of whether they work in formal or informal sector enterprises;
d) Members of informal producers' cooperatives;
e) Employees holding informal jobs[34] (that is jobs in which their employment relationship is, in law or in practice, not subject to national labour legislation, income

[32] See "*Resolution concerning statistics of employment in the informal sector*", adopted by the 15th ICLS (1993) and available in ILO: *Current international recommendations on labour statistics, 2000 edition* (Geneva, 2000). Also available at http://www.ilo.org/public/english/bureau/stat/download/res/infsec.pdf . The resolution covers a variety of issues relating to the scope and definition of the informal sector and the design, content and conduct of informal sector surveys. The relevance of the resolution goes beyond employment statistics, and its definitional parts were included in the SNA 1993.
[33] See http://www.ilo.org/public/english/bureau/stat/download/guidelines/defempl.pdf
[34] The operational criteria for defining informal jobs of employees are to be determined in accordance with national circumstances and data availability.

taxation, social protection or entitlement to certain employment benefits such as advance notice of dismissal, severance pay, paid annual or sick leave, etc) in formal sector enterprises, informal sector enterprises, or as paid domestic workers employed by households; and

f) Own-account workers engaged in the production of goods exclusively for own final use by their household, if considered employed as defined in paragraphs 239-246.

296. Producers' cooperatives are considered informal if they are not formally established as legal entities and also meet the other criteria of informal sector enterprises specified in the *Resolution concerning statistics of employment in the informal sector* adopted by the 15th ICLS.

297. Informal employment outside the informal sector comprises the following types of jobs:

a) Employees holding informal jobs (as defined above) in formal sector enterprises or as paid domestic workers employed by households;
b) Contributing family workers working in formal sector enterprises; and
c) Own-account workers engaged in the production of goods exclusively for own final use by their household, if considered employed.

298. Countries, which exclude agricultural activities from the scope of their informal sector statistics, should develop suitable definitions of informal jobs in agriculture, especially with respect to jobs held by own-account workers, employers and members of producers' cooperatives.

Place of work

299. Place of work is the location in which a "currently employed" person performs his or her job, and where a "usually employed" person currently performs or last performed the job. It is useful to distinguish the type of place of work from the geographic location of the place of work. Information on the type of place of work, distinguishing those working at home from those working in a fixed place outside home or with no fixed place of work, is useful in analysis of employment characteristics, including employment in the informal sector. Information on the geographical location of the place of work is used mainly to study commuting issues (see topic "Location of place of work" in paragraphs 196-197).

Type of place of work (non-core topic)

300. "Type of place of work" refers to the nature of the workplace and distinguishes between the home and other workplaces whether fixed or otherwise.

301. It is recommended to classify type of work place according to the following categories, or a variance thereof necessitated by national circumstances:

(1.0) With a fixed place of work outside the home: To this group should also be classified persons who do not have a fixed place of work but who report to a fixed address at the beginning of their work period (for example bus drivers, airline pilots and stewards), as well as operators of street or market stalls which are not removed at the

end of the workday. This group may also include individuals who travel to work, on a regular basis, across the border to a neighbouring country.
It is recommended that the selection of this response ("fixed place outside the home") should lead to a request for the name and street address of the place of work in order to permit a check on the reporting (and to assist in the coding) of the "industry" variable (while recognizing that this may be sensitive for some countries).

(2.0) Work at home: This category will include farmers who work and live on their farms, home workers, self-employed persons operating (work) shops inside their own home, etc. Persons working and living at work camps will also fall in this category, unless they are identified as a separate category.

(3.0) No fixed place of work: This category includes persons whose work involves travel in different areas and who do not report daily in person to a fixed address, for example travelling salesmen, and long-distance lorry drivers. It also includes ambulant vendors, operators of street or market stalls, which are removed at the end of the workday, construction workers working at different sites during the reference period and push-cart operators, etc.

302. For those persons who have a fixed place of work outside the home (paragraph 301), information on the geographical location of place of work can be collected and used, for instance, to study commuting issues (see topic "Location of place of work" in paragraphs 196-197). Information on place of work also enables profiles in terms of the employed labour force and/or daytime population (as opposed to demographic profiles by place of usual residence) to be built up. Coordination with the name (and address if given) of the enterprise or establishment collected for the "industry" variable is recommended.

Time usually worked (non-core topic)

303. "Time usually worked" should reflect the time worked during a typical week or day, and should be measured for a short reference period and in hours. It is the total time usually spent producing goods and services during the reference period adopted for "economic activity" in the census, within regular working hours and as usual overtime. "Time usually worked" should include activities which, while not leading directly to the production of goods or services, are still defined as being part of the tasks and duties of the job, such as time spent preparing, repairing or maintaining the workplace or work instruments. In practice it will also include inactive time spent in the course of performing these activities, such as time spent waiting or standing by, and other short breaks. Longer meal breaks, time spent on travel from home to work and vice versa, and time usually not worked because of regular sickness, regular reductions in hours due to economic or technical reasons (that is partial unemployment), etc. should excluded.

304. It is recommended that for persons who have had more than one job during the reference period, the questionnaire should ensure the recording of "total time usually worked" (considering the sum of the hours worked in the different jobs). In addition, it is suggested that the questionnaire should collect the "time usually worked" in the main job.

305. The inclusion of "time usually worked" as a topic is particularly useful for countries concerned with the usefulness for some users of the one-hour criterion in the definition of

"employment" when measuring "current activity". Alternative higher time limits for the definition of "employment" can be applied when tabulating census results for such users, if "time usually worked" has been measured.

306. To minimize response errors, the questions and instructions used to measure time usually worked need to ensure that responses exclude all usual absences, whether paid or unpaid, and that all usual overtime, whether paid or unpaid, is included.

Time-related underemployment (non-core topic)

307. Time-related underemployment exists when the hours of work of an employed person are insufficient in relation to an alternative employment situation in which the person is willing and available to engage[35].

308. Time-related underemployment would be more appropriately measured by a labour force survey. However, for those countries without a labour force survey programme, it may be useful to include time-related underemployment as a population census topic.

309. In order to measure time-related underemployment, it is necessary to collect data on time *actually* worked in all jobs as opposed to time *usually* worked (described in paragraph 303 above) in all jobs. *Hours actually worked* includes all hours actually worked during the reference period whether these hours were remunerated at normal rates, overtime rates or worked without remuneration (unpaid overtime). It includes tea/coffee breaks, preparation time, time for repairs and maintenance, time spent at the place of work waiting or standing by for such reasons as lack of supply of work, breakdown of machinery, or accidents, or time spent at the place of work during which no work is done but for which payment is made under a guaranteed employment contract. Hours actually worked should exclude hours paid for but not worked (such as paid annual leave, paid public holidays, paid sick leave), meal breaks, and time spent travelling from home to work and vice versa.[36] The definition of hours of work may be revised by the resolution on working time, which is planned to be submitted for consideration the 18th International Conference of Labour Statisticians in 2008.

310. Persons in time-related underemployment comprise all persons in employment, as defined in paragraphs 239-246 above, who satisfy the following three criteria during the reference period used to define employment:

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[35] *Resolution concerning the measurement of underemployment and inadequate employment situations*, adopted by the 16th International Conference of Labour Statisticians (1998). Available in ILO: *Current international recommendations on labour statistics, 2000 edition* (Geneva, 2000) and at http://www.ilo.org/public/english/bureau/stat/download/res/underemp.pdf

[36] *Resolution concerning statistics of hours of work,* adopted by the 10th International Conference of Labour Statisticians (1962). Available in ILO: *Current international recommendations on labour statistics, 2000 edition* (Geneva, 2000) and at http://www.ilo.org/public/english/bureau/stat/download/res/hours.pdf

a) "*Willing to work additional hours*", that is wanted another job (or jobs) in addition to their current job (or jobs) to increase their total hours of work; to replace any of their current jobs with another job (or jobs) with increased hours of work; to increase the hours of work in any of their current jobs; or a combination of the above. In order to show how "willingness to work additional hours" is expressed in terms of action, which is meaningful under national circumstances, those who have actively sought to work additional hours should be distinguished from those who have not. Actively seeking to work additional hours is to be defined according to the criteria used in the definition of job search used for the measurement of the economically active population, also taking into account activities needed to increase the hours of work in the current job;

b) "*Available to work additional hours*", that is are ready, within a specified subsequent period, to work additional hours, given opportunities for additional work. The subsequent period to be specified when determining workers' availability to work additional hours should be chosen in light of national circumstances and comprise the period generally required for workers to leave one job in order to start another;

c) "*Worked less than a threshold relating to working time*", that is persons whose "hours actually worked" in all jobs during the reference period, as defined in paragraph 309 above, were below a threshold, to be chosen according to national circumstances. This threshold may be determined by for example the boundary between full-time and part-time employment, median values, averages, or norms for hours of work as specified in relevant legislation, collective agreements, agreements on working time arrangements or labour practices in countries.

311. Among time-related underemployed persons, countries may want to identify separately the following two groups:

a) Persons who usually work part-time schedules and want to work additional hours; and

b) Persons who during the reference period worked less than their normal hours of work and wanted to work additional hours.

Duration of unemployment (non-core topic)

312. "Duration of unemployment" refers to the length of time an "unemployed" person as defined in paragraph 247 -248 above has been in that state since previously being either "employed" or "not economically active".

313. To estimate the "duration of unemployment" one should either ask when the search for employment started, or for how long the search has been going on - with precoded alternative periods of duration. It should be noted that if the current activity measurement is used, the census can only provide information on the duration of incomplete spells of unemployment, that is the elapsed duration of unemployment up to the time of the census. Countries should decide on the basis of national priorities and conditions whether the duration of unemployment should be measured in terms of number of days, weeks or other time units, but to facilitate international comparisons it is suggested that from the measure chosen it should be possible to produce numbers for duration of "six months or more" and for "one year or more".

Number of persons working in the local unit of the establishment (non-core topic)

314. The “number of persons working in the local unit of the establishment” is the number of persons usually employed in the establishment, workplace or similar unit in which the job(s) of persons in employment was located. This information is necessary in order to code correctly certain categories in ISCO-88 (COM), the European Community version of ISCO-88.

315. The suggested classification is:

(1.0) 1-4 persons
(2.0) 5-9 persons
(3.0) 10-19 persons
(4.0) 20-49 persons
(5.0) 50 persons or more

Some countries might require a more detailed sub-classification of group (4.0).

Main source of livelihood (non-core topic)

316. The "main source of livelihood" is the principal source of income from which the consumption of each person was financed during a specified reference period. It is recommended that preference is given to a long reference period, such as the preceding twelve months, calendar year or financial year, in order to take account of sources which may actually provide an income at periodic or seasonal intervals (such as income from seasonal activities, payment of quarterly benefits from pension plans, annual payment of scholarships or dividends, income from intermittent secondary activities, etc.). Income in kind as well as in cash should be taken into account.

317. Information on "main source of livelihood" should be obtained for all persons, whether they are economically active or not, and may not necessarily coincide with the main activity status or the main economic activity of the person. The “main source of livelihood” is a useful concept to complement the measurement of the economically active population and of status in employment. However, it is not suitable for the measurement of economic activity status and should not be used to classify the population according to activity status. The “main source of livelihood” can be very useful to cross-classify the different activity statuses. For example, the category of "economically active" persons whose "main source of livelihood" is not "economic activity" is relevant when the labour force concept is used for the collection of data on type of activity because the persons classified as "employed" may include some who only work during a brief portion of the year and who depend on other sources of income (such as unemployment benefits) or on other persons for their livelihood. This category may also be of some importance even when data on type of activity are collected on the basis of the concept of usual activity if no time limit is used as a criterion for the inclusion of part-time workers in the economically active population or if the time limit used is relatively low.

318. Where countries decide to include this topic, it is recommended that the information be obtained through direct questions, if possible by means of a list of potential sources. The list of

potential sources of livelihood should be sufficiently detailed so as to avoid omitting certain possibilities (for example social welfare payments, pensions, rentals).

319. It is suggested that the following main sources of livelihood should be distinguished:

(1.0) Employment:
  (1.1) Wage employment
  (1.2) Self-employment
(2.0) Property and other investments
(3.0) Pensions of all types
  (3.1) Paid by the State and other public bodies
  (3.2) Paid by enterprises, institutions, co-operative organizations and others
(4.0) Other transfers:
  (4.1) Sickness and maternity allowances
  (4.2) Unemployment benefits and relief
  (4.3) Scholarship
  (4.4) Benefits and assistance other than pensions, unemployment benefits, scholarship, and sickness and maternity allowances, provided by the State, other public bodies, co-operative organizations, enterprises or institutions
(5.0) Loans or reduction of savings, realisation of capital
(6.0) Dependent (mainly supported by another person or persons)
(7.0) Other sources

320. Category (5.0) ("Loans or reduction of savings, realisation of capital") covers the situation in which a person's main source of livelihood is the proceeds from the sale of assets or from drawing on savings or from loans.

321. Category (6.0) comprises those persons who rely on the support of another person or persons for their main source of livelihood. Such a dependant may have some income from employment or other sources but insufficient for these sources to constitute his or her main source of livelihood.

322. The independent population comprises all persons who are classified in categories (1.0) to (5.0). A supporter is a person in any of these five categories on whom one or more persons rely for their main source of livelihood.

Income (non-core topic)

323. "Income" may be defined as: (a) income received by each household member and from each source of livelihood (in accordance with the classification proposed in paragraph 319 above, excluding group (5.0) which is not classified as income) during the preceding twelve months or past year, and (b) total annual household income in cash and in kind from all sources.

324. Countries may wish to collect information on the amounts of income received by individual persons and/or households. If this topic is included in the census, it is recommended that data be obtained from all persons above a specified age, whether they are economically active or not. Income should be measured both for the individual and for the household of which he/she is a member.

325. Depending on national circumstances, the necessary information can be collected either through a census questionnaire or through the direct use of administrative records. Problems of collecting data on income through a questionnaire are partly related to the sensitivity of such questions in many societies and partly to the difficulty, which many persons may have in finding, or remembering accurately, the requested information.

326. Countries that include income in their census may also wish to consider the report of the Canberra Group, namely "*Expert Group on Household income Statistics (The Canberra Group), Final Report and Recommendations*", Ottawa, 2001 (ISBN 0-9688524-0-8), see http://www.lisproject.org/links/canberra/finalreport.pdf.

Socio-economic groups (derived non-core topic)

327. The purpose of a set of "socio-economic groups" is to identify different groups of persons where the members of a particular group are, on the one hand, reasonably homogeneous and, on the other hand, fairly clearly distinguished from members of other groups in respect of their social, economic, demographic and/or cultural circumstances and behaviour. A set of "socio-economic groups" can be derived from the detailed categories of the following classifications: industry branch (branch of economic activity); status in employment; occupation; and main source of livelihood.

328. As there is no international standard classification of the population by socio-economic group, countries may wish to prepare their own classification.

329. Unemployed persons who have previously worked should be included in the category relating to their former activity.

Chapter VII. EDUCATIONAL CHARACTERISTICS

Introduction

330. The term education refers to all deliberate, systematic and organised communication designed to bring about learning. While most of this is likely to be undertaken at schools or universities (or there equivalents), it is possible that education can be provided outside these institutions. For purposes of international comparisons, it is recommended that countries compile their data in accordance with the latest revision available of International Standard Classification of Education (ISCED)[37].

Educational attainment (core topic)

331. Educational attainment refers to the highest level successfully completed in the educational system of the country where the education was received. All education which is relevant to the completion of a level should be taken into account even if this was provided outside schools and universities.

332. It is recommended that data on educational attainment be collected for all persons ten years of age and over. In order to permit international comparisons, however, it is recommended that any tabulations of educational attainment not cross-classified by detailed age should at least distinguish between persons less than 15 years of age and those 15 years of age and over.

333. Data should be collected based on the highest level successfully completed.

334. Countries should also consider collecting further information, which captures data on levels of education not successfully completed. This may be achieved by asking whether a higher level than the one attained has been started and interrupted, or studies are ongoing at the higher level. Alternatively a question on grade or number of years of education completed may be appropriate in this context.

335. The data collected should, in all cases, be coded to ISCED level. The following levels of education should be distinguished:

a) ISCED Level 1. Primary (first stage of basic education).
b) ISCED Level 2. Lower secondary (second stage of basic education).
c) ISCED Level 3. (Upper) secondary.
d) ISCED Level 4. Post Secondary non-tertiary education
e) ISCED Level 5. First stage of tertiary education.
f) ISCED Level 6. Second Stage of Tertiary Education

336. Persons who have received no formal schooling should also be identified. Information on ISCED Level 0, pre-primary education may also be collected.[38]

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[37] Education at a Glance, 2004, OECD
[38] see www.unesco.org/education/information/nfsunesco/doc/isced-1997.htm.

337. Special attention needs to be paid to establishing the appropriate level/grade equivalence for persons who received their education under a different or foreign system and to situations where the educational system may have changed more than once. Countries may wish to consider asking for the foreign country where the education was received.

338. Necessary deviations from the recommended definitions and classifications that result from particular characteristics of the national educational system should be explained in the census report and/or relevant metadata. If, for national purposes, it is necessary to publish the results entirely in terms of the designations used for the schools within a country, it is recommended that an effort be made to relate the categories distinguished for national users to those which will make it possible to use the data for international comparisons. Countries coding "educational attainment" to a national standard classification can establish correspondence with the most recent version of ISCED either through double coding or through "mapping" from the detailed groups of the national classification to ISCED.

339. It is important to recognise that under certain circumstances a level of education may have been completed even though a relevant qualification was not obtained. It is recommended that educational attainment data and data on qualifications are collected separately or in such away that it is possible to draw a distinction. If data is not collected separately or the distinction is not possible this should be made clear in any census publications.

Educational qualifications (non-core topic)

340. Educational qualifications are the degrees, diplomas, certificates, etc. which have been conferred on a person by educational authorities, special examining bodies or professional bodies in his/her home country or abroad on the successful completion of a course of full-time, part-time or private study.

341. It is suggested that information on educational qualifications be collected at least for all persons who have successfully completed a course of study at the post-secondary level of education. Such information should include the title of the highest degree, diploma or certificate received, with an indication of the field of study if the title does not make this clear.

Field of study (non-core topic)

342. Field of study, as defined in ISCED, is the subject matter taught in an education programme.

343. Information on the distribution of educated persons by field of study is important for examining the match between the supply and demand for qualified manpower with specific specializations within the labour market. It is equally crucial for planning and regulating the production capacities of different levels, types and branches of educational institutions and training programmes. Besides educational attainment, the field of study of a person represents a second important dimension of his/her qualification. Titles, degrees, diplomas and further training received, as well as experience gained on the job would constitute additional components of a qualification.

344. Information on the field of study should be collected primarily for persons within the adult population who have attained secondary education or above. This would mean that the question is to be principally addressed to persons aged 15 years and over who have completed secondary education or higher or other organized educational and training programmes at equivalent levels of education.

345. A problem may arise in identifying the exact field(s) of study of persons with interdisciplinary or multidisciplinary specializations. In these cases, countries should follow the identification of the major or principal field of study. However, countries may wish to identify specialization in different ways depending on the planned use of this information and data processing capacities.

346. The most common method is to ask the person during census enumeration to identify only one principal field of study, and this may result in loss of information on the other fields. The second solution is to accept multiple responses to the question, in which case appropriate data processing facilities for handling and tabulating multiple responses must be put into place. If necessary, the data collection and processing procedures could be adapted to enable the distinction between principal and secondary fields of study. Another possible solution would be to establish a separate category for each multi-disciplinary field within the classification.

347. Countries may follow established national nomenclature or, to facilitate international comparison, adopt the classifications and coding of fields of study of the most recent version of ISCED. Countries coding "field of study" to a national standard classification can establish correspondence with the most recent version of ISCED either through double coding or through "mapping" from the detailed groups of the national classification to ISCED. Detailed examples and guidance on classifying educational programs within the ISCED framework are available in the Eurostat “Fields of Education and Training Manual”[39].

School attendance (non-core topic)

348. School attendance is defined as regular attendance at any accredited educational institution or programme, public or private, for organised learning at any level of education. Instruction in a particular skill, which is not part of the recognised educational structure of the country (for example in-service training courses in factories), is not considered "school attendance" for census purposes. Data on school attendance should refer to the time of the census. If the census is taken during the school vacation period, school attendance during the period just before the vacation will be taken into account.

349. The concept of school attendance is different from, but complementary to, that of enrolment as normally covered by school statistics. Attendance means the day-to-day presence of participants at an institution of learning. Enrolment refers to the formal registration of the participant at the start of the course, for example the registration of a school pupil at the start of the school year. A person may be enrolled but does not attend, for example, due to illness. A

[39] see http://forum.europa.eu.int/Public/irc/dsis/edtcs/library?l=/public/measuring_lifelong/classifications/isced97_fields

person attending a training programme may not be formally enrolled in a school or an educational institution.

350. The definition of attendance as day-to-day presence at an institution of learning is most relevant to primary and secondary education. There may be other instances where a person is enrolled and actively participating in a course of education to achieve a qualification but does not regularly attend any institution. Examples of this include participation via an Internet based course of study, correspondence courses and certain modes of tertiary education, which only require infrequent attendance.

351. Depending on national priorities, the data collected may be restricted to attendance in primary and secondary education. More broadly it may refer to all modes of participation in all levels of education and information on active participation in a course of study towards a qualification may be gathered. In every case it should be possible to draw a distinction between each type of participation and this should be made clear in the relevant census report and/or metadata.

352. Information on school attendance relates in particular to the population of official school age, which ranges from 5 to 29 years old in general but varies from country to country depending on the national education structure. In cases where data collection is to be extended to cover attendance in pre-primary education and/or other systematic educational and training programmes organized for adults in productive and service enterprises, community-based organizations and other non-educational institutions, the age range may be adjusted as appropriate. Note that those among the 'not currently active' who are classified as 'students' (see paragraph 258) will include only a sub-set of all persons attending school, as some of those attending school will either be classified as 'employed' or as 'unemployed' (see paragraphs 239-248).

Literacy (non-core topic)

353. Literacy is defined as the ability both to read and to write. If this topic is included in the census, the information collected should be designed to distinguish persons who are literate from those who are illiterate. A person who can, with understanding, both read and write a short, simple statement on his everyday life is literate. A person who cannot, with understanding, both read and write such a statement on his everyday life may be considered to be illiterate. Hence, a person capable of reading and writing only figures and his/her own name should be considered illiterate, as should a person who can read but not write and one who can read and write only a ritual phrase which has been memorized. Literacy is an applied skill and ideally needs to be measured in relation to a particular task such as reading a newspaper or writing a letter. Potentially this requires a trained interviewer so it may be unsuitable for a self-completion census. Reading and writing may be measured separately to allow simpler questions to be asked and to enhance analytical power.

354. The collection and tabulation of statistics on literacy during the population census should not be based on assumed inferences between literacy, school attendance and educational attainment. There are circumstances in which people may leave school with only partial literacy skills and may lose these if they are not regularly required to read and write.

355. The language or languages in which a person can read and write is not a factor in determining literacy and need not be considered on the questionnaire. In multi-lingual countries, however, information on the ability to read and write in a particular language may be essential for the determination of educational policy and would, therefore, be a useful additional subject of inquiry.

356. Countries may consider the introduction of some form of literacy assessment questions based on advice from regional experts and UNESCO. Alternatively a simple question on reading and writing literacy may be appropriate.

357. It is suggested that data on literacy be collected for all persons ten years of age and over. In order to permit international comparisons of data on literacy, however, any tabulations of literacy not cross-classified by detailed age should at least distinguish between persons under 15 years of age and those 15 years of age and over.

Computer literacy (non-core topic)

358. Computer literacy is defined as the ability to use basic computer applications to accomplish everyday tasks. If this topic is included it is recommended that information be collected about ability to use word processing, spreadsheet, e-mail and web browsing applications.

Chapter VIII. INTERNATIONAL AND INTERNAL MIGRATION

Introduction

359. Two different aspects relevant for migration can be identified through the census:

(a) Measurement of stocks of international migrants and other groups relevant to international migration, with information on timing and geographical patterns of their international migrations; and
(b) Measurement of stocks of internal migrants, with information on timing and geographical patterns of their internal migrations.

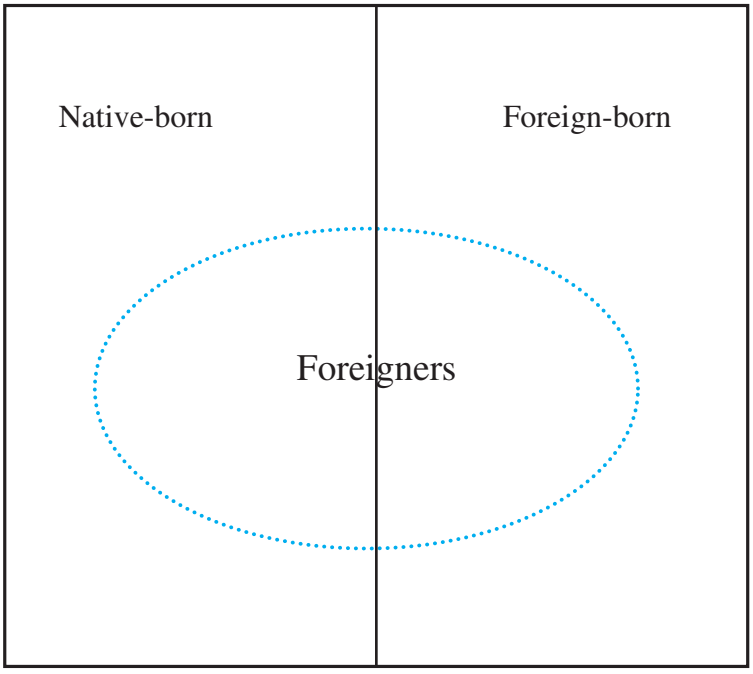
Population groups relevant to international migration

360. Two population groups relevant for international migration are usually identified in population censuses: foreign-born and foreigners.

361. *Foreign-born*: this is the group of persons who were born in another country. This group corresponds to the stock of international migrants that migrated at least once in their life and reside outside of their country of birth at the time of the Census. Persons born in the country are defined as native-born.

362. *Foreigners:* this is the group of persons who do not have the citizenship of the country. Foreigners can be foreign-born or native-born. Persons having the citizenship of the country are defined as nationals.

Chart 1: *Native-born, foreign-born and foreigners*



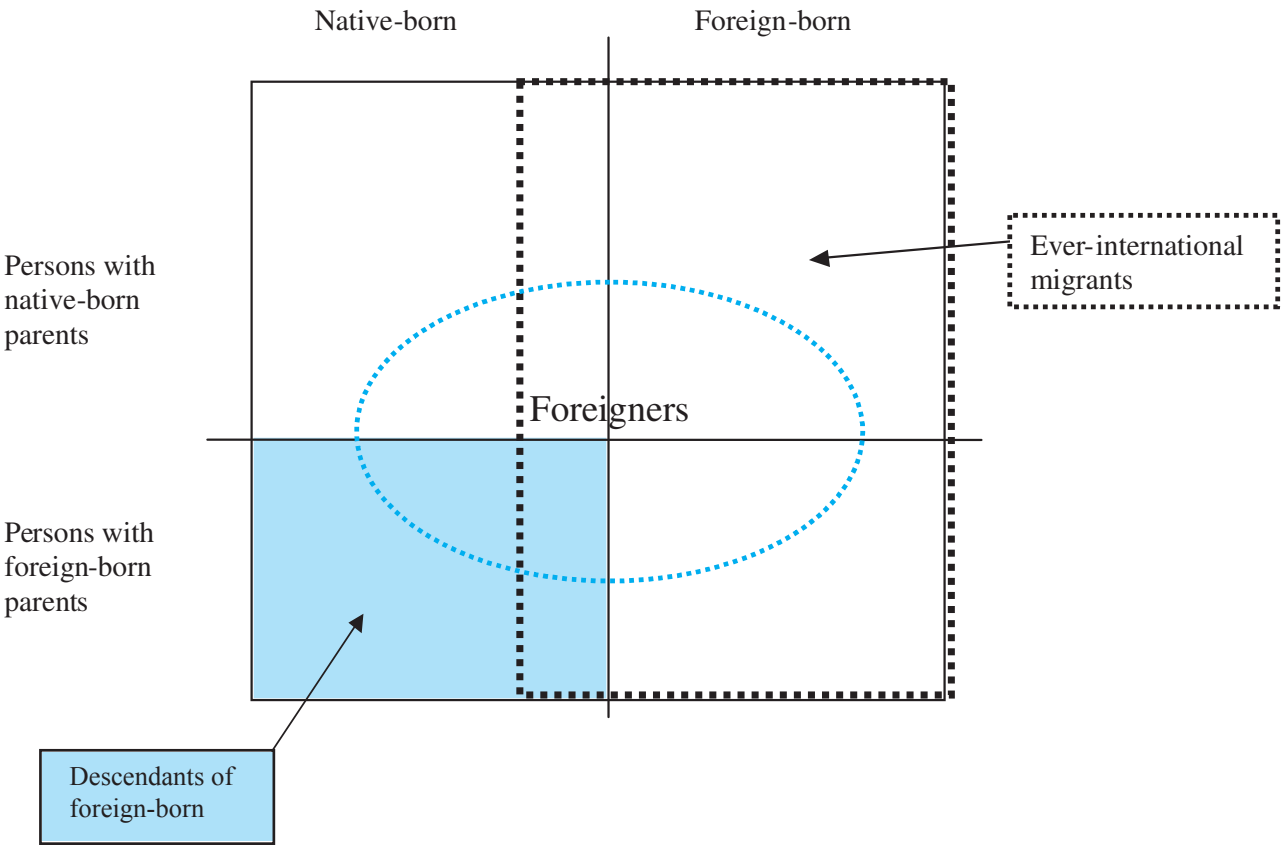
363. The population groups that are identified on the basis of place of birth and citizenship are represented in Chart 1. Though being very important, information on these groups is in many

countries not sufficient to monitor and analyse the impact of international migration. It is therefore recommended that the census should attempt to identify two additional population groups:

364. *Descendants of foreign-born*: This is the group of persons born in the country whose parents were born abroad. Several generations of descendants can theoretically be distinguished, that is: persons whose parents, grandparents, etc, were born abroad. However, in population censuses the focus is generally restricted to those persons whose parents were born abroad (this group is often referred to as the "second generation").

365. *Ever-international migrants:* the Recommendations on Statistics of International Migration[40] define an *international migrant* as "any person who changes his or her country of usual residence". According to this definition, the stock of *ever-international migrants* in a country is the set of persons who have ever changed their country of usual residence. This group includes all foreign-born plus those native-born who have ever resided abroad[41].

Chart 2: *Native-born, foreign-born, foreigners, descendants of foreign-born and international migrants*



[40] Recommendations on Statistics of International Migration – Revision 1, United Nations, 1998, ST/ESA/STAT/SER.M/58/Rev.1, paragraph 32.

[41] It is assumed that all foreign-born are international migrants and that they all resided or were expected to reside in the country of birth for at least one year

366. The groups defined above are not mutually exclusive and they can overlap to a great extent, as shown in Chart 2. However, each group is relevant for different aspects of the migration and integration process and represents a possible target of different programmes and policies. The size of each group clearly depends on the country, its legislation and its migration history.

367. Analytical classifications can be built by using jointly place of birth, citizenship and place of birth of parents. The classifications built using respectively place of birth/citizenship and place of birth/place of birth of parents/citizenship are particularly important since they allow the identification of various population groups relevant to international migration. A full description of these classifications is given in paragraphs 398-405.

368. Persons having one parent born in the country and the other one born abroad represent a special case. This group can represent a significant share of the population in some countries. It is suggested that a separate counting is provided for this group (see paragraph 401).

369. In all topics related to international borders (country of birth, country of birth of parents, country of citizenship, country of previous/current residence) reference should be made to the boundaries existing at the time of the census. This can have important implications in countries that originated from the splitting of a former country, since many persons that moved within the borders of the former country can now be counted as international migrants, if reference is made to their country of birth or their country of previous residence. It is therefore important to pay attention to the interpretation of data from these countries, particularly in relation to country of birth or country of previous residence.

370. Wherever possible, complementary tabulations on the population stocks relevant to international migration should be provided, distinguishing the persons who migrated before the break-up of the former country from those who did so after the break-up. Persons who were born in a particular territory but whose country of birth has changed because of boundary changes should not be counted as foreign-born.

Internal migrants

371. Internal migrants are broadly defined as persons who are usually resident in a particular geographical area and who have previously been resident in another geographical area in the country. In operational terms the geographical area is identified as the smallest civil division. *Internal migrants* are, therefore, defined as those who are usually resident in a civil division at the time of the census and who have previously been resident in another civil division within the country, where the civil division is identified at the smallest civil level. In order to provide relevant information on internal migrants, a detailed classification should distinguish local, intra-regional or inter-regional moves. Movements within smallest civil divisions should be considered as residential mobility, not as internal migrations.

372. Persons who are international immigrants – who, regardless of country of birth or citizenship, have at some point in their lives been usually resident in another country – may also be counted as internal migrants if, in addition to their international move, they also moved internally and they were resident elsewhere in the country prior to the census.

Country/place of birth (core topic)

373. Place of birth can be collected according to either the geographical unit in which the birth took place or to the place of usual residence of the mother at the time of the birth. Countries should collect the information according to the criterion that better suits their data output needs. Some countries may collect information according to both criteria. For persons born in the country, information on the smallest civil division should be collected. For persons born outside the country, it is sufficient to collect information on the country of birth. Country of birth is used to distinguish between native-born and foreign-born residents.

374. For purposes of international comparability as well as for internal use, information on country of birth should be collected on the basis of international boundaries existing at the time of the census. It is recommended that the information on this topic be collected and coded in the most feasible detailed manner. For the foreign-born, the country of birth should be coded, based on the three-digit alphabetical codes presented in the classification issued by the UN Statistical Division[42].

Country of citizenship (core topic)

375. Citizenship is defined as the particular legal bond between an individual and his/her State, acquired by birth or naturalization, whether by declaration, option, marriage or other means according to the national legislation. Citizenship is used to identify the foreign resident population, that is the resident persons who do not hold the citizenship of the country of enumeration.

376. Information on country of citizenship should be collected for all persons and coded in the most feasible detailed manner, based on the three-digit alphabetical codes presented in the classification issued by the UN Statistical Division (Standard Country or Area Codes for Statistical Use, ST/ESA/STAT/SER.M/49/Rev.4/). This classification of countries and areas is a useful tool for developing a classification of citizenships but attention should be paid in considering the dependent territories that are included in the classification above but that may not have their own citizenship.

377. Provisions should be made in order to obtain separate data for stateless persons, that is persons without a recognized citizenship of a state.

378. Information on all citizenships held by respondents should be collected, in order to identify the portion of population with dual or multiple citizenship.

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[42] Standard Country or Area Codes for Statistical Use, ST/ESA/STAT/SER.M/49/Rev.4/ (http://unstats.un.org/unsd/methods/m49/m49.htm)

Ever resided abroad and year of arrival in the country (core topic)

379. This topic focuses on all persons who have ever resided outside the current country of usual residence, regardless of country of birth or citizenship and regardless of other changes of usual residence that may have occurred inside the country. In order to collect information on this topic, individuals should be asked whether they have ever had a usual residence abroad. Information on this topic allows to identifying the group of ever-international migrants (see paragraph 365). For those who ever resided abroad, the year of arrival in the current country of residence should also be collected.

380. The year of arrival should be the calendar year when the person most recently established usual residence in the country. The purpose of this topic is to measure the duration of residence of international migrants in the host country. It is preferable to measure duration using the time of arrival rather than the number of years elapsed since arrival in the country because time of arrival is likely to yield more accurate information[43]. In order to have more detailed information on the time of arrival, information may be collected also on the month of arrival.

381. The year of last arrival to the country is recommended rather than the year of first arrival since it can provide unequivocal information. When using year of last arrival, the derived duration of residence refers to an uninterrupted stay in the country, whereas no information is available on periods of residence abroad when the year of first arrival is used. The year of last arrival can also provide useful information on recent immigration flows. Guidance to enumerators and respondents should emphasise that this item relates only to the most recent immigration to the country since difficulties of understanding may occur where a person has established residence in the country on more than one occasion.

Country of previous usual residence abroad (non-core topic)

382. For persons that have ever resided abroad, the country of previous residence may also be recorded. For purposes of international comparability as well as for internal use, information on country of previous residence should be collected on the basis of international boundaries existing at the time of the census. It is recommended that the information on this topic be collected and coded in the most feasible detailed manner, based on the three-digit alphabetical codes presented in the classification issued by the UN Statistical Division (Standard Country or Area Codes for Statistical Use, ST/ESA/STAT/SER.M/49/Rev.4/).

[43] For those arrived in recent years the individual calendar year should be recorded while broader time intervals could be used for those arrived in previous periods.

Total duration of residence in the country (non-core topic)

383. This topic focuses on the total duration of residence in the country of ever-international migrants (see paragraph 365). Total duration is defined as the total number of years that the ever-international Migrant has resided in the country, taking into account all periods of residence including the last one. This topic provides additional information with respect to the year of last arrival (see paragraphs 380-381) only for those persons who established residence in the country on more than one occasion.

Previous place of usual residence and date of arrival in the current place (core topic)

384. This topic provides information on geographic and time patterns of migration moves to the current place of residence. It is recommended that the place of previous residence should be identified in terms of the smallest civil division.

385. In operational terms this topic can be implemented in two modes:

(a) **Extensive mode**: by enquiring into year and month of arrival in the current place of usual residence plus previous place of usual residence; or
(b) **Reduced mode**: by enquiring into place of usual residence one year prior to the census

Year and month of arrival in the current place

386. In the extensive mode year and month of arrival should be the calendar year and month when the person most recently established residence in the current place of usual residence. In order to reduce the burden on respondents' month of arrival could be asked only of those who arrived in the calendar year before the census[44]. The previous place of usual residence is defined in terms of the smallest civil division. From the joint use of the two questions it is possible to analyse patterns and timing of internal migration. If the previous place of usual residence was outside the country, the country of residence should be collected.

Place of usual residence one year prior to the census

387. The reduced mode is primarily intended to allow patterns of recent migration to be studied. If the place of usual residence one year prior to the census was inside the country, this should be identified as the smallest civil division. If the place of usual residence one year prior to the census was outside the country, the country of residence should be collected.

388. The reduced mode gives information on persons that arrived in the current place of residence during the last year, and this information can be compared to the corresponding information provided by the extended mode. However, the extensive mode also provides

[44] For those arrived in recent years the individual calendar year should be recorded while broader time intervals could be used for those arrived in previous periods

important information on migrations that took place in previous years. Countries should select either one or other of the two modes on the basis of their information needs.

389. Both extensive and reduced mode provide only partial information on international migrations and it is therefore recommended to use the topic 'Ever resided abroad and year of arrival in the country' (see paragraph 379) to collect precise information on timing of international immigrations.

Place of usual residence five years prior to the census (non-core topic)

390. If the question on the place of usual residence one year prior to the census is asked (that is the reduced mode is selected for the topic 'Previous place of usual residence and date of arrival in the current place'), the place of usual residence five years prior to the census could also be asked. This extension of the time interval allows the capture of a larger number of moves at the cost of an increased uncertainty about the exact timing of the migration. If the place of usual residence five years prior to the census was inside the country, it is intended to be the smallest civil division. If the place of usual residence five years prior to the census was outside the country, the country of residence should be collected.

Reason for migration (non-core topic)

391. Some countries may wish to collect information on reasons for international and/or internal migration. This topic should refer to the main reason that drove the respondent to undertake the most recent migratory move. It is recommended that only one main reason for migration should be recorded. It may be most appropriate to include this topic as a sub-question of the item on residence abroad (see paragraph 382) or as a sub-question of the item on the previous place of usual residence (see paragraph 384).

Country of birth of parents (non core topic)

392. Countries with a significant number of immigrants may want to collect information on the country of birth of parents. Information on the country of birth of parents (father and mother) should be asked of all resident persons following the same indications given for the country of birth. This topic permits the identification of the group of descendants of foreign-born. Special attention should be paid in collecting this topic in countries where boundaries have undergone major changes (see paragraph 369).

393. The use of country of birth of parents is suggested in order to identify the group of descendants of immigrants since it is based on objective and reliable information. This topic is recommended in order to collect valuable information on integration processes and outcomes of immigrants and their descendants.

394. In case of adopted children, reference should always be made to legal parents.

Citizenship acquisition (non-core topic)

395. Countries with a significant number of naturalized persons may want to collect information on the way the national citizenship was acquired, either at birth or by naturalization or other means according to the national legislation.

396. Some countries may also wish to include, for naturalized citizens, questions on the year of acquisition of citizenship and the type of naturalization (by marriage, by residence, by legal status, etc.).

397. In countries that have emerged from the break-up of former States, an additional typology of citizenship acquisition may be added which should refer to those who received the national citizenship when the new state was created. This typology should include those who were recognized as national citizens when the regulation on citizenship of the newly created state came into force.

Persons with foreign/national background (derived non-core topic)

398. The group of persons with a foreign background is composed of those persons whose parents were born outside the country. The persons in this group may or may not have directly experienced an international migration.

399. Persons whose parents were born in the country form the group of persons with a national background. Those persons who have one parent born in the country and the other one born abroad form the group of persons with a mixed background.

400. Countries that do not ask for country of birth of parents but for acquisition of citizenship can approximate information on the foreign/national background by using the following rules:

a) Persons having national citizenship since birth will be considered as having national background;
b) Persons who have got the national citizenship by naturalization or other means will be considered as having foreign background;
c) Persons without the national citizenship (that is all foreign citizens) will be considered as having foreign background.

401. When using the topic on citizenship acquisition to identify national/foreign background, the following issues should be considered:

a) Persons with foreign background cannot be identified if, by the time of their birth, their foreign-born parents had already acquired the citizenship of the country;
b) Persons with mixed background cannot be identified.

402. Persons with national/foreign background cannot be identified through a question on citizenship acquisition in countries where granting of citizenship is based on the country of birth (*jus soli* principle).

Population groups relevant to international migration (derived non-core topic)

403. This topic provides a classification of the population groups that can be identified by on the basis of the following topics:
a) Joint use of place of birth and citizenship; and
b) Joint use of place of birth, citizenship and place of birth of parents.

404. On the basis of the two-core topics, place of birth and citizenship, the following population groups can identified:

(1.0) *Foreign-born foreigners*: persons born abroad without the citizenship of the country. This group will include the foreign-born immigrants who did not acquire the citizenship of the host country.
(2.0) *Native-born foreigners*: persons born in the country without the citizenship of the country. This group will be in large part formed by those descendants of foreign-born who did not get the citizenship of the host country.
(3.0) *Foreign-born nationals*: persons born abroad and having the citizenship of the country. This group will in large part formed by persons with national background who were born abroad and by persons with foreign background who eventually got the citizenship of the host country.
(4.0) *Native-born nationals*: persons born in the country with the citizenship of the country. This group will be in large part formed by native-born with national background. It will also include those descendants of foreign-born who got the citizenship of the country.

405. Based on the two core topics, place of birth and citizenship, and the non-core topic place of birth of parents the population groups identified in Table 1 can be derived:

Table 1: **Classification of population according to country of birth of parents, country of birth and citizenship**

Place of birth of parents	Place of birth	Citizenship	Description of the population group		
Country of census	Country of census	National	*1. Native-born nationals with national background*: persons with the country's citizenship and whose parents were born in the country. This group usually includes the large majority of the population.		
		Foreigner	*2. Native-born foreigners with national background*: foreign citizens who were born in the country and whose parents were also born in the country. In principle this is a small population group. It may include members of the so-called third generation, persons with double citizenship who report only the foreign one or other persons with special cases.		
	Abroad	National	*3. Foreign-born nationals with national background*: nationals who were born abroad but whose parents were born in the country. This group usually includes children of emigrants returned to the country of origin of their parents. This group can be sizeable, especially in countries that in the past experienced large emigration flows. Foreign-born adopted children will also be part of this group.		
		Foreigner	*4. Foreign-born foreigners with national background*: foreign citizens who were born abroad but whose parents were born in the country. Children of former emigrants can also be included in this group, if not entitled to national citizenship. This group is in principle very small.		
Abroad	Country of census	National	*5. Native-born nationals with foreign background:* persons born in the country whose parents were born abroad. This group includes children of international immigrants who have got the citizenship of the host country, either at birth or by naturalization.	These two groups jointly form the group of *descendants of foreign-born*. This group is also defined as *native-born with foreign background*.	These groups jointly form the group of *persons with foreign background*
		Foreigner	*6. Native-born foreigners with foreign background:* foreign citizens born in the country but whose parents were born abroad. In this group there are children of immigrants who did not get the citizenship of the host country.		
	Abroad	National	*7. Foreign-born nationals with foreign background*: nationals born abroad whose parents where also born abroad. This group includes the foreign-born immigrants who got naturalized.	These two groups jointly form the *foreign-born with foreign background*. This group is often referred to as the first generation.	
		Foreigner	*8. Foreign-born foreigners with foreign background:* foreign-born foreigners with foreign background. This group includes the foreign-born immigrants living in the host countries and keeping their original citizenship. In many countries this is the largest group among all those with foreign background.		

Population with refugee background (derived non-core topic)

406. *Population with refugee background* includes persons who were "forced migrants" and immediate family members of forced migrants. The population with refugee background can only be identified if the topic on reason for migration is included.

407. The count of the stock of refugees (persons being granted asylum under national regulations and/or international conventions) living in a country is often difficult because of mobility of persons and administrative procedures, like changes in the formal status of the refugee. Countries may use different definitions of the stock of refugees, with specific legal and administrative implications. How individuals perceive themselves may be different again from the legal situation within a country. At the international level, it is suggested to use the common definition of population with refugee background, a group of persons having experienced (directly or indirectly) a forced migration. This group can be useful for cross-country and across time analyses.

408. The narrow definition of this population group includes:

A. Persons who declared that their main reason for migration was 'Forced migration'.

409. The broad definition of this population group also includes (in addition to group A above):

B. Foreign-born persons who declared that their main reason for migration was 'Family' and are members of the same family nucleus of a person of the group A.

C. Native-born children members of the same family nucleus of the parents and having both parents of the group A or one parent in the group A and the other parent of the group B.

410. Further relevant details, such as country of birth, citizenship or date of arrival in the country can be obtained by tabulating the *population with a refugee background* according to the other relevant topics.

Internally Displaced Persons (IDPs) (derived non-core topic)

411. In countries where massive flows of internal migration occurred as a consequence of dramatic events like wars, social unrests, natural or environmental disasters, it is important to measure the size of the group of IDPs (Internally Displaced Persons). In countries having experienced such phenomena, it can be important to include a question on the reason for internal migrations. The group of IDPs includes the persons who declared that their main reason for internal migration was 'Forced migration' and their dependants living in the same household at the time of the census, including children born after the forced migration. The date of arrival and the place of previous residence are important characteristics of IDPs and may be obtained by cross-tabulation with other topics.

Chapter IX ETHNO-CULTURAL CHARACTERISTICS

Introduction

412. Data on ethno-cultural characteristics of the population are of increasing relevance to countries of the UNECE region in the context of migration, integration and minority policies.

413. Countries with a culturally diverse population may wish to collect information on the ethnic identity (or composition) of the population, on mother tongue, the knowledge and practice of languages as well as on religious communities and denominations.

414. They may also wish to collect information on the ethno-cultural characteristics of parents and grand-parents (ancestry) to gain a deeper understanding of the origins of the population and of integration processes.

415. Ethno-cultural characteristics have generally a subjective dimension, they can be politically sensitive and population groups are often small. The free and open declaration of the respondents is therefore of essential importance. Members of certain minority groups may be particularly vulnerable to discrimination on the grounds of ethnic group or religion. Special care, therefore, may be required in census procedures and outputs relating to ethnic group and religion in order to demonstrate to respondents that appropriate data protection and disclosure control measures are in place.

416. Register-based data are only of limited relevance to the topic and can at best cover certain aspects, for example the formal membership of a church or religious community or the official language of communication between the government and households in a multilingual setting.

417. It is recommended that representatives of ethnic, language and religious groups be consulted in the drafting of census questions, the definition of classification procedures and the conduct of censuses among minority populations to assure transparency, the correct understanding of the questions and the full participation of the population.

418. Countries may wish to implement special monitoring mechanisms in relation with the collection of data on ethno-cultural characteristics to guarantee the free declaration of the respondents and data protection.

Ethnicity (non core topic)

419. Ethnicity is based on a shared understanding of the history and territorial origins (regional, national) of an ethnic group or community as well as on particular cultural characteristics: language and/or religion and/or specific customs and ways of life.

420. Multi-ethnic countries with long-established minorities and/or recently arrived immigrant populations may wish to collect information on the ethnic composition of the population or of certain subgroups of the population. The data are relevant for the understanding of the cultural diversity of the population, the position of ethnic groups in society as well as for the definition and monitoring of anti-discrimination policies.

421. Affiliation with certain ethnic groups is distinct from affiliation with language and/or religious groups, although overlaps are frequent. The combined collection and analysis of data on several ethno-cultural characteristics is particularly informative for the understanding of cultural diversity.

422. In some countries, ethnicity is also related to physical characteristics of the population (in particular colour, for example white, black). Data on physical characteristics are used to identify "visible minorities".

423. Some countries may consider collecting data on ancestry and ethnic origin of parents and grandparents.

424. Data on ethnicity should not be confounded with data on country of citizenship or country of birth. The use of the term nationality in place of ethnicity should be avoided.

425. Ethnicity has necessarily a subjective dimension and some ethnic groups are very small. Information on ethnicity should therefore always be based on the free self-declaration of a person, questionnaires should include an open question and interviewers should refrain from suggesting answers to the respondents.

426. Respondents should be free to indicate more than one ethnic affiliation or a combination of ethnic affiliations if they wish so.

427. In order to guarantee the free self-declaration of ethnicity, respondents should be allowed to indicate "none" or "not declared" when asked for their ethnicity. Countries should explain in the census instructions and the census documentations how the ethnicity of children from mixed couples is determined.

428. Countries should document the basic criteria and classification procedures for ethnicity and inform the data users about the scientific and socio-political concepts on which they are based.

429. Classifications of ethnic groups should be comprehensive and include at the finest level, ethnic groups, self-perceived groups, regional and local groups as well as groups that are usually not considered to be ethnic groups (for example religious groups, groups based on nationality in the sense of citizenship etc.). Classifications at the highest level depend on national conditions and concepts and no internationally comparable classification is recommended.

Language (non core topic)

430. Multilingual countries and countries with significant immigrant populations may wish to collect data on languages that are currently written or spoken. Depending on information needs, the following data may be collected:

a) "Mother tongue", defined as the first language spoken in early childhood at home;
b) Main language, defined as the language which the person commands best;
c) Language(s) most currently spoken at home and/or work;
d) Knowledge of language(s), defined as the ability to speak and/or write one or more designated languages.

431. Data on a) and b) are relevant to understand processes of language change and to determine language regions and language groups. Questions will generally refer to one language only. Multiple languages may be required for the mother tongue and main languages of minority groups.

432. Data on c) and d) are relevant to understand language practices and knowledge of languages, including official languages and languages learnt at school. Questions refer to several languages and have to allow for multiple answers.

433. It is recommended that at least two questions be asked about language. One should refer to topics a), b), or c) and the other should refer to topic d).

434. Many language groups are small. It is therefore recommended that an open answer box, at least, be included in questions for groups a) or b).

435. Countries should explain the chosen concepts and definitions and document the classification procedures for languages in the census documentation and reports.

436. Classifications should be comprehensive and include on the finest level language groups, separate languages, regional dialects as well as *invented* and sign languages.

Religion (non core topic)

437. Religion is generally regarded as a set of beliefs and practices, usually involving acknowledgment of a divine or higher being, power or principle, by which people order the conduct of their lives both practically and in a moral sense.

438. Countries that are traditionally multi-denominational or have significant immigrant populations with different religions may wish to collect data on religion.

439. Depending on the specific circumstances and information needs, the following data on religion may be collected:

a) Formal membership of a church or a religious community;
b) Identification with a certain religion, religious community or denomination;
c) Religious belief;
d) Religion in which a person was brought up; or
e) Religious attendance

440. In all approaches respondents should be allowed to declare “none”. For privacy reasons, in some countries the questions may be voluntary.

441. Data should always be based on the free self-declaration of a person and questionnaires should include open questions to allow small groups, break-off groups and local denominations to identify. Countries should explain in the census instructions and the census documentation how the religion of children from mixed couples is determined.

442. Countries should explain in the census instructions and during data collection the chosen concepts and definitions and document the classification procedures for religious groups.

443. Classifications should be comprehensive. They should include at the finest level: groups of religions, religions, and subsets of religions, such as, religious denominations, administrative and organizational groupings, groups of churches, churches, and breakaway groups as well as belief systems that may not generally considered to be religions.

444. To increase consistency and comparability of data, the following classification of religions is recommended on the highest level:

(1.0) Christianity
- (1.1) Catholic
- (1.2) Orthodox
- (1.3) Protestant (including Anglican, Baptist, Brethren, Calvinist, Evangelical, Lutheran, Methodist, Pentecostal, Pietist, Presbyterian, Reformed, and other Protestant groups)
- (1.4) Jehovah's Witnesses
- (1.5) Oriental Christian
- (1.6) Other Christian

(2.0) Islam
- (2.1) Alawit (Nusayris)
- (2.2) Ismaili (Seveners)
- (2.3) Ithna'ashari (Twelvers)
- (2.4) Shia
- (2.5) Sufi
- (2.6) Sunni
- (2.7) Zaydi (Fivers)

(3.0) Judaism
(4.0) Buddhism
(5.0) Hinduism
(6.0) Sikhism
(7.0) Other religious groups
(8.0) No religion

Chapter X DISABILITY

Introduction

445. A census can provide valuable information on disability in a country. For countries that do not have regular special population-based disability surveys or disability modules in on-going surveys, the census can be the only source of information on the frequency and distribution of disability in the population at national, regional and local levels. Countries that have a registration system providing regular data on persons with the most severe types of impairments, may use the census to complement these data with information related to the broader concept of disability based on the International Classification of Functioning Disability and Health (ICF) as described below. Census data can be utilized for planning programs and services (prevention and rehabilitation), monitoring disability trends in the country, evaluation of national programs and services concerning the equalization of opportunities, and for international comparison of the disability prevalence in countries.

Disability status (non core topic)

446. Disability status characterises the population to those with and without a disability. Persons with disabilities are defined as those persons who are at greater risk than the general population for experiencing restrictions in performing specific tasks or participating in role activities. This group would include persons who experience limitations in basic activity functioning, such as walking or hearing, even if such limitations were ameliorated by the use of assistive devices, a supportive environment or plentiful resources. Such persons may not experience limitations in the specifically measured tasks, such as bathing or dressing, or participation activities, such as working or going to church, because the necessary adaptations have been made at the person or environmental levels. These persons would still, however, be considered to be at greater risk for restrictions in activities and/or participation than the general population because of the presence of limitations in basic activity functioning and because the absence of the current level of accommodation would jeopardise their current levels of participation.

447. It is recommended that the following 4 domains be considered essential in determining disability:

i. Walking;
ii. Seeing;
iii. Hearing; and
iv. Cognition.

A comprehensive measure would include all domains (see paragraph 468).
If countries wish, then self care and communication may also be considered as domains.

Disability framework and terminology

448. In 2001 The World Health Organization (WHO) issued the International Classification of Functioning, Disability and Health (ICF)[45] which is the successor of the International Classification of Impairments, Disabilities and Handicaps issued in 1980 (ICIDH)[46]. The ICF is a classification system offering a conceptual framework with conceptual definitions, terminology and definitions of the terms, and classifications of contextual components associated with disability including both participation and environmental factors.

449. The ICF distinguishes multiple dimensions that can be used to monitor the situation of individuals with disability. The system is divided into two parts each with two components;

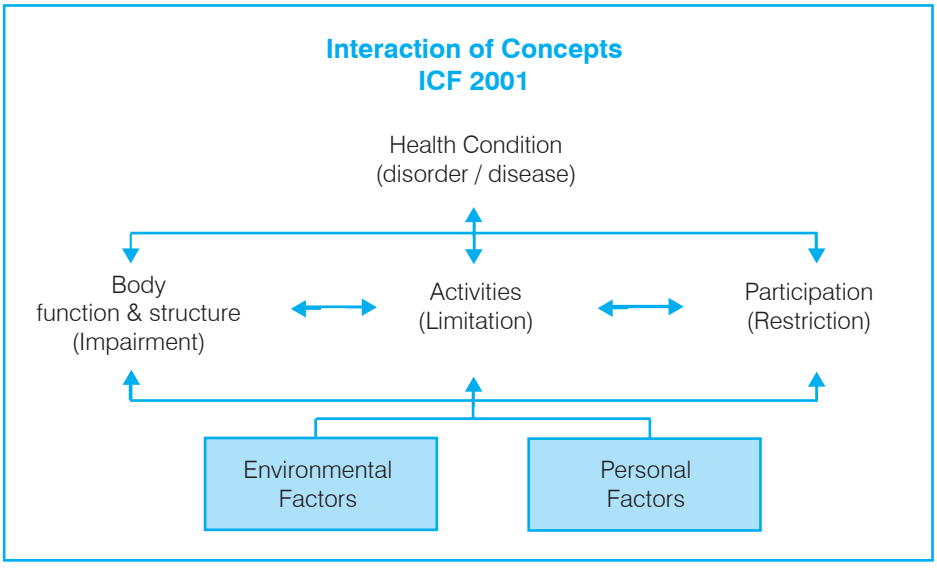
(1.0) Functioning and disability, which include the components:
  (1.1) Body functions and body structures (impairments); and
  (1.2) Activities (limitations) and participation (restrictions).
(2.0) Contextual factors which include the components:
  (2.1) Environmental factors
  (2.2) Personal factors

450. The ICF provides classification schemes for all these elements except for personal factors.

Interactions between components of the ICF

451. The interactions between the parts and components are shown in Chart 3.

Chart 3. *Interaction of disability concepts*



452. The main structure of the classification is reported in Appendix VIII.

[45] International Classification of Functioning, Disability and Health (ICF), Geneva, World Health Organization, 2001.
[46] International Classification of Impairments, Disabilities and Handicaps (ICIDH), Geneva, World Health Organization, 1980.

Use of the census to measure disability at aggregate level

453. A census format offers only limited space and time for questions for one topic such as disability. Since the ICF offers several dimensions for use to develop a census measure, it is best to focus on a few of those dimensions, leaving the remaining dimensions for use in more extensive household surveys. Short sets of disability questions, which can be included in censuses and extended sets to be recommended for inclusion in population-based surveys are being developed and tested[47]. The aim of the recommended sets is to improve comparability of disability data across countries.

454. The World Programme of Action concerning Disabled Persons (WPA)[48] provides a valuable guide for conceptualizing the uses of data on disability. The three major goals of the World Programme of Action are equalization of opportunities, rehabilitation and prevention.

455. Three major classes of purposes for measuring disability in a census are:

a) To provide services, including the development of programs and policies for service provision and the evaluation of these programs and services. The provision of services at the population level includes, but is not limited to, addressing needs for housing, transportation, assistive technology, vocational or educational rehabilitation, and long-term care;
b) To monitor the level of functioning in the population. Monitoring levels of functioning includes estimating rates and analyzing trends. The level of functioning in the population is considered a primary health and social indicator, which characterizes the status of the population in a society;
c) To assess equalization of opportunities. The assessment of equalization of opportunity involves monitoring and evaluating outcomes of anti-discrimination laws and policies, and service and rehabilitation programs designed to improve and equalize the participation of persons with impairments in all aspects of life.

456. The intent of these purposes for measurement is consistent with that of the WPA, which outlines major goals for policy formulation and program planning, internationally. The common goal is to promote the participation of persons with disabilities in all aspects of life by preventing the onset and consequences of impairments, promoting optimal levels of functioning, and equalizing opportunities for participation.

457. The assessment of equalization of opportunity is the purpose that can be best achieved in a census. It is this purpose that is being measured in the topic Disability Status.

458. The definition outlined in disability status (see paragraph 446) requires that disability be defined in terms of limitations in basic activity functioning, and not by performance of or participation in the organized activities (such as educational attendance or work participation).

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[47] The Washington Group on Disability Statistics (WG), a UN City Group which focuses on proposing international measures of disability is developing these questions. See www.cdc.gov/nchs/citygroup.htm. for updates on the questions

[48] *World Programme of Action concerning Disabled Persons*, United Nations, New York, 1983.

While assessment of equalization of opportunities might seem to require measurement of activities and participation, such an approach does not help to identify changes in the level of participation in the population in response to changes in opportunities. It only reflects the circumstances of those who because of unfriendly environments or lack of assistive devices are experiencing restrictions in participation. Approaching the assessment of equalization of opportunity by recognizing the link between a basic level of activity and subsequent participation can reduce some of the methodological problems.

459. Disentangling the conceptual dimensions of basic activity limitations that result from impairment, from the more complex activities associated with participation provides the opportunity to determine the intervening mechanisms that facilitate or interfere with performance of tasks and organized activity. At the analysis stage, people who are identified with and without disabilities on the basis of their ability to perform basic activities can be compared in relation to their participation in organized activities (such as school and work). This comparison can assess the equalization of opportunities. The separation between activities and performance differentiates approaches for the purpose of monitoring functioning in the population and for the purpose of assessing equalization of opportunity. When assessing opportunity equalization, *the connection between the conceptual elements is made during analysis*, whereas for monitoring functioning *the connection is done during data collection*.

460. Within the framework of the ICF Model and its four major dimensions (body structure and function, activity, participation and environment), an activity-oriented set of questions, located at the simplest and most basic level, should be used to capture the basic activity elements required for a good measure of the risk of participation restrictions.

461. The adoption of an activity-oriented approach is also used in the European Health Status Module developed by Eurostat. The module has been developed within the European Statistical System and although has been designed for more extended data collection activities such as health interview surveys, it still can be used to identify questions to measure activity limitations in a census. This module also includes the Minimum European Health Module (MEHM)[49].

462. Given the sensitivity and the complexity of disability it is recommended that several activity domains be identified where people can be asked about their ability to perform in such domains rather than enquire about a general disability status.

Essential domains:

463. The set of domains should capture the definition of disability that is being operationalized. It is suggested that only those domains that have satisfied a set of selection criteria be eligible for inclusion in a short set of questions recommended for use in Censuses. Criteria for inclusion include cross-population or cross-cultural comparability, suitability for self-reporting and space on the census form. Other suggested criteria include the importance of the domain in terms of public health problems. Based on these criteria, four basic domains are-

[49] The following link to the European Health Status Module includes the Minimum European Health Module (MEHM).
http://forum.europa.eu.int/Public/irc/dsis/health/library?l=/reports/healthsinterviewssurvey/questionnaire_translatio&vm=detailed&sb=Title

considered to be essential domains. These include the areas of walking, seeing, hearing and cognition. In addition, if space permits, two other domains have been identified for inclusion, self-care and communication. The domains of walking, seeing and hearing are also included in the European Health Status Module.

464. *Walking* fulfils the criteria of cross-cultural applicability and space requirements for comparable data since walking is a good indicator of a central physical function and is a major cause of limitation in participation. It is also a basic area of activity functioning that can be self-reported.

465. While *seeing* also represents a public health problem, self-reporting of seeing limitation is more problematic, particularly when individuals use glasses to correct visual impairments. Similar difficulties are associated with asking about *hearing* activity. The most direct way to deal with assistive devices like glasses and hearing aids without contributing to confusion over answering such questions is to ask the questions about difficulty hearing or seeing without any devices or assistance.

466. However, devices, such as glasses, provide almost complete accommodation for large proportions of those with impaired functioning and the numbers with the impairment can be very high. It is often argued that asking about seeing without the use of glasses greatly increases the number of persons with disabilities and makes the group too heterogeneous, that is, the group would include persons at very little risk of participation problems along with those at great risk. An alternative is to ask questions on difficulty seeing even *with* the use of glasses if they are usually worn and difficulty hearing *with* the use of hearing aids if these devices are used.

467. Of the four essential domains, *cognition* is the most difficult to operationalize. Cognition includes many functions such as remembering, concentrating, decision making, understanding spoken and written language, finding one's way or following a map, doing mathematical calculations, reading and thinking. Deciding on a cross culturally similar function that would represent even one aspect of cognition is difficult. However, remembering and concentrating or making decisions would probably serve the cultural compatibility aspects the best. Reading and doing mathematical calculations or other learned capacities are very dependent on educational systems within a culture.

Additional domains:

468. There are additional physical functioning domains that could be included in a set of Census questions depending on the space available. Other domains that might be incorporated include upper body functioning of the arms, hands and fingers and psychological functioning. While identifying problems with psychological functioning in the population is a very important element of measuring disability for the stated objective, questions that attempt to represent mental/psychological functioning would run into difficulty because of the levels of stigmatization of such problems within a culture. This could jeopardize the whole set of questions.

Census questions

469. It is recommended that special attention be paid in designing census questions to measure disability. The wording and the construct of questions greatly affect the precision in identifying

the people with disabilities. Each domain should be asked through a separate question[50]. The language used should be clear, unambiguous and simple. Negative terms should always be avoided. The disability questions should be addressed to each single household member and general questions on the presence of persons with disabilities in the household should be avoided. If necessary, a proxy respondent can be used to report for the family member who is incapacitated. The important thing is to account for each family member individually rather than ask a blanket question. Scaled response categories can also improve the reporting of disability.

470. The European Health Status Module (see paragraph 461) includes a set of standard questions for various domains and can be used as source to develop census questions in three of the four core domains (seeing, hearing, and walking). There is also a set of questions for use on national Censuses for gathering information on the four essential domains[51]. The questions have been designed to provide comparable data cross-nationally for populations living in a great variety of cultures with varying economic resources. The objective is to identify persons with similar types and levels of limitations in functional activities regardless of nationality or culture. It is not the purpose of these questions to identify every person with a disability within every community. The questions may not meet all the needs for disability statistics, nor will it replicate a population evaluated across a wider range of domains that would be possible in other forms of data collection or in administrative data.

471. The information that results from measuring disability status (see paragraph 446) is expected to:

a) Represent the majority, but not all persons with limitation in basic activity functioning in any one country;
b) Represent the most commonly occurring basic activity limitations within any country; and
c) Capture persons with similar problems across countries.

472. The questions identify the population with functional limitations that have the potential to limit independent participation in society. The intended use of these data would be to compare levels of participation in employment, education, or family life for those with disability versus those without to see if persons with disability have achieved social inclusion. In addition the data could be used to monitor prevalence trends for persons with limitations in the particular basic activity domains. It would not represent the total population with limitations nor would it necessarily represent the 'true' population with disability, which would require measuring limitation in all domains.

Use of Census to screen for disability and follow-up with other surveys

473. Countries that are planning specialized surveys on disability may want to use the census to develop a sampling frame for these surveys and include a screening instrument to identify persons who will be interviewed subsequently. The definitions and the instruments used for this

[50] When domains are combined such as asking a question about seeing OR hearing, respondents frequently are confused and think they need to have difficulty in both domains in order to answer yes. In addition, having the numbers with specific limitations is useful for both internal planning and for cross national comparisons.

[51] For more information see the Washington Group Web-site: www.cdc.gov/nchs/citygroup.htm.

purpose are very different from the ones used to assess equal opportunities. The main purpose of a screening is to be the most inclusive as possible in order to identify the largest group of people who could be further studied. The screening question should be designed so that false negatives[52] are minimized, while false positive[53] should be less of a concern.

474. Within the framework of the ICF, the census screening may include all of the three main dimensions of body structure and function, activity, and participation. This will allow for keeping a broad approach to the follow-up survey where the different aspects of disability can be better studied.

475. The same recommendations highlighted in paragraphs 469-472 should also be considered when a screening module is designed.

476. Before embarking in using the census to develop a frame for a follow-up survey, it is important that the legal implications of using the census data for this purpose are fully considered. Respondents should be informed that the data may be used for follow-up studies and national authorities responsible for ensuring the privacy rights of the population may need to be consulted in order to obtain their approval.

[52] Persons who have disabilities but are not identified in the census as having disabilities.
[52] Persons who are identified with disabilities in the census but in reality the do not have disabilities (as assessed in the largest instrument used in the follow-up survey).

Chapter XI HOUSEHOLD AND FAMILY CHARACTERISTICS

Introduction

477. Household and family composition can be examined from several different points of view. In considering topics related to households it is important to be aware of the different concepts relating to households and families. These issues are explored in detail in this chapter. Many issues (for example housing problems) focus on data at the household and family level rather than the individual level. In many countries the pattern of family and household formation is changing and it is important to examine the structural changes that are occurring.

Definitions

478. Countries are recommended to use the place of usual residence as the basis of household membership, see paragraphs 158-166 on core topic "place of usual residence" where, *inter alia*, issues such as temporary absence are considered. If only *de jure* information is available (for example from registers) on place of legal residence that is no information is available on place of usual residence, then that information can be used (alone or in combination with other information from other sources) provided that it is judged to reflect the usual residence situation sufficiently accurately.

The household concept

479. A private household is either:

a) A one-person household, that is a person who lives alone in a separate housing unit or who occupies, as a lodger, a separate room (or rooms) of a housing unit but does not join with any of the other occupants of the housing unit to form part of a multi-person household as defined below; or

b) A multi-person household, that is a group of two or more persons who combine to occupy the whole or part of a housing unit and to provide themselves with food and possibly other essentials for living. Members of the group may pool their incomes to a greater or lesser extent.

480. This concept of a private household is known as the housekeeping concept. This does not assume that the number of private households is equal to the number of housing units. Within this concept, it is useful to distinguish between "boarders" and "lodgers". Boarders take meals with the household and generally are allowed to use the household facilities. They are thus members of the household as defined in paragraph 479. Lodgers have hired part of the housing unit for their exclusive use. They will belong to a different household.

481. Some countries may be unable to collect data on common housekeeping of household members, for example when their census is register-based. Many of these countries use a different concept of the private household, namely, the household-dwelling concept. The household-dwelling concept considers all persons living in a housing unit to be members of the same household, such that there is one household per occupied housing unit. In the household-dwelling concept, then, the number of occupied housing units and the number of households occupying them is equal, and the locations of the housing units and households are identical.

482. Whether a country uses the 'housekeeping unit' or the 'household-dwelling' concept of a household has generally little implication for the total number of private households. However, differences can be large for certain household types, for example for one-person households. In view of international comparability it is therefore recommended that countries that use the 'housekeeping unit' concept, if possible, make an estimate of the number of private households according to the 'household-dwelling' concept, and break this number down by household size.

483. Countries should specify in their census reports and/or relevant metadata whether they used the 'housekeeping unit' or the 'household-dwelling' concept of a private household.

484. An institutional household comprises persons whose need for shelter and subsistence are being provided by an institution. An institution is understood to be a legal body for the purpose of long-term inhabitation and provision of services to a group of persons. Institutions usually have common facilities shared by the occupants (baths, lounges, eating facilities, dormitories and so forth). The great majority of institutional households fall under the following categories:

(1.0) Residences for students;
(2.0) Hospitals, convalescent homes, establishments for the disabled, psychiatric institutions, old people's homes and nursing homes;
(3.0) Assisted living facilities and welfare institutions including those for the homeless;
(4.0) Military barracks;
(5.0) Correctional and penal institutions;
(6.0) Religious institutions; and
(7.0) Worker dormitories.

485. Members of an institutional household have their place of usual residence at the institution. People who are normally members of private households but who are living in institutions are considered as members of institutional households if their actual or expected absence from a private household exceeds one year.

486. Countries should endeavour to distinguish between the institutional population and persons who are part of private households within collective living quarters. For example, employees of the institution who live alone or with their family at the institution should be treated as members of private households.

487. Prior to census enumeration, countries should consider using a living quarters validation instrument. A brief questionnaire instrument can identify, among other things, the nature and functions of collective living quarters, the potential presence of private households, and whether services are offered to persons considered to be homeless. Also, one main advantage of using a living quarters validation instrument is that it allows for the dealing of multipurpose institutional households. Thus, parts of an institutional household may be classified differently.

488. There may be differences between countries in the ways in which the boundary between the population living in private households and the population living in institutional or other households is drawn. The definitions used should therefore be explained clearly in census publications, and attention should be drawn to any differences between national practice and these recommendations.

489. There are some persons who do not live in private or institutional households.

The homeless with no place of usual residence

490. The definition of the homeless can vary from country to country because homelessness is essentially a cultural definition based on concepts such as "adequate housing", "minimum community housing standard" or "security of tenure" which can be perceived in different ways by different communities. For certain policy purposes, some persons living in institutions may be considered homeless persons.

491. For persons not in private or institutional households, the following two categories or degrees of homelessness can be considered:

(1.0) Primary homelessness (or rooflessness). This category includes persons living in the streets without a shelter that would fall within the scope of living quarters (see paragraphs 592- 594).

(2.0) Secondary homelessness. This category may include persons with no place of usual residence who move frequently between various types of accommodations (including dwellings, shelters, institutions for the homeless or other living quarters). This category includes persons living in private dwellings but reporting "no usual address" on their census form.

492. These definitions are supported by a collection and other strategies that ensure, for example, that certain dwellings be properly identified as shelters and not private dwellings (see Chapter XIII on housing characteristics).

The family concept

493. A family nucleus is defined in the narrow sense as two or more persons who live in the same household and who are related as husband and wife, as cohabiting partners, as a marital (registered) same-sex couple, or as parent and child. Thus a family comprises a couple without children, or a couple with one or more children, or a lone parent with one or more children.

494. The family concept as defined above limits relationships between children and adults to direct (first-degree) relationships, that is between parents and children. In some countries, numbers of "skip generation households", that is households consisting of (a) grandparent(s) and one or more grandchild(ren), but with no parent of those grandchildren is present, are considerable. Therefore, countries may include such skip generation households in their family definition. The relevant census report and/or metadata should clearly state whether or not skip generation households are included in the family nucleus definition.

495. Child refers to a blood, step- or adopted son or daughter (regardless of age or marital status) who has usual residence in the household of at least one of the parents, and who has no partner or own child(ren) in the same household. Grandsons and granddaughters who have usual residence in the household of at least one grandparent while there are no parents present may also be included. Foster children are not included. A (grand)son or (grand)daughter who lives

with a spouse, with a registered partner, with a consensual partner, or with one or more own children, is not considered to be a child. A child who alternates between two households (for instance after his or her parents have divorced) should consider the household where he or she spends the majority of the time as his or her place of usual residence. Where an equal amount of time is spent with both parents the place of usual residence should be the place where the child is found at the time on census.

496. The term couple should include married couples, registered couples, and couples who live in a consensual union. Two persons are considered to be partners in a consensual union when they have usual residence in the same household, are not married to each other, and have a marriage-like relationship with each other.

497. A three-generation household consists of two or more separate family nuclei or one family nucleus and (an)other family member(s), containing at least three generations. The youngest two generations always constitute one family nucleus. For example, a woman who is living in a household with her own child(ren) and her own parent(s) should be regarded as being in the same family nucleus as the child(ren) even if she is never married.

498. A reconstituted family is a family consisting of a married or cohabiting couple or a marital (registered) same-sex couple, with one or more children, where at least one child is a non-common child that is the child of only one member of the couple. If the other partner adopts the child of one partner later, the resulting family is no longer a reconstituted family.

499. A few family nuclei live in institutional households, for example elderly couples living in old age homes. However, the number is very small in most countries in the ECE region and it is often difficult to identify them. The scope of the basic data to be compiled on family nuclei is therefore confined to family nuclei living in private households. If those living in institutional households are included, they should, if possible, be shown separately.

500. Family nuclei are usually identified at the processing stage on the basis of marital status, sex, age, and relationship to the reference member of the household. In the case of multi-family households, however, these data are often not sufficient to provide a reliable basis for allocating persons to particular family nuclei. It is left to countries to decide whether family nuclei in these households should be distinguished by asking the respondent to list the members of each family nucleus in consecutive order, or in some other way.

501. Some countries may wish to derive information on "extended families" also. It is suggested that an extended family be defined for census purposes as a group of two or more persons who live together in the same household and who do not constitute a family nucleus but are related to each other (to a specified degree) through blood, marriage or adoption. Data on extended families can have certain advantages for studying the economic relationships of families or kin as spending units, but they also have certain advantages for studying and classifying families from a demographic point of view. Countries that derive information on this type of family unit are encouraged to use the suggested classifications proposed for the non-core topics "extended family status" (see paragraphs 530-532) and "type of extended family" see paragraphs 543-544).

Same-sex partnerships (derived non-core topic)

502. Some countries may wish to collect and disseminate data on same-sex partnerships. In some countries, same-sex couples can have their partnership registered. In other countries, two persons of the same sex can legally marry each other. Data needs can arise resulting from the increasing legal recognition of such unions, or on the importance of same-sex cohabiting partners who are not married/registered. In such cases, information on same-sex partnership can be derived by adding specific categories for same-sex partners (distinct from the categories for opposite-sex partners) to the relationship to the reference person question (see paragraph 506) or the household relationship matrix (see paragraph 507).

503. The following response categories could be used to collect information on marital and nonmarital partners:

(1.0) Husband or wife
(2.0) Same-sex registered (marital) partner
(3.0) Opposite-sex cohabiting partner
(4.0) Same-sex cohabiting partner

504. When data are collected on same-sex partnerships, same-sex partners should be included in the family categories in census tabulations. They should form couples and families (with or without children), but should be distinguished from opposite-sex couples and families. The same distinction should be applied when presenting data on the family status of individuals.

Household and family characteristics of persons

Relationships between household members (core topic)

505. Information should be collected for all persons living in private households on their relationship to other members of the household. Data on this topic are needed for use in (i) identifying family nuclei and private households of various types; (ii) deriving the family status and the household status of household members.

506. In previous censuses, the selection of the one reference person in the household to whom all other household members report or designate their relationship was the recommended method for mapping household structures. When the household's reference person is chosen carefully, this method gives accurate information for most household types and family types. In certain cases, however, for instance in multiple family households, this method will not always give the information that is required. Therefore, a more elaborative method has been developed, namely the household relationship matrix method. The household relationship matrix allows for the collection of all relationships between all household members.

507. Some countries have good experience with the household relationship matrix method in their censuses. Other countries have noted problems with this approach, due to its complicated character. Therefore, it is recommended that countries consider the relationship matrix only as one possible method for mapping household structures. Pre-census tests of the relationship

matrix are recommended to check the feasibility of the method. Where feasible, the relationship matrix method is the recommended approach. Otherwise, countries are recommended to use the household's reference person. It is to be noted that the household relationship matrix, if necessary, may be limited to certain members of the household, for example only the adult members, or the children.

508. The classification of types of relationship to one (in case the reference person method is used) or more (when the household relationship matrix is used) other members is given in paragraph 515 and paragraph 509, respectively.

509. In case the household relationship matrix method is used, the following classification of persons living in a private household by relationship to other household members is recommended. The classification is recommended at the one-digit level and optional at the two-digit level.

(1.0) Other person's husband or wife
(2.0) Other person's partner in consensual union (cohabiting partner)
  (2.1) Other person's opposite-sex cohabiting partner
  (2.2) Other person's same-sex cohabiting partner
(3.0) Other person's child
(4.0) Other person's father or mother
(5.0) Other person's other relative
(6.0) Non-relative of other person
  (6.1) Foster child
  (6.2) Boarder
  (6.3) Domestic servant
  (6.4) Other

510. The optional distinction between categories (2.1) “Other person's opposite-sex cohabiting partner” and (2.2) “Other person's same-sex cohabiting partner” should be considered by countries that would like to collect data on same-sex partnerships. Adding a specific category for same-sex partners distinct from the category for opposite-sex partners allows for the collection of data on same-sex partnerships without having to rely on the sex question to distinguish between opposite-sex and same-sex partnerships. Depending on the data needs and the national legislation, the information can be collected for marital (registered) and/or non-marital (de facto) same-sex partnerships. It is suggested that a thorough testing program (both cognitive and quantitative) be conducted prior to introducing such a sensitive topic on the census questionnaire.

511. Countries may wish to subdivide category (3.0) into children according to the different age groups. It is further suggested that employees, other than domestic servants, who are members of the household (for instance nurses, farm workers) be included in category (6.4). Countries that use the household-dwelling concept may also need separate headings for sub-tenants and members of subtenants' households.

512. Countries that identify skip generation families are recommended to use two additional categories, namely one for grandparent and one for grandchild.

513. The selection of the one reference person in a household to whom all other persons in the household report, or designate, their relationship requires careful consideration. In the past the person considered to be the 'head' of the household was generally used as the reference person, but this concept is no longer considered appropriate in many countries of the region. It has also sometimes been proposed that the person designated as the reference person should be the oldest person in the household or the one who contributes the most income. However, given that the primary purpose of the question is to assign family status and to assign individuals into families, both of these approaches have weaknesses. The automatic selection of the oldest person may be undesirable because in multi-generational households the broadest range of explicit kin relationships can be reported where the reference person is selected from the middle generation. Similarly, the selection of the person with the highest income may be a person who will not solicit the broadest range of explicit kin relationships. There is some evidence though to suggest that the following criteria for selection of the reference person will yield the most fruitful range of explicit kin relationships:

a) Either the husband or the wife of a married couple living in the household (preferably from the middle generation in a multi-generational household);
b) Either partner of a consensual union couple living in the household where there is no married couple present;
c) The parent, where one parent lives with his or her sons or daughters of any age; or
d) Where none of the above conditions apply, any adult member of the household may be selected.

514. These criteria are presented here to provide an example of how an adult member of the household could be selected with a view to facilitating the determination of family relationships. The considerations given here may also be appropriate when countries wish to apply the concept of head of household.

515. In order to facilitate identification of family nuclei and households, the following classification of persons living in a private household by relationship to the household's reference person is recommended. The classification is recommended at the one-digit level and optional at the two-digit level.

(1.0) Reference person
(2.0) Reference person’s spouse
  (2.1) Husband or wife
  (2.2) Same-sex registered partner
(3.0) Reference person’s partner in consensual union (cohabiting partner)
  (3.1) Opposite-sex cohabiting partner
  (3.2) Same-sex cohabiting partner
(4.0) Child of reference person and/or of husband/wife/cohabiting partner
  (4.1) Child of reference person only
  (4.2) Child of reference person's husband/wife/cohabiting partner
  (4.3) Child of both
(5.0) Husband/wife or cohabiting partner of child of reference person
(6.0) Father or mother of reference person, of spouse, or of cohabiting partner of reference person
(7.0) Other relative of reference person, of spouse, or of cohabiting partner of reference person

(8.0) Non-relative of reference person of the household
(8.1) Foster child
(8.2) Boarder
(8.3) Domestic servant
(8.4) Other

516. Countries that define a skip generation family as family nucleus are recommended to use two additional categories, namely one for grandparent and one for grandchild.

517. The optional distinction between categories (3.1) "Opposite-sex cohabiting partner" and (3.2) "Same-sex cohabiting partner" should be considered by countries that would like to collect data on same-sex partnerships (see paragraph 510).

518. The optional distinction between categories (4.1), (4.2) and (4.3) allows the identification of reconstituted families in private households provided that the reference person is a parent in the reconstituted family (see paragraph 498).

519. Countries may wish to subdivide categories (4.1) to (4.3) by children according to different age groups. It is further suggested that employees, other than domestic servants, who are members of the household (for instance nurses, farm workers) be included in category (8.4). Countries, which use the household-dwelling concept, may also need separate headings for sub-tenants and members of sub-tenants' households.

Household status (derived core topic)

520. Information should be derived for all persons on their status or position in the household and for people in private households whether they are living alone, in a nuclear family household or living with others.

521. The following classification of the population by household status is recommended:

(1.0) Person in a private household
(1.1) Person in a nuclear family household

(1.1.1) Husband
(1.1.2) Wife
(1.1.3) Male partner in a consensual union
(1.1.4) Female partner in a consensual union
(1.1.5) Lone father
(1.1.6) Lone mother
(1.1.7) Child under 25 years of age
(1.1.8) Son/daughter aged 25 or older
(1.1.9) Other persons not member of the nuclear family, but in a nuclear family household

(1.2) Person in other private households
(1.2.1) Living alone
(1.2.2) Living with relatives
(1.2.3) Living with non-relatives

(2.0) Person not in a private household
(2.1) Person in institutional household
(2.2) Primary homeless person
(2.3) Other

522. This classification is recommended at the three-digit level. Depending on national legislation and data needs, countries may include the oldest partner of a registered (marital) same-sex couple in category (1.1.1), and the youngest partner in category (1.1.2).

523. Countries that identify skip generation families are recommended to use two additional categories under (1.1), namely one for grandparent and one for grandchild.

524. It should be noted that information on household status can be used to derive what is commonly known as *de facto* marital status, for example, whether a person who is not legally married, lives together with a partner in a consensual union, or whether a person who is legally married, lives without a partner.

Family status (derived core topic)

525. Information should be derived for all persons on their family status. Family status is measured in terms of partner, lone parent or child.

526. The following classification of the population living in families is recommended:

(1.0) Partner
(1.1) Husband in a married couple
(1.2) Wife in a married couple
(1.3) Male partner in a consensual union
(1.4) Female partner in a consensual union
(2.0) Lone parent
(2.1) Lone father
(2.2) Lone mother
(3.0) Child
(3.1) Child aged under 25
(3.1.1) Child of both partners
(3.1.2) Child of male partner only
(3.1.3) Child of female partner only
(3.1.4) Child of lone father
(3.1.5) Child of lone mother
(3.2.) Son/daughter aged 25 or over
(3.2.1) Son/daughter of both partners
(3.2.2) Son/daughter of male partner only
(3.2.3) Son/daughter of female partner only
(3.2.4) Son/daughter of lone father

527. This classification is recommended at the two-digit level. Further detail on the age of the youngest child may be added, for instance under 18, 18-24, 25-29, and 30 or over. Depending on national legislation and data needs, countries may include the oldest partner of a registered (marital) same-sex couple in category (1.1), and the youngest partner in category (1.2).

528. Countries that identify skip-generation families are recommended to use three additional categories, namely (3.3) grandchild aged under 25, (3.4) grandson/granddaughter aged 25 or over, and (4.0) grandparent.

529. The classification of children in reconstituted families requires special attention. These children should be classified according to the relationship with both parents. If the child has been adopted by the new partner, he/she should be classified in (3.1.1) or (3.2.1), and the family should not be considered a reconstituted family (unless not all children have been adopted by the new partner), see paragraph 498. If not, he/she belongs to (3.1.2) or (3.1.3) or (3.2.2) or (3.2.3).

Extended family status (derived non-core topic)

530. It is suggested that countries interested in deriving data on extended families classify persons in private households by extended family status.

531. The following classification, on the basis of their relationship to the reference person of the household is recommended:

(1.0) Extended family reference person
(2.0) Husband/wife, registered (marital) same-sex partner, or cohabiting partner of reference person
(3.0) Child of reference person
(4.0) Other relative of reference person
(5.0) Not member of an extended family

532. Some countries may also wish to subdivide category (4.0) by type of relationship to meet specific requirements.

Characteristics of family nuclei

Type of family nucleus (derived core topic)

533. The family nucleus is defined in paragraph 493. Family nuclei should be classified by type.

534. The following classification of family nuclei by type is recommended:

(1.0) Husband-wife family, not reconstituted family
  (1.1) Without resident children
  (1.2) With at least one resident child under 25
  (1.3) Youngest resident son/daughter 25 or older

(2.0) Cohabiting couple, not reconstituted family
  (2.1) Without resident children
  (2.2) With at least one resident child under 25
  (2.3) Youngest resident son/daughter 25 or older

(3.0) Lone father
  (3.1) With at least one resident child under 25
  (3.2) Youngest resident son/daughter 25 or older

(4.0) Lone mother
  (4.1) With at least one resident child under 25
  (4.2) Youngest resident son/daughter 25 or older

(5.0) Reconstituted family
  (5.1) With at least one resident child under 25
  (5.2) Youngest resident son/daughter 25 or older.

535. This classification is recommended at the two-digit level, except for category (5.0) and sub-categories (5.1) and (5.2) on reconstituted families. Countries that do not wish to distinguish reconstituted families as a separate type of family nucleus should consider an amended version the classification, where categories (1.0) “Husband-wife family” and (2.0) “Cohabiting couple” would also include reconstituted families, and where the last category should be (5.0) "Other type of family nucleus", without further subdivision. Depending on national legislation and data needs, countries may include registered (marital) same-sex couple in category (1.0).

536. Countries that identify skip generation families are recommended to use an additional category, namely (6.0) Skip generation family.

537. It is suggested that countries that wish to subdivide the classification by age of female partner (for couple families) and/or by age of parent (for lone parent families) do so by using at least the following age groups: below 35; 35 to 54; 55 and over. These age groups are suggested because they are the significant groupings to use in family life cycle constructions. An additional subdivision showing the age of children is encouraged.

Type of reconstituted family (derived non-core topic)

538. A reconstituted family is defined in paragraph 498. Reconstituted families may or may not have one or more children that are common to both partners, in addition to at least one child that is non-common. Information should be collected on type of reconstituted family by number of non-common and common children.

539. The following classification of reconstituted families is recommended:

(1.0) Reconstituted family, one non-common child
  (1.1) And no common children
  (1.2) And one common child
  (1.3) And two or more common children

(2.0) Reconstituted family, two non-common children
  (2.1) And no common children
  (2.2) And one common child
  (2.3) And two or more common children

(3.0) Reconstituted family, three non-common children
  (3.1) And no common children
  (3.2) And one common child
  (3.3) And two or more common children

(4.0) Reconstituted family, four or more non-common children
  (4.1) And no common children
  (4.2) And one common child
  (4.3) And two or more common children

540. Some countries may wish to add further detail on the family status of the couple (married or cohabiting), on the age of the children, and/or whether the children are solely the woman's children, solely the man's children, or children from an earlier liaison of both the man and the woman.

How to identify reconstituted families

541. The identification of reconstituted families requires careful attention. Several approaches have been used in previous censuses and these are described below.

a) Household relationship matrix

A reconstituted family can be identified provided that each child in the household can specify his/her relationship to each adult so that he/she can be classified in one of the following three distinct categories:

(1.0) Child of both the adult person *and* his/her spouse/partner;
(2.0) Child of the adult person only; and
(3.0) Not the child of the adult person.

In category (1.0) it is assumed that the spouse/partner of the adult person is a member of the same private household.

b) The partial household relationship matrix

The household relationship matrix as described under (a) covers the relationships between all members of the household. For the purpose of identifying a reconstituted family it is sufficient to use only part of that matrix, namely that part that asks all children information on their relationship to all adults in the household, as specified by categories (1.0) to (3.0) above.

c) Relationship to the reference person of the household

In those cases where the reference person is a parent in a reconstituted family, that family can be identified when relationship to reference person includes the following three categories:

(1.0) Child of both the reference person and his/her spouse/partner;
(2.0) Child of reference person only; and
(3.0) Child of the reference person's spouse/partner only.

However, this approach will not cover reconstituted families in those cases where the reference person is not a parent in the reconstituted family.

d) Birth dates

Countries with a register-based census are recommended to identify reconstituted families on the basis of children's birth dates. More particularly, a matching between birth dates of all natural children ever-born to each adult household member on the one hand, and the birth dates of all children present in the household on the other, will facilitate identification of reconstituted families.

542. Countries with a register-based census are recommended to use the fourth approach for the purpose of identifying reconstituted families. Other countries are recommended to use the first or the second approach, provided that the household relationship matrix method is feasible. Otherwise, the third approach can be used, provided that the reference person is chosen carefully.

Type of extended family (derived non-core topic)

543. Extended families are defined in paragraph 501. Some countries may also wish to derive data by type of extended family.

544. The following classification is recommended:

(1.0) One-couple extended families
  (1.1) One couple with other relatives only
  (1.2) One couple with children and other relatives

(2.0) Two-couple extended families
  (2.1) Two couples only
  (2.2) Two couples with children but no other relatives
    (2.2.1) Two couples both with children
    (2.2.2) One couple with children, one without
  (2.3) Two couples with other relatives only
  (2.4) Two couples with children and other relatives
    (2.4.1) Both couples with children and other relatives
    (2.4.2) One couple with children, one without, and other relatives
(3.0) All other extended families

Size of family nucleus (derived core topic)

545. Family nuclei (as defined in paragraph 493) should be classified by size according to the total number of resident members of the family.

546. Family nuclei should also be classified according to the total number of resident children in the family.

Characteristics of private households

Type of private household (derived core topic)

547. Private households are defined in paragraph 479. Information on different types of private households should be collected.

548. The following classification of private households by type is recommended at the three-digit level:

(1.0) Non-family households
- (1.1) One-person households
- (1.2) Multi-person households

(2.0) One-family households
- (2.1) Husband-wife couples without resident children
  - (2.1.1) Without other persons
  - (2.1.2) With other persons
- (2.2) Husband-wife couples with at least one resident child under 25
  - (2.2.1) Without other persons
  - (2.2.2) With other persons
- (2.3) Husband-wife couples, youngest resident son/daughter 25 or older
  - (2.3.1) Without other persons
  - (2.3.2) With other persons
- (2.4) Cohabiting couples without resident children
  - (2.4.1) Without other persons
  - (2.4.2) With other persons
- (2.5) Cohabiting couples with at least one resident child under 25
  - (2.5.1) Without other persons
  - (2.5.2) With other persons
- (2.6) Cohabiting couples, youngest resident son/daughter 25 or older
  - (2.6.1) Without other persons
  - (2.6.2) With other persons
- (2.7) Lone fathers with at least one resident child under 25

(2.7.1) Without other persons
(2.7.2) With other persons

(2.8) Lone fathers, youngest resident son/daughter 25 or older
(2.8.1) Without other persons
(2.8.2) With other persons

(2.9) Lone mothers with at least one resident child under 25
(2.9.1) Without other persons
(2.9.2) With other persons

(2.10) Lone mothers, youngest resident son/daughter 25 or older
(2.10.1) Without other persons
(2.10.2) With other persons

(3.0) Two or more-family households

549. Depending on national legislation and data needs, countries may include registered (marital) same-sex couple in categories (2.1)-(2.3).

550. Countries that that identify skip generation families are recommended to use one or more additional categories under (2.0) for this family type.

551. Countries are recommended to classify one-person households by sex and five-year age group of the person in the household. This classification is recommended. A further breakdown by marital status is optional.

Other household classifications

552. The family-based classification recommended above involves expensive and time-consuming processing; it is therefore only derived for a sample of households in some countries and this limits its use. In earlier censuses, some countries used a supplementary classification of private households by type on the basis of the age and sex structure and size of household that could be derived easily and quickly on a 100 per cent basis at an early stage of the census processing and that could therefore be used down to the small area level. These countries found that these types of classifications complemented each other, and that the classification of private households by type, on the basis of age structure and size of household, had produced useful and interesting results. In view of this, the following classification is suggested on an optional basis, as a complement to the classification recommended in paragraph 548 above:

(1.0) One adult under legal retirement age without children
(2.0) One adult over legal retirement age without children
(3.0) Two adults both under legal retirement age without children
(4.0) Two adults one or both over legal retirement age without children
(5.0) One adult with one or more children
(5.1) Adult female with one or more children
(5.2) Adult male with one or more children
(6.0) Two adults with one child

(7.0) Two adults with two children
(8.0) Two adults with three children
(9.0) Two adults with four or more children
(10.0) Three or more adults with one or more children
(11.0) Three or more adults without children

553. Countries in which individuals have the legal right to retire during a certain age span (for instance, between ages 63 and 68) may use the highest legal retirement age (68 in the previous example) in categories (1.0) to (4.0).

Generational composition of private households (derived non-core topic)

554. In addition to deriving data on type of private household , some countries may also wish to derive information on the generational composition of private households, particularly in cases where the practice of living together in multi-generational households is considered to be sufficiently widespread or important.

Size of private household (derived core topic)

555. Private households should be classified by size according to the total number of resident members in the household.

Tenure status of households (core topic)

556. This topic refers to the arrangements under which a private household occupies all or part of a housing unit.

557. Private households should be classified by tenure status as follows:

(1.0) Households of which a member is the owner of the housing unit
(2.0) Households of which a member is a tenant of all or part of the housing unit
  (2.1) Households of which a member is a main tenant of all or part of the housing unit
  (2.2) Households of which a member is a sub tenant of an owner occupier or main tenant
(3.0) Households occupying all or part of a housing unit under some other form of tenure

558. This classification is recommended at the one digit level and optional at the two-digit level.

559. In view of the diversity of legal arrangements internationally, countries should describe fully in their census report or relevant metadata the coverage of each of the categories in the above classification. These descriptions should specify, where applicable, the treatment of households which (a) live in housing units as members of different types of housing co

operatives, (b) live in housing units rented from an employer under the terms of the contract of employment of one of the household members, and (c) live in housing units provided free of charge by an employer of one of the household members or by some other person or body. Some countries may wish to extend the recommended classification to distinguish these or other groups of households that are of interest for national purposes. Households that are in the process of paying off a mortgage on the housing unit in which they live or in purchasing their housing unit over time under other financial arrangements should be classed as (1.0) in the classification.

Single or shared occupancy (non-core topic)

560. Countries that use the housekeeping unit concept for defining households may wish to collect information on this topic directly through the census questionnaire, while others may prefer to derive the information from the non-core topic occupancy by number of private households (see paragraphs 642-643).

561. The following classification of private households living in conventional dwellings by single or shared occupancy is suggested for countries using the housekeeping unit concept of households:

(1.0) Households living alone in a dwelling
(2.0) Households sharing a dwelling with one or more other households

562. Category (2.0) may be subdivided to distinguish households sharing with one, two, or three or more other households. This category may also be sub divided, where feasible, to distinguish households which are voluntarily sharing a dwelling and those which are doing so involuntarily. This classification will not apply to countries that use the household dwelling concept of households, since all would appear in category (1.0) of the classification.

563. There is an increasing amount of accommodation which is being specifically provided for the elderly, the disabled, and other special groups which falls between an institutional and a private household, in that meals can be taken communally or by each household with its own cooking facilities. It is suggested that if at least half the population living in such accommodation possess their own cooking facilities, they should be treated as private households and, if possible, identified separately in the output.

Rent (non-core topic)

564. Rent is the amount to be paid in respect of a specified period for the space occupied by a household including, in some cases, local rates and ground rent. Payments for the use of furniture, heating, electricity, gas and water and for the provision of special services like washing, cooking, etc., should be excluded.

565. Concerning heating and hot water, the practices differ in different countries. In some countries the heating and/or hot water are normally included in the rent, in other countries they are not, while still in some other countries both practices exist in parallel. It would be important that countries which include "rent" in their census clearly describe whether the heating and/or hot water are included in the rent or not. The recommendation would be to exclude heating and hot

water expenditures from the rent. The ideal solution would be to produce the rent information separately without heating and hot water expenditures and to report the expenditures for heating, hot water and electricity separately.

566. Nominal rent paid may not correctly reflect the real rates. For instance, an individual housing allowance determined on the basis of a means test and paid by housing authorities directly to the landlord should be included in the rent; and if a public sector landlord on the basis of a means test charges a rebated rent, the full rent should be recorded. It may also be possible to ask questions such as whether the tenant is a relative or an employee of the landlord, whether he performs any function or office as part of his rent, etc., in order to appraise the actual rent paid.

567. If this topic is included in the census, it may be desirable to obtain information on the range within which the rent paid falls rather than on the exact amount paid.

Durable consumer goods possessed by the household (non-core topic)

568. With the purpose of obtaining some qualitative indicators on the households' levels of living, a question on durable goods in the possession of the household might be included. Examples of durable goods, which could be considered, include: washing machines, refrigerators, deep-freezers, ovens, televisions, fax machines and personal computers. Consideration could also be given to the household's accessibility to durable consumer goods rather than their possession.

Number of cars available for the use of the household (non-core topic)

569. It is suggested that this topic cover the number of cars and vans available for use by members of the household, including any car and van provided by an employer if available for use by the household but excluding vans used solely for carrying goods.

570. The following classification is recommended:

(1.0) No car
(2.0) One car
(3.0) Two or more cars

Availability of car parking (non-core topic)

571. It is recommended that this topic cover the availability of car parking facilities for use by the members of the household. Such facilities are restricted for census purposes to physical space for the exclusive use of the household, either owned by one or more household members, or for which a written or oral agreement exists between the owner of the physical space and the household member(s).

572. The following classification is recommended:

(1.0) No car parking available
(2.0) Car parking for one car available
(3.0) Car parking for two or more cars available
(4.0) Not applicable

Telephone and Internet connection (non-core topic)

573. Telephone and Internet connections reflect a household's ability to communicate with the rest of society using technology.

574. The following classification is recommended:

(1.0) Telephone(s) fixed in the housing unit
(2.0) Mobile cellular telephone(s)
(3.0) Both (1.0) and (2.0) are available.
(4.0) No telephone in the housing unit

575. It is also recommended to collect information on the availability of an Internet connection in the housing unit.

Chapter XII AGRICULTURE

Introduction

576. In this chapter, two non-core topics on agriculture are presented. These two alternative topics could be considered by countries that would like to collect in the population and housing census information that would facilitate the preparation of the frame of agricultural holdings in the household sector, for a subsequent agricultural census (see also paragraph 45).

577. With the first topic, at the household level, information is collected on whether any member of the household is engaged in own-account agricultural production activities at their place of usual residence or elsewhere. With the second topic, at the individual person level, information is collected to identify persons involved in agricultural activities during a longer period, such as a year.

Own-account agriculture production (non-core topic)

578. Some countries may want to use the population census to identify households engaged in own-account agricultural production to provide additional data for agriculture-related analysis of the population census and for use as a frame for a subsequent agricultural census or other surveys. In this case, information should be collected for all households on whether any member of the household is engaged in any form of own-account agricultural production activities.

579. Where possible, information should be collected separately on the type of activity under the broad headings of crop production and livestock production. For countries where household level agriculture is particularly important, additional information on the size (area) of the agricultural holding and the numbers of livestock by type may also be collected in the population census.

580. Where aquacultural production is important at the household level, information can also be collected on whether any member of the household is engaged in any form of own-account aquacultural production activities.

581. Agricultural production activities refer to Groups 011, 012 and 013 of ISIC (Rev. 3.1) namely:

Group 011: Growing of crops; market gardening; horticulture.
Group 012: Farming of animals.
Group 013: Growing of crops combined with farming of animals (mixed farming).

582. Aquacultural production activities refer to Class 0502 of ISIC (Rev 3.1), namely:

Class 0502: Aquaculture

583. An own-account worker in agricultural production (agricultural holder) is a person who is working on his/her own account (self-employed), or with one or more partners, and where that person has overall responsibility for the management of the agricultural production unit.

Characteristics of all agricultural jobs during the last year (non core topic)

584. The population census normally collects employment data in respect of a person's main activity during a short reference period, which may not cover all persons working in agriculture because of the seasonality of many agricultural activities. To overcome this problem, information should be collected for all economically active persons on all agricultural jobs carried out during the year preceding the population census day. The information to be collected should normally be limited to occupation and status of employment, but can be expanded to identify main or secondary occupation and time worked.

585. Information on occupation and status in employment of all agricultural jobs can be used as an alternative way of identifying households engaged in own-account agricultural production activities (see paragraphs 578-583), for use as a frame for an agricultural census. It can also provide additional data for agriculture-related analysis of the population census.

586. Where aquacultural production is important in a country, an additional topic on occupation and status in employment of all aquacultural jobs, carried out during the year preceding the population census day, can also be included and expanded to identify main or secondary occupation and time worked, as required.

587. An agricultural job is defined as a job in the agricultural industry as defined by Groups 011,012 and 013 of ISIC (Rev 3.1); namely:

Group 011: Growing of crops; market gardening; horticulture.
Group 012: Farming of animals.
Group 013: Growing of crops combined with farming of animals (mixed farming).

588. An aquacultural job is defined as a job in the aquacultural industry as defined by Class 0502: Aquaculture of ISIC (Rev 3.1).

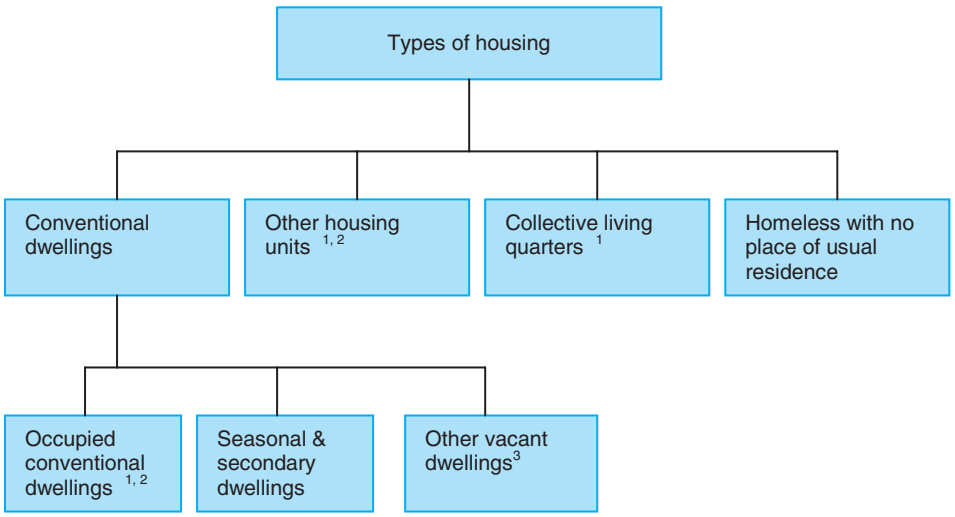
PART THREE: HOUSING TOPICS

Chapter XIII. LIVING QUARTERS, DWELLINGS AND HOUSING ARRANGEMENTS

Introduction

589. This chapter focuses on housing topics and on the relationship between the population and the living quarters. Housing topics can be defined as the characteristics of housing units and buildings that are collected on the occasion of the housing census. It should be noted that certain housing topics (for example the core topic of tenure status in paragraphs 556-559 above, and the non-core topics of single or shared occupancy, and rent) have been included amongst the characteristics of private households since the principle units of enumeration for these topics generally are households. For housing topics presented in this chapter there are two main units of enumeration: conventional dwellings and other housing units. An exception is the topic "housing arrangements" which describes the relationship between the population and the living quarters, and which can be referred to either the individuals or the households. Another exception is the topic "Household availability of unoccupied dwellings" Chart 4 shows all types of housing for the whole population.

Chart 4. *Different types of housing*



[1] Occupied conventional dwellings, other housing units and collective living quarters together represent "living quarters" and they must be used by at least one person as the usual residence in order to be counted as part of "living quarters".
[2] The sum of occupied conventional dwellings and other housing units represents "housing units".
[3] This group can also include dwellings with residents not included in the census (for example, foreign nationals temporarily present in the country).

590. Not all topics are relevant for different types of housing. Chart 5 below shows for each type of housing, whether the topic is core, non-core or not measured in the census. The reasons for not measuring a particular topic in the census vary. For some housing types, the topic is not relevant. An example of this is the homeless where many of the topics simply do not apply. In other cases the topic is difficult to measure in a census for a particular housing type. This is particularly so for those dwellings that are vacant at census time. Finally, the topic may not be appropriate or

necessary for particular types of housing arrangements. An example of this is the amenities questions in collective living quarters.

591. Throughout this chapter, topics are described as core or non-core based on how occupied conventional dwellings are to be treated. For other types of housing, it is necessary to refer to the following diagram to determine whether the topic is to be core, non-core, or not collected at all.

Chart 5. *Summary table on housing topics*

Topic	Enum. units[2]	Type of Housing and Housing Arrangements					
		Homeless[1]	Collective living quarters	Other housing units	Occupied conventional dwellings	Seasonal and secondary dwellings	Vacant dwellings
					(CONVENTIONAL DWELLINGS)		
				(HOUSING UNITS)			
			(LIVING QUARTERS)				
Housing arrangements	I, H	Core	Core	Core	Core	●	●
Type of living quarters	LQ	●	Core	Core	Core	●	●
Location of living quarters	LQ	●	Core	Core	Core	O	O
Occupancy status of conventional dwellings	D	●	●	●	Core	Core	Core
Availability of secondary, seasonal and vacant dwellings	H, D	●	●	●	●	Non-core	Non-core
Type of ownership	D	●	●	◐	Core	O	O
Occupancy by number of private households	HU	●	●	Non-core	Non-core	●	●
Number of occupants	LQ	●	Core	Core	Core	●	●
Useful floor space and/or number of rooms	HU	●	◐	Core	Core	O	O
Density standard		●	◐	Core	Core	●	●
Type of rooms	HU	●	●	Non-core	Non-core	O	O
Water supply system	HU	●	◐	Core	Core	O	O
Toilet facilities	HU	●	◐	Core	Core	O	O
Bathing facilities	HU	●	◐	Core	Core	O	O
Hot water	HU	●	◐	Non-core	Non-core	O	O
Sewage disposal	HU	●	◐	Non-core	Non-core	O	O
Kitchen	HU	●	◐	Non-core	Non-core	O	O
Cooking facilities	HU	●	●	Non-core	Non-core	O	O
Type of heating	HU	●	◐	Core	Core	O	O
Heating energy	HU	●	◐	Non-core	Non-core	O	O
Electricity supply	HU	●	◐	Non-core	Non-core	O	O
Piped gas	HU	●	◐	Non-core	Non-core	O	O
Air-conditioning	HU	●	◐	Non-core	Non-core	O	O
Position of dwelling in bldg.	D	●	●	◐	Non-core	O	O
Accessibility to dwelling	HU	●	●	Non-core	Non-core	O	O
Lift	D	●	◐	◐	Non-core	O	O
Type of building	D	●	●	◐	Core	O	O
Period of construction	D	●	◐	◐	Core	O	O
No. of floors in the building	D	●	◐	◐	Non-core	O	O
Materials of the building	D	●	◐	◐	Non-core	O	O
State of repair of the bldg.	D	●	◐	◐	Non-core	O	O

● Not measured or not applicable in the census.

O May be difficult to measure in a census. Some countries may collect or have available this information. Information on seasonal and secondary dwellings and the information on vacant dwellings concerning all the characteristics should be shown separately.

◐ Although the topic may be relatively easy to obtain, only some countries would be interested in this information for this type of housing. If information is collected, it should be shown separately for the different types of housing and collective living quarters.

[1] Including all persons who are not usual residents in any living quarter category (see paragraph 593)

[2] Enumeration units: I=Individuals; H=Households; LQ=Living Quarters; HU=Housing Units; D=Dwellings.

Definitions

Living quarters

592. Living quarters are those housing types, which are the usual residences of one or more persons. The concept of living quarters is qualified by the definitions of the main categories into which living quarters are divided.

593. The type of living quarters, together with the principal categories that they comprise are:

(1.0) Occupied conventional dwellings
(2.0) Other housing units – a hut, cabin, shack, caravan, houseboat, barn, mill, cave or other shelter used for human habitation at the time of the census
(3.0) Collective living quarters – a hotel, institution, camp, etc.

594. This definition of living quarters differs from the one given in the Recommendations for the 2000 Censuses of Population and Housing in the ECE region[54], where vacant conventional dwellings were also counted as part of living quarters.

Housing units

595. A housing unit is a separate and independent place of abode intended for habitation by a single household, or one not intended for habitation but used as a usual residence by a household at the time of the census. This includes occupied conventional dwellings and other housing units. For the purpose of international comparability, it is recommended that information is collected and presented separately for occupied conventional dwellings. Countries are encouraged to also collect information on 'other housing units' where possible, but this information should be presented separately from the same information collected for occupied conventional dwellings.

Conventional dwellings

596. Conventional dwellings are structurally separate and independent premises, which are designed for permanent human habitation at a fixed location and are not used wholly for non-residential purposes at the time of the census.

597. A dwelling or enclosure is separate if surrounded by walls and covered by a roof so that a person, or a group of persons, can isolate themselves from other persons for the purposes of sleeping, preparing and taking meals or protecting themselves from the hazards of climate and environment. It is independent when it has direct access from the street or from a public or communal staircase, passage, gallery or grounds. That is, when the occupants can enter and leave without passing through another household's accommodation.

598. A conventional dwelling is defined as a room or suite of rooms and its accessories (for example lobbies, corridors) in a permanent building or structurally separated part thereof which, by the way it has been built, rebuilt or converted, is designed for habitation by a single household all the year round, such as a house or apartment. It need not necessarily have a bathroom or toilet

[54] Recommendations for the 2000 Censuses of Population and Housing in the ECE region, United Nations New York and Geneva, 1998 IBSN 92-1-116685-3

available for the exclusive use of its occupants. For this purpose, "permanent building" is a building that was constructed to be structurally stable for at least ten years. Some countries may prefer to define permanence in terms of the method of construction or in terms of the building materials used. Detached rooms for habitation, which are clearly designed to be used as part of the dwelling, for example a room or rooms above a detached garage should be included.

599. Conventional dwellings can be classified as occupied, secondary, seasonal and other vacant dwellings. A conventional dwelling is defined as an occupied conventional dwelling if it is a usual residence of one or more persons. An occupant of a conventional dwelling is a person who has usual residence in the dwelling.

600. All conventional dwellings are counted for census purposes whether or not they are occupied (i.e. have at least one usual resident) – although most topics apply only to occupied conventional dwellings.

601. Because of their importance, conventional dwellings are further classified by occupancy and type of building. However, countries can also subdivide occupied conventional dwellings using the core housing infrastructure (presence of a kitchen, water supply, toilet, bathing and heating facilities) to classify how basic the housing is.

Other housing units

602. Some housing units do not come fully within the category of a conventional dwelling either because they are mobile, semi-permanent or improvised, or are not designed for human habitation, but which are nevertheless used at the time of the census as the usual residence of one or more persons who are members of one or more private households. All these are grouped under the term “other housing units”. Certain census topics will not apply to them. In the Recommendations for the 2000 Census of Population and Housing in the ECE region[55], these housing units were labelled as "non-conventional dwellings" was used.

603. The definitions applicable to other housing units are set out below:

a) A mobile housing unit is any type of living accommodation which has been made to be transported (such as a tent) or which is a moving unit (such as a ship, yacht, boat, barge or caravan) and which is designed for human habitation and is occupied at the time of the census, that is, it is somebody's usual residence. Nomad camps should be included in this category. Passenger quarters in means of transport such as passenger ships, railroad cars and aircraft should not be considered as other housing units and the persons who happen to be travelling in them at the time of the census should not be counted as living in these vehicles, ships or aircraft.
b) A semi-permanent housing unit is an independent structure such as a hut or a cabin which has been constructed with locally available crude materials such as wooden planks, sun-dried bricks, straw or any similar vegetable materials for the purpose of habitation by one private household and which is used as the usual residence of at least one person at the time of the census. Such units may be expected to last for only a limited time, although occasionally they may last for longer periods.

[55] Recommendations for the 2000 Censuses of Population and Housing in the ECE region, United Nations New York and Geneva, 1998 IBSN 92-1-116685-3

c) Other housing units designed for habitation comprise independent, makeshift shelters or structures such as shacks and shanties, which have been built of waste materials, which are used as the usual residence of at least one person at the time of the census.
d) Other housing units not designed for habitation comprise premises in permanent or semi-permanent buildings such as stables, barns, mills, garages, warehouses, offices, etc. which have not been built, rebuilt, converted or arranged for human habitation but are, nevertheless, used by one or more private households as their usual residence at the time of the census. This category also includes natural shelters such as caves, which are used by one or more private households as their usual residence at the time of the census.

604. Premises, which, not initially designed or constructed for human habitation but have been converted for the purpose of habitation by a private household and which fulfil the requirements of a conventional dwelling should not be included in this category, but instead classified as a conventional dwelling.

Collective living quarters

605. The category “collective living quarters” comprises premises which are designed for habitation by large groups of individuals or several households and which are used as the usual residence of at least one person at the time of the census. This category covers (a) hotels, rooming houses and other lodging houses; (b) institutions; and (c) camps. Once again, the category of "collective living quarters" differs from the other categories in the range of topics, which apply to it.

606. The definitions applicable to collective living quarters are set out below:

a) A hotel is a separate and independent set of premises comprising all or part of a permanent building or set of buildings which by the way it has been built, rebuilt or converted is designed to provide accommodation on a fee basis and which is used as the usual residence of at least one person at the time of the census. Motels, inns, boarding houses, pensions, rooming houses and other lodging houses are included in this category. If the accommodation occupied by a private household residing in a hotel or similar establishment fulfils the requirements of a conventional dwelling, it should be classified as such. Otherwise it should be classified with collective living quarters. Some countries may wish to consider distinguishing hotels and similar establishments as a separate category of the classification.
b) An institution is a separate and independent set of premises comprising all or part of a permanent building or set of buildings which by the way it has been built, rebuilt or converted is designed for habitation by a large group of persons who are subject to a common authority or regime or bound by a common objective or personal interest, and which is used as the usual residence of at least one person at the time of the census. Such collective living quarters usually have certain shared common facilities such as cooking and toilet facilities, baths, lounge rooms or dormitories. This category includes premises such as nurses' hostels, student residences, hospitals, sanatoria and convalescent homes, welfare institutions, monasteries, convents, military and police barracks, prisons and reformatories.
c) A camp is a separate and independent set of premises comprising all or part of a semi-permanent or temporary structure or set of structures which by the way it has

been built, rebuilt or converted is designed for the temporary accommodation of groups of persons with common activities or interests, and which is used as the usual residence of at least one person at the time of the census. Such collective living quarters usually have certain common shared facilities such as cooking and toilet facilities, baths, lounge rooms or dormitories. This category includes military camps, refugee camps and camps for housing workers employed by agriculture, logging, mining, construction or other enterprises.

607. Housing units located on the grounds or within a building containing a hotel, institution or camp should be separately identified and counted as dwellings, if they fulfil the requirements of a conventional dwelling.

Homelessness

608. A homeless person can be broadly defined as a person who, because of the lack of housing, has no other option than to sleep:

a) Rough or in buildings which were not designed for human habitation;
b) In emergency centres, or night shelters,
c) In emergency accommodation in hotels, guest houses or bed and breakfast;
d) In hospitals due to a lack of decent shelter; or
e) In accommodation temporarily provided by friends or relatives because of the lack of a permanent place to stay.

609. In practice, it is difficult to identify, and then to collect information on homeless people. For this group, it may be possible to make an estimate using different sources of information, such as, capacity of emergency shelters and information provided in social housing applications.

610. Homelessness is dealt with more fully in the recommendations for household and family characteristics in paragraphs 490-492, where the following groups are identified

(1.0) Primary homelessness (or rooflessness). This category includes persons living in the streets without a shelter that would fall within the scope of living quarters (see paragraphs 592-593)
(2.0) Secondary homelessness. This category may include persons with no place of usual residence who move frequently between various types of accommodations (including dwellings, shelters, institutions for the homeless or other living quarters). This category includes persons living in private dwelling but reporting “no usual address” on their census form.

611. With regard to housing and population censuses both these categories (roofless homeless and secondary homeless) should only include persons who are not usual residents in any living quarter category. This means that the persons are not occupants in conventional dwellings, in other housing units or in collective living quarters in such a way that these living arrangements constitute their usual residence. The majority of these persons can be considered homeless.

612. It is important to note that the above approach does not intend to provide a full definition of the "homeless". In this respect, compare paragraphs 490 and 491 above.

Housing topics

613. The majority of topics in this chapter refer to characteristics and amenities of housing units, which include occupied conventional dwellings and other housing units. A few topics refer to characteristics of living quarters, which include housing units and collective living quarters, and one topic refers to the housing arrangements of individuals and households.

614. For some of the topics, countries may wish to collect information also on unoccupied conventional dwellings (including seasonal and secondary dwellings and vacant dwellings), in addition to occupied conventional dwellings (see paragraphs 632-637). It may be difficult to obtain information on unoccupied dwellings as, in many cases, they may not appear on mailing lists of conventional dwellings or, as these dwellings are not permanently occupied, there may be no one present at census time. When information is collected on unoccupied conventional dwellings, the same classifications described in this chapter, or simplified modifications, are recommended.

615. Information on some of the characteristics of housing units could also be obtained for collective living quarters. However, given the nature of collective living quarters, in some cases the information may not be collected and presented in the same way as for housing units. For instance, with regard to toilet or bathing facilities, relevant information relates to how many people use on average the same facility.

616. Priority should always be given to obtaining information on occupied conventional dwellings, which should be presented separately. When information is also obtained for other types of housing (including other housing units, seasonal and secondary dwellings, vacant dwellings, and collective living quarters), it should be kept separate from information on occupied conventional dwellings and presented separately for each different type of housing. In this way it would be possible to assess the quality of life associated with the different types of housing. If information is obtained on collective living quarters, when possible it should be presented separately for the different categories of collective living quarters.

Housing arrangements (core topic)

617. Housing arrangements cover the whole population and is defined as the type of housing where a person is a usual resident at the time of the census – This covers all persons who are usual residents in different types of living quarters, or who do not have a usual residence and stay temporarily in living quarters, or are roofless persons sleeping rough or in emergency shelters when the census was taken.

618. The concept of ‘housing arrangement’ is introduced as a core topic to ensure that the whole population is classified according to all the units counted in the housing censuses including the consideration of those who are roofless.

619. The following classification by housing arrangement is recommended:

(1.0) Occupants (that is persons with a usual residence) living in a conventional dwelling

(2.0) Occupants (that is persons with a usual residence) living in an other housing unit – hut, cabin, shack, caravan, houseboat, or a barn, mill, cave or other shelter used for human habitation at the time of the census
(3.0) Occupants (that is persons with a usual residence) living in a collective living quarter – a hotel, institution, camp, etc.
(4.0) Persons who are not usual residents in any living quarter category, such as homeless or other people moving between temporary accommodations.

620. This classification can be considered at the level of individuals or households.

621. The number of occupants in the first three categories above is the number of persons who usually reside in the housing arrangement, including persons who may be temporarily absent at the census but excluding people temporarily present at the census that usually live elsewhere (see paragraphs 158-159 above for the definition of 'place of usual residence'). As the living arrangements under categories (2.0) and (3.0) may be of a different nature, countries may subdivide these categories further (see paragraphs 622-625).

Type of living quarters (core topic)

622. Living quarters are defined in paragraph 592. Type of living quarters relate to occupied conventional dwellings, other housing units and collective living quarters.

623. It is recommended that living quarters be classified by type as follows:

(1.0) Occupied conventional dwellings
(2.0) Other housing units
  (2.1) Mobile units
  (2.2) Semi-permanent units
  (2.3) Other units designed for habitation
  (2.4) Other units not designed for habitation
(3.0) Collective living quarters
  (3.1) Hotels, rooming houses and other lodging houses
  (3.2) Institutions
  (3.3) Camps

This classification is recommended at the one-digit level but optional at the two-digit level.

624. All occupied conventional dwellings and other housing units must be in use by at least one person as their usual residence at the time of the census in order to be counted as part of living quarters.

625. Since institutions can be of different nature, countries may subdivide further category (3.2) in the above classification to present detailed data on different categories of institutions. In this context, consideration could be given to the categories of institutional households presented in paragraph 484 and to the institutions listed in paragraph 606 b).

Location of living quarters (core topic)

626. Since living quarters other than mobile housing units are permanently located in the areas in which they are enumerated, it is possible to classify them to very detailed geographical areas, but the extent to which this is done will vary according to each country's needs for statistics for localities and the smallest civil divisions relevant. The definitions and classifications set out in paragraphs 181-188 above apply equally to this topic as to the place of usual residence core topic.

Occupancy status of conventional dwellings (core topic)

627. Occupancy status refers to whether or not a conventional dwelling is occupied by a usual resident at the time of the census. For those dwellings not occupied (i.e. vacant or in secondary use), the reason for not being occupied is classified.

628. It is recommended that conventional dwellings be classified based on the presence of usual residents and use. The following classification is therefore recommended

(1.0) Occupied conventional dwellings with one or more usual residents
(2.0) Conventional dwelling with no usual residents at time of census
  (2.1) Dwellings reserved for seasonal or secondary use
  (2.2) Vacant dwellings
    (2.2.1) Vacant for sale
    (2.2.2) Vacant for rent
    (2.2.3) Vacant for demolition
    (2.2.4) Other vacant or not known
(3.0) Conventional dwellings with residents not included in census (see para. 176)

629. The classification is recommended at the one- and two-digit level but optional at the three-digit level. Categories (2.2.1) and (2.2.2) may be subdivided to show the length of time the dwelling has remained unoccupied - as an indication of the situation in the housing market in the area concerned.

630. Dwellings that are used during the working week only by persons who are resident in another dwelling at their family place should be considered as part of (2.0) "conventional dwellings with no usual residents at time of census" because the persons using the dwelling are not usual residents of the dwelling.

631. To obtain information on dwellings, which are vacant, or in secondary or seasonal use may be difficult. A possible way of obtaining such information may be to collect the information from households who own, or rent on an annual basis, dwellings used for secondary or seasonal purposes, or other vacant dwellings.

Availability and characteristics of secondary, seasonal and vacant dwellings (non-core topic)

632. This topic relates to the household availability of secondary, seasonal and vacant dwellings (unoccupied conventional dwellings). It allows for the description of some features of unoccupied conventional dwellings. The number and types of features measured will depend on the individual requirements of countries.

633. The majority of topics in this chapter relate to occupied conventional dwellings. However, there may be interest in collecting information on, at least, some of the main characteristics of all conventional dwellings. In the core topic "Occupancy status of conventional dwellings" the number of all conventional dwellings is obtained including seasonal, secondary and vacant dwellings. In addition to this number, some countries may also wish to collect more information on unoccupied conventional dwellings to be able to produce more information than just numbers on the whole dwelling stock.

634. In this topic, countries may collect information on the household availability and characteristics of secondary, seasonal and vacant dwellings. The different features of unoccupied conventional dwellings can be described; for example, number of rooms and useful floor space, amenities (e.g. water, toilet, bathing, hot water, sewage system, heating, electricity) and type of building. The same classifications, or simplified modifications, described in paragraphs 659-719 are recommended. This information should be kept separate from information on occupied conventional dwellings and on other housing units.

635. Some countries may wish to relate the information on secondary and seasonal dwellings to the characteristics of the usual residence to get an overall view of the living conditions of households. In this context the distance and travel time from the usual residence can also be included.

636. In addition to dwellings fit for habitation year round, countries may also wish to collect similar information on premises that are not designed to be used year round (e.g. mountain huts, primitive cabins). If countries collect this information it must be ensured that the information on these premises is not included in the data on conventional dwellings and thus not in the dwelling stock.

637. The metadata must make the collection of data clear. The main approach should be that the information on secondary and seasonal dwellings covers dwellings at the disposal of one household on an annual basis. For other circumstances double counting must be avoided; this may occur for example where there is joint ownership of a secondary dwelling by two or more households.

Type of ownership (core topic)

638. This topic refers to the type of ownership of dwellings and not that of the land on which the dwelling stands. In the case of an owner-occupied dwelling, the type of ownership will be the same as the tenure status.

639. The following classification of dwellings by type of ownership is recommended:

(1.0) Owner-occupied dwellings
(2.0) In co-operative ownership
(3.0) Rented dwellings
  (3.1) In private ownership
  (3.2) Owned by the local or central government and/or by non-profit organisations
  (3.3) Mixed ownership
(4.0) Other types of ownership

640. This classification is recommended for occupied conventional dwelling at the one-digit level but optional at the two-digit level.

641. If subdivisions of category (1.0) or (2.0) are distinguished for national purposes, the types of ownership included in each of the subdivisions should be clearly described in the census reports.

Occupancy by number of private households (non-core topic)

642. This topic measures household occupancy of housing units. It is only relevant for countries which define housing units on a structural basis and which use the housekeeping unit concept of the private household (see paragraph 480)

643. The following classification of housing units by single or shared occupancy is recommended:

(1.0) Housing units occupied by a single household
(2.0) Housing units occupied by two households
(3.0) Housing units occupied by three or more households

Number of occupants (core topic)

644. The number of occupants of a living quarter is the number of people for whom the living quarter is the usual residence. A classification of the total number of living quarters according to the type (occupied conventional dwellings, other housing units and collective living quarters) and the number of occupants should be included (i.e. dwellings with one person, two persons, etc.). The average number of occupants per each type of living quarter should also be counted.

Useful floor space and/or number of rooms of housing units (core topic)

645. The definition of useful floor space used for census purposes should preferably be the same as that recommended in the *Programme of Current Housing and Building Statistics for Countries in the UNECE Region* (Statistical Standards and Studies No. 43). Useful floor space is defined in that document as the floor space measured inside the outer walls excluding non-habitable cellars and attics and, in multi-dwelling buildings, all common spaces. In the document mentioned above, another concept of living floor space is also used, which is defined as the total floor space of rooms falling under the concept of "room" as defined in paragraph 648 below. If this concept is used, it should clearly be mentioned and defined to avoid confusion in international comparisons. If possible, floor space should be used in preference to the number of rooms.

646. Together with information on useful floor space, countries should report the total useful floor space of housing units as well as the average useful floor space per housing unit. Information concerning useful floor space is recommended for housing units so that the density standard using this indicator can be calculated.

647. The following classification of housing units by area of floor space is recommended:

(1.0) Under 30 square metres
(2.0) 30 and less than 40 square metres
(3.0) 40 and less than 50 square metres
(4.0) 50 and less than 60 square metres
(5.0) 60 and less than 80 square metres
(6.0) 80 and less than 100 square metres
(7.0) 100 and less than 120 square metres
(8.0) 120 and less than 150 square metres
(9.0) 150 square metres and over

648. A “room” is defined as a space in a housing unit enclosed by walls reaching from the floor to the ceiling or roof covering, at least to a height of 2 metres above the ground, of a size large enough to hold a bed for an adult (4 square metres at least) and at least 2 metres high over the major area of the ceiling. Thus, normal bedrooms, dining rooms, living rooms, habitable cellars and attics, servants' rooms, kitchens and other separate spaces used or intended for habitation all count as rooms if they correspond to the definition above. A kitchenette (i.e. a kitchen of less than 4 square metres), verandas, utility rooms (for example boiler rooms, laundry rooms) and lobbies do not count as rooms; nor do bathrooms and toilets (even if they are more than 4 square metres). Rooms without windows, for example cellars below ground – however large – should not generally be counted, unless they are functionally used for domestic purposes – which might include large lobbies with writing tables or internal bedrooms with no windows for example.

649. Countries should report the total number of rooms and the average number of rooms per housing unit. Where a classification by number of rooms is used, the residual group should at least be limited to one which contains less than 10 per cent of the cases and, at most, the category 10 or more rooms. Classification by number of rooms is recommended for occupied conventional dwellings so that the density standard can be calculated, and optional for other housing units.

650. Rooms used only for business and professional purposes should preferably be counted separately as it is desirable to include them when calculating the number of rooms in a housing unit but to exclude them when calculating, for instance, the number of persons per room. Each country should indicate in its census report and/or relevant metadata how such rooms have been treated. At the lower quality end of dwellings, which constitute 'other housing units', there may be difficulties in defining rooms and useful floor space. Countries should then note the number of 'other housing units' for which information could not be collected. These housing units are to be excluded from housing density standards. Information on useful floor space and number of rooms for conventional dwellings should always be reported separately.

Density standard (derived core topic)

651. Useful floor space in square metres divided by the number of occupants in a housing unit is generally regarded as a better measure of density standard than the number of rooms divided by the number of occupants in a housing unit because rooms vary in size. However, in some countries the population may not know, with any degree of accuracy, the useful floor space. For comparative purposes it is better that countries collect both the number of rooms per occupant and the useful floor space in square metres per occupant where possible.

652. Overcrowding indicators can be calculated using a cross-tabulation of the number of occupants in housing units (that is, housing units with one person, two persons, etc), and the housing units classified by number of rooms (that is, one-room housing units, two-room housing units, etc.) or by number of bedrooms. In addition, the average useful floor space per occupant can be counted separately for housing units with one person, housing units with two persons and so on.

653. The following classification of useful floor space per occupant is recommended:

(1.0) Under 10 square metres per occupant
(2.0) 10 and less than 15 square metres per occupant
(3.0) 15 and less than 20 square metres per occupant
(4.0) 20 and less than 30 square metres per occupant
(5.0) 30 and less than 40 square metres per occupant
(6.0) 40 and less than 60 square metres per occupant
(7.0) 60 and less than 80 square metres per occupant
(8.0) 80 square metres and over per occupant

654. The following classification for number of rooms per occupant is recommended:

(1.0) Less than 0.5 room per occupant
(2.0) 0.5 and less than 1.0 room per occupant
(3.0) 1.0 and less than 1.25 rooms per occupant
(4.0) 1.25 and less than 1.5 rooms per occupant
(5.0) 1.5 and less than 2 rooms per occupant
(6.0) 2 and less than 2.5 rooms per occupant
(7.0) 2.5 and less than 3 rooms per occupant
(8.0) 3 or more rooms per occupant

655. If the information is collected for other housing units or for collective living quarters, it should be shown separately for conventional dwellings, other housing units and collective living quarters.

Type of rooms (non-core topic)

656. Some countries may wish to provide more specific information on overcrowding within housing units by providing information on the number of certain types of rooms within housing units.

657. Some countries consider that the number of bedrooms provides a more accurate indicator of overcrowding, especially where overcrowding is defined by number of bedrooms and age, sex and relationships of members within the household. Rooms, which are used as household living space, should not be included as a bedroom.

658. The count of the following categories of rooms for housing units is suggested:

(1.0) Reception and living rooms
(2.0) Bedrooms

Water supply system (core topic)

659. All countries should report separately on water supply systems for occupied conventional dwellings but information should also be collected for all other housing units.

660. The following classification of occupied conventional dwellings and of other housing units by type of water supply system is recommended:

(1.0) Piped water in the housing unit
  (1.1) From a community scheme
  (1.2) From a private source
(2.0) No piped water in the housing unit
  (2.1) Piped water available within the building but outside the housing unit
    (2.1.1) From a community scheme
    (2.1.2) From a private source
  (2.2) Piped water available outside the building
    (2.2.1) From a community scheme
    (2.2.2) From a private source
  (2.3) No piped water available

661. This classification is recommended at the one-digit level and optional at the two and three-digit levels.

662. A community scheme is one, which is subject to inspection and control by public authorities. A public body generally operates such schemes but in some cases they are operated by a co-operative or a private enterprise.

Toilet facilities (core topic)

663. All countries should report separately on toilet facilities for occupied conventional dwellings but information should also be collected for all other housing units.

664. The following classification of occupied conventional dwellings and of other housing units by type of toilet facilities is recommended:

(1.0) Flush toilet in the housing unit
(2.0) No Flush toilet in the housing unit
  (2.1) Toilet of other type in the housing unit
  (2.2) Flush toilet available within the building but outside the housing unit
    (2.2.1) Private (i.e. for the exclusive use of the occupants of the housing unit)
    (2.2.2) Shared (i.e. shared with occupants of another housing unit)
  (2.3) Flush toilet available outside the building
    (2.3.1) Private
    (2.3.2) Shared
  (2.4) Toilet of other type within the building but outside the housing unit
    (2.4.1) Private
    (2.4.2) Shared
  (2.5) Toilet of other type outside the building
    (2.5.1) Private
    (2.5.2) Shared

665. This classification is recommended at the one-digit level and optional at the two and three-digit levels.

Bathing facilities (core topic)

666. All countries should report separately on bathing facilities for occupied conventional dwellings but information on the availability of bathing facilities in other housing units should also be reported.

667. It is recommended that the following classification of bathing facilities be used:

(1.0) Fixed bath or shower in the housing unit
(2.0) No fixed bath or shower in the housing unit
  (2.1) Fixed bath or shower available within the building but outside the housing unit
    (2.1.1) Private

(2.1.2) Shared
(2.2) Fixed bath or shower available outside the building
(2.2.1) Private
(2.2.2) Shared
(2.3) No fixed bath or shower available

668. This classification is recommended at the one-digit level and optional at the two and three-digit levels. A fixed bath or shower is one, which has fixed connections to both a water supply and a waste pipe leading outside the building.

Hot water (non-core topic)

669. Information should be given separately on the availability of hot water to occupied conventional dwellings and, depending on the availability of information, to other housing units. Each country should define the concept of "hot water".

670. A classification similar to that given for the availability of bathing facilities would be appropriate.

(1.0) Hot water tap in the housing unit
(2.0) No hot water tap in the housing unit
(2.1) Hot water tap available within the building but outside the housing unit
(2.2) Hot water tap available outside the building.
(2.3) No hot water tap available

Type of sewage disposal system (non-core topic)

671. It is preferable that all countries collect information on the type of sewage disposal system in occupied conventional dwellings and report it separately. It is recommended that countries which use the building as a unit of enumeration or of data collection collect information on the type of sewage disposal system to which the building containing the housing unit is connected, and to cross-classify housing units by type of toilet facilities at the one-digit level and type of sewage disposal system.

672. The following classification of occupied conventional dwellings and of other housing units by type of sewage disposal system is recommended:

(1.0) Wastewater empties into a piped system connected to a public sewage disposal plant
(2.0) Wastewater empties into a piped system connected to a private sewage disposal plant (for example a septic tank built for a single housing unit or a small group of dwellings)
(3.0) All other arrangements (for example waste water empties into an open ditch, a pit, a cesspool, a river, the sea, etc.)
(4.0) No sewage disposal system

Kitchen (non-core topic)

673. It is suggested that where occupied conventional dwellings are classified by number of rooms they should also be classified by availability of a kitchen. A kitchen is defined as a room (or part of a room) of at least 4 square metres or two metres wide that has been designed and equipped for the preparation of the principal meals and is used for that purpose, irrespective of whether it is also used for eating, sleeping or living.

674. The kitchen is counted as a room in these recommendations (see paragraphs 648 and 675). Since certain countries apply different practices in this respect, it is important to be able to count the number of rooms both with the kitchen included and with the kitchen excluded. This will make international comparisons possible.

675. The definition of a kitchen adopted for the census should be given in detail in the relevant census report and/or metadata, and attention should be drawn to any deviations from the general definition given above. In particular, countries should indicate how they have classified dwellings in which meals are prepared in a room that is also used for other activities.

676. The following classification of dwellings by availability of a kitchen is recommended:

(1.0) With a kitchen
(2.0) With a kitchenette (that is a separate space with less than 4 square metres or two metres width of floor space)
(3.0) Without a kitchen or kitchenette
(4.0) Cooking facilities are provided in another type of room

Cooking facilities (non-core topic)

677. The 'kitchen' topic refers only to the availability of a kitchen or a kitchenette to the dwelling. In addition, some countries may wish to know what kind of equipment is used for cooking (for example stove, hot plate, fireplace, etc.), what other kinds of equipment are available (for example sink etc.) and whether electricity, gas, oil, coal, wood or some other fuel is used for cooking. Some of these items relate to the dwellings and others to the household.

Type of heating (core topic)

678. All countries should report separately the type of heating in occupied conventional dwellings.

679. The following classification of occupied conventional dwellings and of other housing units by type of heating is recommended:

(1.0) Central heating
  (1.1) Central heating from an installation in the building or in the housing unit
  (1.2) Central heating from a community heating centre
(2.0) No central heating

(2.1) Heating facilities or equipment available in the occupied conventional dwelling/other housing unit
  (2.1.1) Stove
  (2.1.2) Fireplace
  (2.1.3) Portable electric heater
  (2.1.4) Other
(2.2) No heating at all

This classification is recommended at the one-digit level and optional at the two-digit level.

680. A housing unit is considered as centrally heated if heating is provided either from a community heating centre or from an installation built in the building or in the housing unit, established for heating purposes, without regard to the source of energy. Some countries may wish to include additional sub-categories in this classification so as to obtain information, which can be used for energy planning (see also non-core topic main type of energy used for heating).

Main type of energy used for heating (non-core topic)

681. In addition to the core topic type of heating, some countries may also wish to collect information on the main type of energy used for heating purposes. If this information is available it should be reported separately for occupied conventional dwellings and other housing units.

682. The following classification of occupied conventional dwellings and of other housing units by main type of energy used for heating purposes is recommended:

(1.0) Solid fuels
  (1.1) Coal, lignite and products of coal and lignite
  (1.2) Wood and other renewable wood-based products
  (1.3) Other
(2.0) Oil
(3.0) Gaseous fuels
  (3.1) Natural gas
  (3.2) Other (including liquefied gases)
(4.0) Electricity
(5.0) Other types of energy used
  (5.1) Solar energy
  (5.2) Wind energy
  (5.3) Geothermal energy
  (5.4) Other

683. Countries should indicate in the census reports and/or relevant metadata how the main type of energy was selected in a housing unit where two types of energy were equally used for heating purposes.

Electricity (non-core topic)

684. Countries collecting information on the availability of electricity should report it separately for occupied conventional dwellings and other housing units.

685. The following classification of occupied conventional dwellings and of other housing units by the availability of electricity is recommended:

(1.0) Electricity available in the housing unit
(2.0) No electricity available in the housing unit

Piped gas (non-core topic)

686. Piped gas should be defined as natural or manufactured gas which is distributed by pipeline and the consumption of which is recorded by gas meters. Countries collecting information on the availability of piped gas should report it separately for occupied conventional dwellings and other housing units.

687. A classification similar to that suggested for availability of electricity would be appropriate.

(1.0) Piped gas available in the housing unit
  (1.1) For heating purposes
  (1.2) For cooking purposes
(2.0) No piped gas available in the housing unit

Air-conditioning (non-core topic)

688. Some countries may wish to record air-conditioning as a housing quality measure, but use and importance of this topic as a housing measure may vary across countries. If this information is collected it should be reported separately for occupied conventional dwellings and other housing units.

689. The following classification of air-conditioning is recommended:

(1.0) Air-conditioning available in the housing unit
  (1.1) Central air-conditioning from an installation in the building or in the housing unit
  (1.2) Independent air-conditioning unit(s) available in the housing unit
(2.0) No air-conditioning available in the housing unit

Position of dwelling in the building (non-core topic)

690. Some countries may want to collect information on the position of dwellings in the building. This information can be used as an indicator of accessibility to dwellings, possibly in conjunction with the non-core topic accessibility to dwelling. Countries collecting this information should report it separately for occupied conventional dwellings.

691. The following classification of dwellings by position in the building is recommended:

(1.0) Dwellings on one floor only
- (1.1) Dwelling on the ground floor of the building or lower (below ground level)
- (1.2) Dwelling on the 1st or 2nd floor of the building
- (1.3) Dwelling on the 3rd or 4th floor of the building
- (1.4) Dwelling on the 5th floor of the building or higher

(2.0) Dwellings on two or more floors
- (2.1) Dwelling on the ground floor of the building or lower (below ground level)
- (2.2) Dwelling on the 1st or 2nd floor of the building
- (2.3) Dwelling on the 3rd or 4th floor of the building
- (2.4) Dwelling on the 5th floor of the building or higher

692. For dwellings on two or more floors, information should be provided with reference to the lowest floor level of the dwelling.

Accessibility to dwelling (non-core topic)

693. Some countries may want to collect information on the accessibility to dwellings, in particular with reference to accessibility by persons with disabilities. Countries collecting this information should report it separately for occupied conventional dwellings and other housing units.

694. The following classification of accessibility to the front door of the dwelling is recommended, based on the presence of ramps, steps, and lifts:

(1.0) Access with no steps or ramp
(2.0) Access by ramp
(3.0) Access by disabled stair lift
(4.0) Access using lift only (though the building may have staircases as well)
(5.0) Access by using only steps
(6.0) Access only by using both lift and steps

Note: these categories are not mutually exclusive.

Lift (non-core topic)

695. It is suggested that information on the presence of a working lift in multi-storey buildings be collected. Countries collecting this information should report it separately for occupied conventional dwellings. The information should not be limited to the presence of a lift, but it should be indicated if the lift is operational for most of the time and is subject to regular maintenance. It could also be useful to collect information on the size of the lift (for the handicapped persons and ambulance transport), and if the lift goes to the ground floor.

696. Some countries may also want to collect information on the availability of a working lift with reference to the single dwellings in a building. In this case, information should be collected on whether or not the lift stops on the same floor, as is the case for the dwelling.

Characteristics of buildings containing dwellings

697. The building is an important unit since information on type of building and period of construction is required to describe the dwellings within the building and for formulating housing programmes. The topics included in this section refer to occupied conventional dwellings as unit of enumeration. The main interest is to report on the characteristics of occupied conventional dwellings and other housing units. The idea is not to describe the characteristics of buildings per se, but instead to count the number of dwellings in buildings with different characteristics.

698. These recommendations concern buildings that contain occupied conventional dwellings. A building is defined in this context as any independent structure containing one or more dwellings, rooms or other spaces, covered by a roof and enclosed within external walls or dividing walls which extend from the foundations to the roof, whether designed for residential or for agricultural, commercial, industrial or cultural purposes or for the provision of services. Thus a building may be a detached house, apartment building, factory, shop, warehouse, garage, barn, etc.

Dwellings by type of building (core topic)

699. Dwellings may be classified by type of building where they are placed. Countries collecting this information should report it separately for occupied conventional dwellings.

700. The following classification is recommended.

701. Number of conventional dwellings in:

- (1.0) Residential buildings
  - (1.1) Detached house (houses not attached to any other buildings)
    - (1.1.1) Detached houses with one dwelling
    - (1.1.2) Detached houses with two dwellings (with one above the other)
  - (1.2) Semi-detached house (two attached dwellings)
  - (1.3) Row (or terraced) house (at least three attached or connected dwellings each with separate access to the outside)

(1.4) Apartment buildings
(1.4.1) Apartment buildings with three to nine dwellings
(1.4.2) Apartment buildings with 10 or more dwellings
(1.5) Other residential buildings
(2.0) Non-residential buildings

702. For some purposes, it might be useful to classify the buildings by the number of dwellings a building contains. The relationship between the classification under paragraph 701 and the classification of buildings by the number of dwellings a building contains is:

a) Dwellings in one-dwelling buildings: (1.1.1)
b) Dwellings in two-dwelling buildings: The sum of (1.1.2) and (1.2)
c) Dwellings in three or more dwelling buildings: The sum of (1.3) and (1.4)

703. If no information on the classification under paragraph 701 is available, the breakdown of buildings by the number of dwellings a building contains might be obtained by direct enumeration.

Dwellings by period of construction (core topic)

704. Period of construction is measured in terms of the date when the building was completed. Countries should report separately the information for occupied conventional dwellings.

705. The following classification of occupied conventional dwellings by the period in which the construction of the building containing them was completed is recommended:

(1.0) Before 1919
(2.0) 1919 – 1945
(3.0) 1946 – 1960
(4.0) 1961 – 1970
(5.0) 1971 – 1980
(6.0) 1981 – 1990
(7.0) 1991 – 2000
(8.0) 2001 – 2005
(9.0) 2006 or later
(9.1) 2006
(9.2) 2007
(9.3) 2008
(9.4) 2009
(9.5) 2010
(9.6) 2011

706. This classification is recommended at the one-digit level, and optional at the two-digit level.

707. Consideration could be given to collecting information on this through an open-ended question. If no exact reply is obtained, the household should be asked to indicate the approximate

years (or year) in brackets following a classification, which could be aggregated, into the above specified classification.

Dwellings in buildings, which have undergone thorough reconstruction since they were originally built, may be classified to the period in which the building was originally constructed or to the period of latest reconstruction according to national requirements. Each country should indicate in its census report and/or metadata how such dwellings have been classified.

Dwellings by number of floors in the building (non-core topic)

708. The number of floors is counted from the ground floor upwards. Countries should report separately the number of floor levels for occupied conventional dwellings.

709. The following classification from ground floor upwards in a dwelling is suggested.

710. Number of dwellings located in buildings which have the following number of floors:

(1.0) 1 floor
(2.0) 2 floors
(3.0) 3 floors
(4.0) 4 floors
(5.0) 5 - 9 floors
(6.0) 10 -19 floors
(7.0) 20 floors or more

Dwellings by materials of which specific parts of the building are constructed (non-core topic)

711. Information on the materials of which specific parts of buildings containing dwellings are constructed may be used, in conjunction with data on other topics, for assessing the quality of dwellings. Some countries may wish to collect data on the materials of which the outer walls, the roof, the floors, etc. are constructed for this and other purposes. Countries should report separately the information for occupied conventional dwellings but information could also be collected for other housing units.

712. The following classification of dwellings by the main structural material of which the outer walls of the building containing them are constructed is suggested:

(1.0) Wood
(2.0) Unburnt clay (may be omitted by countries where this is not important)
(3.0) Burnt clay (bricks, blocks, panels, etc.), stone, concrete (in situ cast concrete , blocks, panels, etc.), or steel frame
(4.0) Prefabricated units – generally factory constructed and brought to the site and erected
(5.0) Other material (to be specified)
(6.0) Mixed materials (that is a combination of building materials)

713. When this classification is combined with that by period of construction, a classification providing data on the quality of dwellings is obtained. Some countries may wish to have only persons in owner-occupied dwellings respond to questions on this topic, particularly since many tenants and other respondents may not be able to respond accurately.

Dwellings by state of repair of the building (non-core topic)

714. This topic refers to whether the building is in need for repair and the kind of repair needed. Countries should report separately the information for occupied conventional dwellings and other housing units.

715. The recommended classification of dwellings according to the state of repair of buildings is as follows:

(1.0) Repair not needed
(2.0) In need of repair
  (2.1) Minor repair
  (2.2) Moderate repair
  (2.3) Serious repair
(3.0) Irreparable

716. Minor repair refers mostly to the regular maintenance of the building and its components, such as a cracked window or inoperative lock, or removing graffiti from the front wall and so forth.

717. Moderate repair refers to correcting moderate defects such as gutters missing on the roof (where they are normally used), large areas of broken plaster and stairways with no secure hand railing.

718. Serious repairs are needed in case of serious structural defects of the building such as missing covering material (for example shingles, tiles) cracks and holes in the exterior walls and missing stairways.

719. 'Irreparable' refers to buildings that are beyond repair, that is, with so many serious structural defects; it is deemed more appropriate to tear them down than to undertake repairs. This usually refers to buildings with only the frame left standing, without complete external walls and/or roof, windows, doors, etc.

PART FOUR: APPENDICES

Appendix I: List of proposed core and non-core topics for the 2010 round of population and housing censuses, CES countries

CORE TOPICS	NON-CORE TOPICS
Population to be enumerated	
Place of usual residence (para. 158)	
*Total population (derived) (*para. 171)	

Geographic characteristics	
Locality (derived) (para. 181)	*Urban and rural areas (derived)* (para. 189)
Location of place of work (para. 196)	Location of school, college or university (para. 198)
	Mode of transport to work (para. 199)
	Mode of transport to school, college or university (para. 201)
	Distance travelled to work and time taken (para. 202)
	Distance travelled to school, college or university and time taken (para. 203)

Demographic characteristics	
Sex (para. 205)	De facto marital status (para. 216)
Age (para. 207)	Total number of children born alive (para. 222)
Legal marital status (para. 209)	Date(s) of legal marriage(s) of ever married women: (i) first marriage and (ii) current marriage (para. 224)
	Date(s) of the beginning of the consensual union(s) of women having ever been in consensual union: (i) first consensual union and (ii) current consensual union (para. 225)

CORE TOPICS	NON-CORE TOPICS
Economic characteristics	
Current activity status (para. 237)	Usual activity status (para. 251)
Occupation (para. 270)	Providers of unpaid services, volunteers (para. 262)
Industry (branch of economic activity) (para. 274)	Type of sector (institutional unit) (para. 290)
Status in employment (para. 279)	Informal employment (para. 294)
	Type of place of work (para. 300)
	Time usually worked (para. 303)
	Time related underemployment (para. 307)
	Duration of unemployment (para. 312)
	Number of persons working in the local unit of the establishment (para. 314)
	Main source of livelihood (para. 316)
	Income (para. 323)
	Socio economic groups (derived) (para. 327)
Educational characteristics	
Educational attainment (para. 331)	Educational qualifications (para. 340)
	Field of study (para. 342)
	School attendance (para. 348)
	Literacy (para. 353)
	Computer literacy (para. 358)
International and internal migration	
Country/place of birth (para. 373)	Country of previous usual residence abroad (para. 382)
Country of citizenship (para. 375)	Total duration of residence in the country (para. 383)
Ever resided abroad and year of arrival in the country (para. 379)	Place of usual residence five years prior to the census (para. 390)
Previous place of usual residence and date of arrival in the current place (para. 384)	Reason for migration (para. 391)
	Country of birth of parents (para. 392)
	Citizenship acquisition (para. 395)
	Persons with foreign/national background (derived) (para. 398)
	Population groups relevant to international migration (derived) (para. 403)

CORE TOPICS	NON-CORE TOPICS
	Population with refugee background (derived) (para. 406)
	Internally Displaced Persons (IDPs) (derived) (para. 411)

Ethno-cultural characteristics	
	Ethnicity (para. 419)
	Language (para. 430)
	Religion (para. 437)

Disability	
	Disability status (para. 446)

Household and family characteristics	
Relationships between household members (para. 505)	*Same-sex partnerships (derived)* (para. 502)
Household status (derived) (para. 520)	*Extended family status (derived)* (para. 530)
Family status (derived) (para. 525)	*Type of reconstituted family (derived)* (para. 538)
Type of family nucleus (derived) (para. 533)	*Type of extended family (derived)* (para. 543)
Size of family nucleus (derived) (para. 545)	*Generational composition of private households (derived)* (para. 554)
Type of private household (derived) (para. 547)	Single or shared occupancy (para. 560)
Size of private household (derived) (para. 555)	Rent (para. 564)
Tenure status of households (para. 556)	Durable consumer goods possessed by the household (para. 568)
	Number of cars available for the use of the household (para. 569)
	Availability of car parking (para. 571)
	Telephone and internet connection (para. 573)

CORE TOPICS	NON-CORE TOPICS
Agriculture	
	Own-account agricultural production (household level) (para. 578)
	Characteristics of all agricultural jobs during the last year (individual level) (para. 584)

Living quarters, dwellings and housing arrangements[56]	
Housing arrangements (para. 617)	Availability and characteristics of secondary, seasonal and vacant dwellings (para. 632)
Type of living quarters (para. 622)	Occupancy by number of private households (para. 642)
Location of living quarters (para. 626)	Type of rooms (para. 656)
Occupancy status of conventional dwellings (para. 627)	Hot water (para. 669)
Type of ownership (para. 638)	Type of sewage disposal system (para. 671)
Number of occupants (para. 644)	Kitchen (para. 673)
Useful floor space and/or number of rooms of housing units (para. 645)	Cooking facilities (para. 677)
Density standard (derived) (para. 651)	Main type of energy used for heating (para. 681)
Water supply system (para. 659)	Electricity (para. 684)
Toilet facilities (para. 663)	Piped gas (para. 686)
Bathing facilities (para. 666)	Air-conditioning (para. 688)
Type of heating (para. 678)	Position of dwelling in the building (para. 690)
Dwellings by type of building (para. 699)	Accessibility to dwelling (para. 693)
Dwellings by period of construction (para. 704)	Lift (para. 695)
	Dwellings by number of floors in the building (para. 708)
	Dwellings by materials of which specific parts of the building are constructed (para. 711)
	Dwellings by state of repair of the building (para. 714)

[56] See paragraph 591 and following chart to determine whether the topic is core, non-core or not recommended for different types of housing.

Appendix II: Alternative approaches to census-taking

Traditional census

Description

1. The traditional census is the total process of collecting, processing, evaluating, disseminating and analyzing demographic, economic and social data pertaining, at a specific time, to all persons in a country or in a well-delimited part of a country. It is taken in a given limited period immediately after a given reference date (census day). Data are generally recorded on census questionnaires.[57] There are two major methods of enumeration: canvasser (or enumerator) method and householder self-enumeration method.

2. In the canvasser/enumerator method information for each individual (in a population census) and for each set of living quarters and the occupants therein (in a housing census) is collected and entered in the questionnaire by a census official designated to perform this operation in a specified area during a specified and usually short period of time to meet the requirements of universality and simultaneity.

3. In the householder/self completion method, the major responsibility for entering the information is given to a person in the unit being enumerated (usually the head of the household/ or reference adult person), although the questionnaire is usually distributed, collected and checked by a census official.

4. In some countries, postal distribution of the questionnaire, with or without postal return, is used in conjunction with the householder method. This mail-out and mail-back procedure can be used exclusively or combined with on-site checking by a census official.

Necessary conditions

5. Both short and long forms may be used within the context of traditional censuses, or there may be an exhaustive collection of all characteristics data. If the former approach is used, the short form contains only questions intended for universal coverage, while the long form is used to collect information only from a sample of households and population. This form usually contains detailed questions on a particular topic in addition to covering complex topics such as fertility. Both are utilized during the same time frame of the census, with no content data collected outside of that time frame.

6. This approach to census-taking is the one utilized by most countries. It has a long-standing tradition of use, and is fully described in the United Nations' *Principles and Recommendations for Population and Housing Censuses*.

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[57] There have been some attempts at the use of use of handheld computers for data collection: in a test census taken in The former Yugoslav Republic of Macedonia in October 1999 and in the 2003 Oman Census in Muscat Governorate, (the largest region in the Sultanate). The results were very good, and some operations (such as auditing, coding, and data entry) necessary when paper questionnaires are used were eliminated. However, the use of these devices depends on the financial situation, the engagement of enumerators with computer skills, and obtaining equipment for data transfer in census district centres.

Advantages and disadvantages

7. The main advantages of this approach are in providing a snap shot of the entire population at a specified period and the availability of data for relatively small areas.

8. Traditional censuses have been singled out as the most elaborate, complex and costly data collection activity that national Statistical offices undertake. In addition to costs, this complex task requires full awareness and cooperation of the public to participate in it. Because of their complexity and expense, such censuses are usually mounted only once every five or ten years, so that the latest census data available is often several years out of date.

9. Each enumeration approach (canvasser or self-enumeration) also has its own advantages and limitations. The canvasser method is the only method that can be used in largely illiterate populations or in other population groups that may be unwilling to complete the census forms themselves, or find it difficult to do so, but requires a huge number of staff for field enumeration.

10. On the other hand, in countries where literacy is virtually universal and educational attainment relatively high, the householder method may often yield more reliable results at substantially lower costs, particularly if a mail-out/mail-back procedure can be used. However, the postal services should be used to distribute the census forms only when a comprehensive up-to-date and nationally agreed list of addresses is available or can be prepared.

11. It may sometimes be desirable to rely on one method for enumerating most of the population and to use another method in certain areas or for special groups[58] of the population. However, overly complex designs should be avoided.

Implications for the various phases of census-taking

12. The decision regarding the method of enumeration to be employed should be taken at an early stage on the basis of thorough testing of the various alternatives in terms of their costs, the quality of the data produced and their operational feasibility. Even where a method has been followed traditionally, it is well to periodically reassess its relative advantages in light of current census needs and changing techniques. An early decision is required because the method of enumeration used affects the budget, the organizational structure, the publicity plan, the training programme, the design of the questionnaire and, to some extent, the kind of data that can be collected.

13. Timing and length of the enumeration period is of great importance. The main consideration should be to select a period in which the census is likely to be most successful and to yield the most useful data. This may depend on a number of factors. Firstly, it is necessary to avoid those seasons in which it will be difficult to reach inhabited areas, or in which the work will be particularly arduous, because of severe or extreme weather conditions. Secondly, a time should be chosen when most people are staying at their place of usual residence; such a choice

[58] See more in World Recommendations: *Principles and Recommendations for Population and Housing Censuses,* Statistical Papers, Series M, No. 67/ Rev.1, United Nations, part II. Planning, organization and administration of population and housing censuses

will simplify the census operations both in a de jure and in a de facto enumeration, and it can make the results of a de facto enumeration more meaningful. The season of peak agricultural activity should be avoided because of the difficulty of contacting persons who work late every day and who may even stay on their land at night if the land is far from home. Great traditional festivals, pilgrimages and fasting periods are also unsuitable times for the census enumerator.

14. It is also very important that the timing of the census should not overlap with major political events such as state or local election campaigns, since the population may confuse the two events and be less responsive to the enumerator at home. Also it is very important that the census should be taken within a stable political and socially secure environment in the country. In times of political or military instability the public are less likely to be compliant and, the security of enumerators may not be guaranteed. The level of security should allow enumerators to reach all parts of the country safely.

15. Once a census has been taken successfully and the census date is found to have been on the whole satisfactory, the next census should be taken at the same time of the year, unless there are strong reasons for changing this date. A regular census date enhances the comparability of the data and facilitates analysis and also provides administrative discipline, motivating all those involved in the census to make necessary preparations in a timely manner.

16. It is desirable to keep the enumeration period short in order to avoid double counting and omissions, which can occur in spite of a single reference date. On the other hand, the shorter the enumeration period, the greater the number of field staff that have to be employed. This increases the cost and may lower the quality of the data. How these different considerations should be reconciled depends on the size and nature of the country and on the resources at its disposal.

17. In recent censuses, most developing countries have allowed about one to 10 days for the training of enumerators, while the enumeration period has generally varied from a few days to two or three weeks. Short periods are often feasible in small countries while longer periods may be necessary in large countries with poor communications.

Implications for content

18. The traditional approach to census-taking creates fewer content limitations than those that might be found with a register-based approach. However, overall content in this approach must result from a careful balance between the statistical requirements of users and the desire to minimise respondent burden.

Traditional enumeration with yearly updates of characteristics

Description

19. This design is a variation on the traditional census design and focuses on counting the population and collecting only the basic demographic data in the census year. A large household survey collects and tabulates detailed demographic, social, economic, and housing data every year (or every non-census year) throughout the decade, replacing the need for a census long form to collect this detailed data from a sample of the population.

20. The survey samples a percentage of addresses each year to approximate a long form sampling rate over a certain period of the census cycle, such as four or five years. To improve the reliability of the estimates for small governmental units, a larger proportion of addresses are sampled. In the United States, for example where this approach has been implemented, annual sampling rates at various geographic levels range from about 1.7 percent to about 10 percent. Over a five-year period, the sampling rates range from about 8.5 percent to about 50 percent. Peru uses an annual average sample of 5 per cent, resulting in a 20 per cent sample after four years, with reliability of the estimates at the smallest civil divisions.

21. The sample is cumulated over time to produce the lowest levels of geographic detail similar to the long form sample in the traditional census. Again in the United States, five years of data are required for areas with a population of less than 20,000. Three-year estimates are produced for areas with populations of 20,000 or greater. Single year estimates are produced for areas of 65,000 population or greater. In Peru, quarterly estimates are produced for 25 civil divisions and annual results are produced for 195 civil divisions.

22. The survey data must be weighted to produce reliable and useable estimates. Survey data are weighted to reflect the sample design, to adjust for the effects of nonresponse, and to correct for survey undercoverage or overcoverage. This final weighting adjustment helps to ensure that estimates of the characteristics are comparable to the standard, which is the periodic census. Once the final weights are applied, the statistics are generated, including population estimates, proportions, means, medians, and ratios.

Necessary conditions

23. Among a number of necessary conditions, this approach requires the agreement of census stakeholders and government policy makers to introduce such a major variation in design. Users of traditional census data products must be willing to transition from once-a-decade products to a new set of annually updated multi-year products. This approach requires substantial, annual funding, rather than funding clustered in a one- or two-year period once a decade.

24. Operationally, this approach requires an address frame for sample selection. It is critical that this frame be maintained throughout the decade. Keeping the frame up-to-date from year-to-year, especially in rural areas, is critical.

25. Conducting a traditional enumeration with yearly updates of characteristics requires an ongoing high level of professional staff throughout the decade to support the implementation of the survey. In addition, it requires staff to oversee a program of early and comprehensive planning, development and testing designed to continually seek efficiencies in the management and conduct of the short form only component of the census.

Advantages and disadvantages

26. The primary impetus for this approach is twofold - to provide more frequent and relevant data on the population than is available when a census is conducted only once a decade and to reduce the operational risks associated with the census. Such a program is costly and technically difficult to mount, and requires a multi-year program of comprehensive planning, development, and testing. Particularly in countries with legal requirements for complete counts of the population at intervals, the complete count component of the census design is crucial.

27. In a traditional census design, even when detailed census data are released as soon as possible after the census year, data users are required to work with results that are, on the average, seven years old. The production of timely data to support decision-making at all levels of government is a major motivation for this approach. These timely and, therefore, more relevant data can greatly enhance the value of the information to government officials, policymakers, and businesses that are currently obtained from a once-in-a-decade long form.

28. Removing the responsibility for the collection of detailed data from a sample of the population as part of the census will allow the short-form-only census to focus more directly on meeting the most basic census objectives.

Implications for the various phases of census-taking

29. This design transfers to the ongoing survey the responsibility to provide estimates of detailed demographic, socioeconomic and housing data throughout the decade. This transfer eliminates the data collection, data processing and tabulation responsibilities for these data from the census. By removing the need for a long form during the census year (which requires collecting information on many more questions from a sample of households), census planners may be able to focus more on coverage improvement in the census year itself. Innovation, including the use of some technologies, may become possible when the census task is limited to short-form data collection. Eliminating the need for the census to capture, process, and tabulate detailed data will reduce the processing workload and allow the census to develop processing methods specific to the short-form requirements. Tabulation and release of census data will also be dramatically reduced.

30. Many components of the census now must be coordinated across the census (during the years surrounding the census) and the survey (throughout the decade). This includes outreach, promotion, and partnership programs designed to increase public cooperation and awareness. It also includes maintaining a master file of addresses that must be updated regularly, rather than established for a once-in-a-decade endeavor.

31. The fact that the survey is ongoing throughout the decade provides an opportunity to develop a strong foundation to support data collection during the year of the census. Information obtained from the survey itself (for example, language spoken) can be of great use in planning for data collection in the census year. The survey-taking experience can be used to better allocate resources during the census.

Implications for content

32. Just like the census long form, the ongoing survey can provide data on a wide variety of subjects including: families, children, and the elderly; income and poverty; educational attainment and school enrolment; work and unemployment; disability; immigration and language ability; housing; and many more. In the most obvious approach, the content for the survey is defined to be the content of the census long form. Requirements for adding or revising content must be clearly defined. A survey that relies on multiple years of sample data to support the production of estimates cannot easily accommodate content changes.

For more information

http://192.91.247.58/stats/documents/2004/11/censussem/wp.1.e.pdf
http://www.census.gov/acs/www/

Register-based census

Description

33. The development of a register-based population census system is usually a long process, which might take many years or even decades. Many countries will choose to continue to use a traditional census in some way even when they start moving towards a register-base approach. The first data items taken from registers can be addresses, basic demographic data items, civil registration information, and income data. Usually the share of administrative data increases stepwise census by census. It is vital that countries have introduced a common identification number before they can combine data from different administrative sources.

34. The register-based population census system is built around a set of basic registers that contain comprehensive data on the units that are to be described in the population and housing census. These registers may include the data maintained in a population register and a register of buildings and dwellings, as well as data from a business register. Such registers cover all people resident in the country, the buildings and dwellings in the country and all the business companies (including all the institutions in the public sector) and their establishments. All statistical units can be linked to one another by means of the identification systems: persons can be linked to household-dwelling units and to the dwellings and buildings in which they live. while employed persons can be linked to their employers. Similarly, all units can be located on the maps by using local area codes or map co-ordinates.

35. Population census data are produced using the method of register estimation, in which several register sources are used simultaneously to define for each statistical unit the value of the relevant variable. The decision rules should be defined in such a way that the data they produce come as close as possible to the data collected by means of questionnaires. Data from earlier population censuses and register data from the same point of time are also consulted in constructing these rules. These include rules on prioritisation between different sources in the event of contradictory data.

Necessary conditions

36. Legislation provides a key foundation for the use of administrative data sources for statistical purposes. National legislation must allow the use of existing administrative data sources for statistical purposes rather than the re-collecting of data whenever it is possible. Such legislation should also give powers to Statistical Offices to access administrative data on unit level with identification data and to link them for statistical purposes. Furthermore, the appropriate legislation should provide a detailed definition of data protection.

37. It is also extremely important that the general public appreciates and understands the benefits of using register sources for statistical purposes and that there is broad public acceptance of the use of these administrative data for purposes of statistics production. Open discussion and

debate, explaining the rationale and benefits of register use must always be considered a key principle. It is also important that the national register legislation is up-to-date and the activities of register authorities are open and transparent.

38. One major factor that facilitates the statistical use of administrative data records is the application of unified identification systems across different sources. The data linkage must occur at the individual level. In the absence of such unified systems it is extremely difficult and laborious, if not impossible, to link different registers, which is absolutely central to register-based statistics production.

Advantages and disadvantages

39. Reduced costs are without question the biggest advantage of using administrative register sources over the more traditional census approach. With the introduction of the register system, particular census statistics (such as employment, buildings and dwellings and housing conditions) can be compiled on an annual basis. A further key advantage of administrative sources is that the need for processing is confined to those data items that have changed. It is cheaper to collect information just once and to process that information only if and when it changes, such as for example changes of address. Nationality, religion and marital status, completed education and degrees change quite seldom. In most dwellings the floor area and number of rooms almost never changes.

40. Register statistics are obtained from all geographical areas, since registers aim to cover the target population in its entirety, and because detailed geographical information can be obtained for all geographic units, municipalities, freely defined sub-areas and map grids of different sizes.

41. Register-based statistics are generally available every year. Growing information needs create new pressures to step up the production of regional statistics, but regional data from a decennial population census may not be up to date enough to satisfy those needs. Again, this is a major asset of using register sources, allowing for more frequent statistics production. The dawn of register-based production also meant that many key statistics (including population and population trend statistics, family statistics, industry and employment statistics, building and housing statistics, and statistics on educational structure) may become available on an annual basis.

42. The use of administrative data sources, however, involves certain drawbacks that need to be taken into account. One such drawback is the fact that register-based descriptions have to rely exclusively on the information contents that can be formed on the basis of the registers available. This imposes some restrictions with respect to the variables that are available for analysis and may also undermine both internal and international comparability.

43. The use of registers also adds to the statistical agency's dependence on register authorities as well as on any changes in legislation and administrative practices. It is therefore crucially important to have close collaboration with the relevant authorities so that information on any such changes reaches the agency as soon as possible.

Implications for the various phases of census-taking

44. Register based systems can create problems with reference periods and consistency. For reasons of statistical reliability it is important that change events are accurately recorded according to their true date. Information on dates of death and birth is usually accurate because it is recorded on the basis of certificates issued by the authorities, in most cases the reference time point is therefore right. Accurate information is also usually obtained on the dates of employment, unemployment and pension periods, whereas for periods of studying the dates are less accurate. In the event of a change of address the person who is moving may neglect to provide notification altogether, or be late in doing so.

45. The linking of a person's data on such variables as place of work, occupation, and income from different register sources may sometimes give rise to consistency problems, that is it is not always clear that the information on occupation and branch of industry, for instance, describe the same period of employment.

46. There might be some items in the register system where data linking has caused particular difficulty. The data on employment pension, for example, may not use the same business code as the taxation and business registers, and therefore extra work is needed to link individuals to the company where they are employed. As another example, the linking of business enterprises to the building where they are based is not always straightforward since the company address data may not necessarily be fully accurate, or they may differ from the information in the buildings register.

Implications for content

47. There are some data items that may have to be dropped from the register-based population census system because the relevant information is simply not available from any register: these may include household composition and family relationship, mode of transport to work, part-time work and mobile work.

48. Furthermore, without a traditional census, there is no longer any collection tool for ad hoc needs. In many countries the population census system is an important tool of data collection that is used to meet emerging information needs. This flexibility is lost when data are no longer collected by means of questionnaires.

Combination of register-data with survey data

Description

49. Some countries create census type statistics by using registers and other administrative sources, together with information from sample surveys. This option, as used by the Netherlands is open to those countries that do not have all census information available in registers. If this option is chosen, some census tables can be produced by simply counting from register information, while for other census tables information from surveys has to be weighted to population totals. This is, however, only one way to merge register and survey data to obtain census-type results. Israel, for example, uses a population register as the basis for a 100 percent

enumeration, and a sample survey to evaluate the accuracy of the register addresses and collect the traditional long-form census data.

Necessary conditions

50. A country can only choose the option of a register-based census with sample surveys if all census information is available in the different sources. Moreover, it is a prerequisite to be able to link the information from the different sources at the record level. Before one can start producing tables in a register-based census with sample surveys, micro-integration of the different sources is important. In the micro-integration process the data are checked and incorrect data are adjusted.

Advantages and disadvantages

51. The advantages of a register-based census with sample surveys are that it is much cheaper than a census with interviewing all inhabitants and that little extra burden is put on the population of a country. A traditional census can meet with many privacy objections against the collection of integral information about the population living in the country. This increases the non-response problem. There are almost no objections to a register-based census and the non-response problem only plays a role in the surveys of which the data are used. If non-response can be corrected in a survey, it will certainly be possible to correct for the selectivity of that survey in the census where it is used. It also may be the case that micro-integrated data will provide highly reliable results, because they are based on a maximum amount of information. Also the coverage of sub-populations will be reliable because when data are missing in one source, another source can be used. Another advantage of micro-integration is that there may be less reason for confusion among users of statistical information, since there will be, for example, one figure on each socio-economic phenomenon, instead of several figures depending on which sources have been used.

52. A disadvantage is that it involves more work to produce the tables from the microdata as weighting problems may arise. Moreover, it may be more difficult to get public awareness and use of the census results when there is no longer a single census event on which the public may focus its attention. Other disadvantages may be a lack of transparency (no one external to the process may be able to reproduce the information), data quality, and dissemination of the results.

Implications for the various phases of census-taking

53. It would be expected to take longer to instigate a register-based census than a traditional census since it does not make sense to start the census project until all sources are available. Nevertheless, once off the ground a register-based census is normally quicker to produce results as it has the advantage that the incoming census forms do not need to be checked and corrected. However, one must realise that for some variables only sample information is available, which means that it is sometimes impossible to meet the level of statistical and geographical detail required in some tables.

Implications for content

54. Some required variables have to be constructed from different sources and information in registers may be rather different from the result obtained if all the people in the country were interviewed. This may damage the comparability of the results among countries and over time. Registers have, on the other hand, the advantage that complete information is available. It is crucial that statistical bureaus make use of registers where they are relevant for the census.

Combination of register-based approach with complete enumeration

Description

55. While many countries utilizing the traditional approach start with administrative lists, such as address lists, the essence of this type of census approach is to make use of more complete population registers relevant to a census (to reduce costs and to lessen the response burden), but complemented with an exhaustive statistical operation, with a twofold aim: to improve the accuracy of population counts, on one hand, and to obtain the census variables not available from the combination of registers, on the other hand. Countries using this approach must be cognizant of the fact that, as discussed in Chapter I (paragraph 17), if the data collection results are used to update population registers, this may violate one of the Fundamental Principles of Official Statistics stating that "individual data collected by statistical agencies…are to be used exclusively for statistical purposes." Legislative requirements to support this approach are discussed in paragraph 58 below.

56. There are two major differences from the most similar census type (combination of administrative registers with sample surveys):

a) Variables not available from administrative registers are not obtained by sample surveys but through an exhaustive field operation, as in a classical censuses; and
b) The population count based on the population register is not immediately accepted as the best possible, but checked and corrected against reality through the complete enumeration. The census is thus an exhaustive evaluation of the coverage of the population register, and allows for the reduction of both under-coverage (typical of the classical censuses) and over-coverage (typical of some population registers).

Necessary conditions

57. The main technical and legal conditions for this census type to be suitable are:

a) Availability of a population Register. The Register need not to be completely reliable for demographic purposes, but it must be reliable enough as an initial solution for how many people will be counted and where; and
b) Other administrative registers usable for census purposes. Examples include tax files, social security files, public registers of unemployed, educational qualification records, and so on.

58. This type of census, with regard to its relationship with the population register, has two variants, depending on whether it is simply the case that the census is supported by the

population register, or whether the benefits are mutual, such that the population register uses the census operation to update and improve its information. In the latter case, two additional conditions are required:

a) The specific legislation governing the population register must expressly provide such use of the census operation to update the population register – while preserving the statistical confidentiality in the strictly census-related information; and
b) Technical measures must be applied to ensure that the population register information to be checked, which will be used for both (administrative and statistical purposes), is treated in a proper and different way, all over the whole operation, from the rest of census information, which may only be used for statistical purposes. For example, in questionnaire design, this may be achieved by isolating the population variables on specific pages; and in the processing phase, files containing personal identifications should not contain statistical information, and so on.

Advantages and disadvantages

59. The population counts in this approach may be more precise than in a traditional census (thanks to the previous information contained in the population register, that plays the role of default solution and avoids many cases of under-coverage) and also more precise, also, than in an exclusively register-based census (because of the checking against reality that complete enumeration supplies, which prevents errors of the population register to accumulate indefinitely).

60. Information not available in the combination of registers is obtained in an exhaustive, classical way, permitting maximum geographical and conceptual detail.

61. The longitudinal perspective that the use of registers allows is also present in this census approach, for example, by using the population register as the linchpin.

62. Disadvantages come from the intermediate-point condition of this approach. For example, they are more expensive than exclusively register-based censuses, because of the exhaustive collection operation component. However, it should be cheaper than the traditional census since the knowledge of the location where every person is registered permits the use of more efficient collection methods.

63. Response burden, other factors being equal, is also somewhere between the minimum imposed in censuses without any specific collection operation and the maximum for censuses with full enumeration and no previous information support.

Implications for the various phases of census-taking

64. Pre-filling questionnaires with population register information is a complex technical task (in particular, it requires special printing devices), especially when associated with the large census volume and with the constraints imposed by available technology.

65. Previous censuses information and related administrative data facilitates a much more informed correction and imputation of incoherence and missing values.

66. Dissemination also draws benefits from the previous censuses information, because of the longitudinal perspective it allows.

Implications for content

67. Combination of registers and exhaustive collection operation permits maximum flexibility in the content, while reducing the response burden in comparison with a classical census with the same information.

68. Compared with combining registers and sample surveys, the main advantage is the complete geographical and conceptual detail of all the variables, whether available in the registers or not.

Rolling census

Description

69. A rolling census represents a further alternative approach to the traditional model of census taking by means of a cumulative continuous survey, covering the whole country over a period of time, rather than on a particular day. There are two main parameters in a rolling census:

a) The length of the period of time which is linked to the frequency of update required; and
b) The sample rate: which depends on the budget and the geographical levels required for dissemination (country, regions, towns, local areas, etc).

70. For example, it is possible to build a sample framework in order to produce national results with an annual survey; regional results by cumulating three annual surveys and small areas results by cumulating five years' data. An annual survey may be conducted over the year or in a particular month.

Necessary conditions

71. Necessary conditions depend on the complexity of the sample framework. If the sampling units are addresses, a master address file is to build preliminary. But if the sampling unit is larger, for example municipality, it is only necessary to have enough information to spread the municipalities over the different years as each will be representative. However, it will be necessary to explain to the users of census data what will be the consequences and how they will use these data, because people is more used to snapshot data rather than period data.

Advantages and disadvantages

72. The main advantage of the rolling census approach is the higher frequency for updating data: a traditional census provides decennial or quinquennial benchmarks, whereas the rolling census provides annual updates. Another advantage is the reduction in the burden on the public . Furthermore it offers the possibility of improving the census process year after year, and to test

new technologies as they emerge. The disadvantage is that it no longer provides a snapshot of the whole population, complicating comparisons between areas due to different enumeration times.

Implications for the various phases of census-taking

73. It is better to begin a rolling census just after a full traditional census, in order to reap the benefit of recent information in which to build the sample framework. As the operation is annual, the process must be very carefully prepared, since any delay can be problematic for the following stages.

Implications for content

74. A rolling census is able to include all usual census topics and there is the possibility of changing the questions more regularly than in a decennial cycle. This enable the census to be more reactive to changes in the needs of users, even if comparability over time must be preserved. According to the organisation of the census, it may be possible to add some thematic surveys.

Appendix III: The fundamental principles of official statistics in the context of population and housing censuses

1. Population and housing censuses are an integral part of the system of official statistics in each country. They are therefore expected to encompass the fundamental principles of official statistics. These principles were adopted for the ECE region by the Economic Commission for Europe in 1992[59], and by the United Nations Statistical Commission at its Special Session of 11-15 April 1994.

2. The principles are:

1) Official statistics provide an indispensable element in the information system of a democratic society, serving the government, the economy and the public with data about the economic, demographic, social and environmental situation. To this end, official statistics that meet the test of practical utility are to be compiled and made available on an impartial basis by official statistical agencies to honour citizens' entitlement to public information.
2) To retain trust in official statistics, the statistical agencies need to decide, according to strictly professional considerations including scientific principles and professional ethics, on the methods and procedures for the collection, processing, storage and presentation of statistical data.
3) To facilitate a correct interpretation of the data, the statistical agencies are to present information according to scientific standards on the sources, methods and procedures of the statistics.
4) The statistical agencies are entitled to comment on erroneous interpretation and misuse of statistics.
5) Data for statistical purposes may be drawn from all types of sources, be they statistical surveys or administrative records. Statistical agencies are to choose the source with regard to quality, timeliness, costs and the burden on respondents.
6) Individual data collected by statistical agencies for statistical compilation, whether they refer to natural or legal persons, are to be strictly confidential and used exclusively for statistical purposes.
7) The laws, regulations and measures under which the statistical systems operate are to be made public.
8) Coordination among statistical agencies within countries is essential to achieve consistency and efficiency in the statistical system.
9) The use by statistical agencies in each country of international concepts, classifications and methods promotes the consistency and efficiency of statistical systems at all official levels.
10) Bilateral and multilateral cooperation in statistics in statistics contributes to the improvement of systems of official statistics in all countries.

3. These fundamental principles have been incorporated into two operational standards of official statistics of the International Monetary Fund (IMF), the Special Data Dissemination Standard (SDDS)[60] and the General Data Dissemination System (GDDS)[61]. Both standards have

[59] Economic Commission for Europe, Report of the 8th meeting, 15 April 1992.
[60] see http://dsbb.imf.org/Applications/web/sddshome/
[61] see http://dsbb.imf.org/Applications/web/gdds/gddshome/

a section on integrity, which has been further specified in the IMF's Data Quality Assessment Framework (DQAF, Generic Framework July 2003)[62]. This DQAF lists the following components on integrity:

1. Assurances of integrity *The principle of objectivity in the collection, processing, and dissemination of statistics is firmly adhered to.*	**1.1 Professionalism** *Statistical policies and practices are guided by professional principles*	1.1.1 Statistics are produced on an impartial basis. 1.1.2 Choices of sources and statistical techniques as well as decisions about dissemination are informed solely by statistical considerations. 1.1.3 The appropriate statistical entity is entitled to comment on erroneous interpretation and misuse of statistics.
	1.2 Transparency Statistical policies and practices are transparent.	1.2.1 The terms and conditions under which statistics are collected, processed, and disseminated are available to the public. 1.2.2 Internal governmental access to statistics prior to their release is publicly identified. 1.2.3 Products of statistical agencies/units are clearly identified as such. 1.2.4 Advanced notice is given of major changes in methodology, source data, and statistical techniques.
	1.3 Ethical standards *Policies and practices are guided by ethical standards.*	1.3.1 Guidelines for staff behavior are in place and are well known to the staff.

Source: IMF General Data Dissemination System (GDDS)

4. These components include the principles of impartiality (part of 1st UN fundamental principle), professional independence (2nd UN principle), right to comment on erroneous interpretation and misuse (4th principle), transparency in terms of sources and methods (3rd UN principle) and rules under which statistical producers operate (6th UN principle), transparency and impartiality of dissemination practices (part of 1st UN principle), and guidelines for staff on ethical standards. However, the concept of integrity is a general one that can, if applied to whole statistical systems and not only to specific statistical output, cover all ten fundamental principles, and notably the 6th principle on confidentiality.

5. The last component in the IMF framework illustrates the point that enshrining principles in law is very instrumental, but not sufficient in itself. These principles have to be translated on the one hand into institutional safeguards, and on the other into guidelines for staff and processes by which decisions, especially in borderline cases, are taken in such away that they build up a set

[62] see http://www.imf.org/external/np/sta/dsbb/2003/eng/dqaf.htm

of consistent case-laws within the statistical system or at least within the NSO. These guidelines for ethical and professional behaviour should be interpreted by staff, through training and implementation, as part of their everyday data collection, processing, and dissemination work. The senior statisticians in NSOs should give a model of behaviour to all other staff in this respect, and contribute to promoting the ethical foundations of official statistics with all stakeholders, the media, and the public.

6. These principles are a formulation of the professional and ethical standards that are necessary to ensure credibility in the results of official statistics by all users, and to ensure the integrity of the national institutions that act as producers of official statistics. They are meant to be applicable to all subject areas of official statistics, to all national producers of official statistics, and for all the processes that are involved in producing and disseminating official statistics. They should be the yardsticks for the national legislation that defines the institutional framework of official statistics, and for the behaviour of all staff involved in these processes. Many countries have developed a general statistics law that meets these criteria.

7. The notion of a national statistical system is used here as the sum of all public bodies that are producers of official statistics in the sense defined by the relevant national legislation. The 8th principle asks that these producers do not act independently, but are coordinated. In addition, the statistical system should include any coordinating or advisory bodies for official statistics foreseen by the statistical legilsation or set up on the basis of this legislation.

8. In the case of public bodies other than the NSO (or statistical offices at regional or local level) acting as producers of official statistics, the fundamental principles of official statistics imply that statistical tasks are subject to the statistical legislation, and that they are clearly separated in the organisation chart from other tasks assigned to this department, ministry or agency. The notion of producer of official statistics (and of the statistical system) does not necessarily include therefore an entire ministry, department or agency, but only those organisational sub-units that have regular tasks as producers of official statistics in the above sense. All government units other than producers defined in this way are considered as potential users of official statistics. This clarification is important because the notion of professional independence refers to this boundary in terms of decisions to be made within the statistical system. Also, the exchange of data subject to statistical confidentiality should not be extended to government units other than the statistical producers in the above definition or research institutions.

9. The population and housing censuses is one of the most publicly visible activities of national official statistics, and therefore adherence to these principles is of particular importance. NSO's must ensure that population censuses, both in reality and in the perception of users and respondents, are in line with these principles, so that the credibility not only of the census, but of the entire NSO and the whole statistical system are not compromised. It is therefore recommended that any specific legislation on the population census in countries where a general statistics law with explicit recognition of the fundamental principles is in force, explicitly acknowledges the applicability of these principles for the census.

Confidentiality

10. In the context of a population census, the most important principle for the population as the provider of the information is the confidential use of the individual information. The 6th

principle, refers to the use by statistical authorities of individual data, whether they refer to natural or legal persons[63], to be strictly confidential and used exclusively for statistical purposes. When collecting individual data from respondent through surveys or censuses, statistical producers must state this pledge, which in most countries is enshrined in national legislation, very prominently in order to persuade respondents to participate and to provide correct information. The term "statistical purposes"[64] in this context excludes the use of such information for any decisions by a government or public sector authority (including courts) targeted at an individual unit. Thus, it eliminates the possible perception of respondents that the individual information they provide in good faith about themselves could be used against them. Secondly, the principle ensures that the statistical producers are seen to take seriously the concern of respondents about the privacy of the information they provide.

11. The clearest way for statistical producers to comply with this principle is the so-called "one-way" principle for individual data referring to protected units. Statistical producers can receive such data, but, with the two possible exceptions mentioned below, should never release or make accessible such data. The one-way principle should apply to all individual data, irrespective of the source (census, survey, or administrative source). Survey and administrative data should be covered by the same statistical confidentiality provisions in all stages of collection, processing, and dissemination, from the moment they are handed over to a statistical producer.

12. Statistical legislation may prescribe two exceptions to the ban on statistical authorities making protected individual information partially accessible: the exchange of individual information between statistical producers within the same national statistical system, and the granting of access to micro-data files with individual data, under certain conditions, to bona fide researchers. The details of the latter are described in the chapter on methodology. The first exception has to be strictly limited to purposes of official statistics, and the second exception to tabulation/analysis under the researchers' own responsibility.[65] Because of the ban on non-statistical use of micro-data, the use of the first exception is especially delicate if the statistical producer at the receiving end is a division of a larger government unit whose main task is the non-statistical use of data, as a minimum, the national statistical legislation has to be fully applicable to the statistical producer in order to make such a statistical producer eligible to receive confidential census micro-data from the NSO.

13. It is of overriding importance that NSOs are perceived as completely trustworthy with respect to confidentiality. For this reason, requests for release of individual data for non-statistical purposes should always be refused. If, on the basis of legislation in areas other than official statistics, such an access for non-statistical purposes is lawful (e.g. in the case of data

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[63] The protection of the statistical unit "natural person" is not effective if the "household" is not also protected. Dwelling or building are not protected unless there is an indirect risk of disclosure for a person.

[64] The term "statistical purpose" should not be interpreted as allowing the use of individual information for tables. Statistical purposes also covers the matching of individual information with other sources of official statistics.

[65] Both exceptions may be limited to national partners, or extend to cover statistical departments of supra- and international organisations in the first case, or researchers abroad or being part of an international research network in the second case. National legislations and practices differ in this respect.

originating in administrative sources, or in the case of a dual-purpose census) such access should be provided by other appropriate government authorities, and not by NSOs.

14. The 6th principle implies not only the exclusion of disclosure by direct identification of units (through names, addresses, or generally available reference numbers), but also by indirect identification (through a combination of characteristics, or as part of a narrowly defined small aggregate). It also implies strict security rules for handling questionnaires and stored individual data. The recommendations in the context of a population census are presented in more detail in Chapter II.

Professional independence

15. The delimitation of professional independence for a statistical authority is important. This is especially so for an operation like a population census, where the NSO is dependent for funding from government budgets (at national, regional and local level, plus international donors where applicable). The principle of "professional" independence can therefore be summarised in such a way that it addresses the "how" part of official statistics (that is how official statistics are produced and disseminated. However,), this principle does not extend to the "what" part (that is the decisions about which characteristics in the society are sufficiently relevant to be measured by government funded activities of official statistics, and the frequency of these measurements and the major breakdowns of these characteristics insofar this has a substantial impact on the resources).

16. In the terms of processes, professional independence means that, while a variety of stakeholders, especially major users, will be consulted about professional issues, the decisions about the "how" aspects will be taken entirely within the system of official statistics and not by the government or any political body. "Within the statistical system" can mean by the head of the NSO, with possible involvement, for major issues, of an advisory board like a statistical council that is set up by the relevant legislation on official statistics, or of a body composed of all or some producers of the national statistical system. In the case of population census, the census law may provide for a special census committee to play a role in such decisions. Whatever the form of decision-making mechanisms within the statistical system of a country, it is crucial that the relevant law enshrines very clearly that all bodies involved are subject to the fundamental principles (which preferably are also enshrined in a general statistics law). For the "what" part of official statistics as further described above (which includes decisions on resources and priorities), not falling under the professional independence, the division of roles is exactly the opposite; while most proposals for such decisions will be prepared by various actors of the statistical system in a coordinated way, the decision will be made at the political level, be it by a minister, the government, or the Parliament.

17. The point where the line is drawn between the "what" and the "how" can differ from country to country. The perception of integrity of the NSO is so high in certain countries that the head of this organisation may even be in a position to decide on the allocation of overall resources for official statistics between subject areas (with only the total budget decided at the political level as part of the budgetary process). However, there is a core of issues falling under the principle of professional independence that should never be subject to decision-making by a political body.

18. Such issues include:

a) The design of data collection instruments for official statistics with respect to coverage, questionnaires and the terminology used therein, selection of respondent units (in the case of non-exhaustive coverage). This extends to the design of pilot surveys and post-enumeration surveys;
b) The choice of administrative sources to be used in the preparation of the census, or (as in the case of registered-based censuses) in the implementation phase;
c) The follow-up of non-response in the case of primary data collection, or the verification process of administrative data by the persons concerned and the respective follow-up of non-response in this approach;
d) The choice of methods and strategies for editing raw data (from primary data collection or from administrative sources), for imputing missing information or for correcting erroneous information, for classifying open-ended questions, and for combining various sources in the best possible ways (either at unit or aggregate level);
e) The choice of the aggregates to be compiled from the census to be disseminated as results of official statistics, including the terminology used for these aggregates and the ways of compiling them;
f) The ways in which these results are disseminated in full respect of the relevant fundamental principles, including the timing of the release;
g) The standards, methods and processes of quality control for the various steps of the operation, and the decisions whether certain aggregates cannot be released because of insufficient quality;
h) The ways in which census data are used for improving other outputs or activities of official statistics (benchmarking of time series, use as sampling frame); and
i) The way in which edited unit-level data from the census are organised, documented and stored to facilitate additional tabulation on request according to specifications of individual users (statistical services) and for any later use in official statistics (analytical studies).

19. Two general qualifications concerning the professional independence in deciding about the "how" part are worth making. For example, the final decision can remain legitimately at the political level without this being a contradiction to the fundamental principles. The first issue is linked to another fundamental principle: the issue of response burden in primary data collection (5th principle). This includes response obligations, the consideration whether certain questions, especially in the context of a census, may be considered as too much of an intrusion into privacy, and the issue of penalties for respondents who refuse to comply with response obligations. The second issue is about the division of work and the allocation of responsibilities between the various players and bodies of the statistical system of a country for the various parts of a statistical programme in a country, assuming that all of them are subject to the statistical legislation. For a basic operation like the census that is exclusively for statistical purposes, the overall responsibility is normally allocated with the NSO as the major producer of official statistics and coordinator of the statistical system, even though certain elements may be assigned to other players in the statistical system.

20. In the context of a traditional population census, the details that will be enshrined by law and secondary legislation based on this law are often of a more detailed character than for other primary data collections for official statistics such as sample surveys. There is therefore a certain

risk of political bodies getting involved in decisions that are listed above as being the core of professional independence. Such legal texts should not go beyond listing the characteristics to be covered by the census in a general way, but the exact wording of questions in the questionnaire has to be left to the statistical system. Legal texts about census should not contain an exhaustive list of tables as outputs, but if any specification of the output at legal level is considered to be unavoidable, it should be in general terms, leaving the exact definitions and the methods of aggregation entirely to the statistical system. The most important aspects of output specification in legal terms refer to impartiality and possibly timeliness.

21. For the choices to be made under professional independence, the responsible players within the statistical system "need to decide according to strictly professional considerations, including scientific principles and professional ethics" (2nd principle), so that the results of official statistics are as a reliable a picture of the characteristics of a society as is possible. In most cases, such decisions are not made in a void; there is a recognised stock of international and national professional standards and good professional practices of official statistics for many of the decisions listed above; they can and in most cases should be considered as a valid option at national level, not only because they facilitate international comparisons, but mainly because they offer an impartial and professionally sound solution about methodological issues.

22. A specific problem of professional independence in the context of a census may arise from the pressure from certain ministries and outside interest groups to see certain characteristics included, whereas professional considerations, based on earlier experience in the same country or in other countries, may lead to the view that other forms of primary data collection, such as sample surveys not linked to an exhaustive census with response obligations, as being more appropriate for providing more reliable results, or in providing results in a less costly way. It seems that for such users, inclusion in the census is a kind of recognition of high importance compared to inclusion in a sample survey of official statistics only. This is a typical example of a non-professional consideration that should be kept outside the decision-making process. If, at a political level, it is decided that such characteristics have to be included in spite of the methodological advice by the NSO to the contrary, the dissemination of the results for this characteristics will still be subject to a the minimum quality level reached that is defined by the statistical system.

Impartiality

23. Impartiality is an important consideration for all phases of the statistical production and dissemination process. It implies, among others, the use of factual and stable terminology for the results to be disseminated, the use of understandable, non-offensive terminology in questionnaires, and the avoidance/correction of any biasing factors in collecting, processing and presenting results, such as the complete omission of certain groups of the population. The most important aspect, however, is the impartiality in making results of official statistics available to all users.

24. Impartiality in dissemination has several aspects; all results declared as official results have to be publicly accessible, and the dissemination of these results has to be simultaneous for all users, including government users, at dates determined by the statistical system, and not by the government. Therefore, it is good practice for NSOs to have an advance release calendar. The advance release calendar may be a rolling one, where the release dates become gradually

more precise over time. Results may be released as provisional and final in order to be timely, but the principle of impartiality in dissemination must be respected in all cases.

25. As with other issues within professional independence, the selection of results, and the choice of the dates of release, have to be based on professional considerations. Once checked for quality and consistency, results should be released as soon as possible. Concerns that certain results may be unwelcome or untimely from the point of view of the government or other important stakeholders should never be taken into account, whether these concerns are expressed explicitly or as second-guessing on the part of statisticians. This would be an infringement of the fundamental principles. Dissemination is the part of official statistics where attempts to undermine strict adherence to integrity are most likely. Therefore, it is very important that the NSO has acquired a reputation for being strict in this respect in all areas of official statistics, so that there is no room for deviation from an established standard in the particular case of the population census. If there is not a clear history in this respect, the population census, through its high public profile, is an excellent opportunity to build up and promote a new standard of integrity to be applicable throughout official statistics during and after the census.

26. The IMF specification of integrity mentions that advance information to certain government departments can be given under embargo, but this practice should be made public. The purpose of this advance information is that key users in the government can prepare themselves for confronting questions of the media with respect to policy implications of these results. It is not to invite them to comment on the way the NSO disseminates the results. Therefore, this advance information, if used at all, has to be limited in time (not exceeding one day), because the greater the time, the greater the risk of a breach of the embargo, or of attempts to interfere with the dissemination by the NSO.

27. An often neglected, but essential part of both professional independence and impartiality is the choice of terminology for the results to be disseminated. Decisions about this terminology should be made entirely within the statistical system (that is they should not be imposed from outside), and they need to demonstrate impartiality. There should therefore be a limit to the use of catchwords or the language of advocacy for certain policies, in releases by official statisticians.

28. Countries may differ in their practice about what impartiality implies for the provision of explanatory comments together with the release of new results. The minimum is to add the definitions and other technical explanations about the coverage and accuracy of the results, so that at least expert users can receive guidance on the correct use. In view of the dissemination to the media and the public at large, this may not be sufficient, especially for benchmark results such as the census. Explanations need to be added that help media, and through them the public, to help them to understand the most significant elements of this new information, and to transform the quantitative information into everyday language that can be easily understood and put into relation to other, non-statistical, information, but without coming into conflict with impartiality. As a minimum, it is the duty of NSOs to distinguish, in quantitative terms, between those parts in developments/differences that are due to changes in methodology when they occur, and those that correspond to “real” changes or differences.

29. The selection of the most important elements among the many aspects of the new census results for the so-called "story-telling"[66] is not always easy, but marked differences over time, across geographies (both within and between countries), and between population groups are certainly a first promising approach. The message for the media and the public is certainly enriched by comments that allow pointing to causal factors of a development or of differences between groups and areas that show up in the results; but in order not to be in conflict with impartiality, comments of this nature made by official statisticians have to be backed by facts and should never be policy-prescriptive. The DQAF of the IMF insists (see paragraph 3 in Appendix III) that "products of statistical agencies/units are clearly identified as such", or, with other words, that comments by other units than the NSO, whether they contain policy-prescriptive comments or not, are clearly separated from NSO products and releases. The art of adding relevant comments to statistical releases is gained with experience and feedback from users, and should be based on a general policy of the NSO applicable to all areas. The principle of impartiality has to avoid any bias or partisan jargon. The risk of biasing the information is especially present when using charts or maps, where the first impression is the prevailing one for most non-expert users.

30. Whereas the strict application of the principle of simultaneous dissemination to all users is standard for economic statistics, it is sometimes less strictly applied in demographic and social statistics. There is no professional reason why such a difference between subject areas should persist. One argument is that, because of the low periodicity of certain results in demographic and social statistics, these results need to be discussed and verified with the assistance of outside experts before they are released. However, quality management is an integral part of statistical processes whatever the subject area and the periodicity, and where quality management includes the assistance of outside experts, statistical producers have to make sure that no leakage to ministries or interest groups can arise as by-product of the quality assurance process. This risk is minimised when the necessary expertise for quality control is within the statistical office, or at least within the national statistical system.

31. A special problem in the context of impartiality arises from the use of aggregate census results for "allocation purposes". This covers uses such as the allocation of seats in the Parliament or other bodies proportional to the benchmark population, or the funding of local governments from the national budget on the basis of statistical parameters, such as the benchmark population. It also covers schemes where funding is tied to eligibility criteria for local or regional entities, one of them being a population (or population ratio) threshold. When the benchmark is renewed through a new census round, fears that the outcome would be unfavourable to one body or another, or be inequitable, may be presented to the NSO in order to influence its choice of methods. But this may introduce biases and deviations from good professional practice and standards, and in doing so, the principle of impartiality of official statistics would be violated, since the choice of methods should not be influenced by such considerations (nor by considerations of how the country's ranking in an international league table would be influenced).

32. An answer to these concerns that is fully compatible with integrity considerations is to clarify the responsibilities of official statisticians, and those responsible for the allocation processes, in the light of the fundamental principles. It is the decision of the latter, and not of official statisticians, to statistical parameters (and certain subjective weights to aggregate them)

[66] UNECE: http://www.unece.org/stats/documents/writing/

as key for their decisions on allocation or eligibility. However, their choice is not constrained by the results of official statistics published by the NSO; other options may be a subset of the official overall results (that is excluding certain components), or "adding in" some other elements that are measured separately (provided that sufficiently reliable statistics are available for these elements). The NSO would certainly be able to compile any key according to user specification. However, this should not replace the officially released benchmark result as defined by statisticians, but rather be an additional product with its own status. The distinction between the two is that the NSO bears the full responsibility for the official results, whereas for the user-specified concept, the NSO is only responsible for the accuracy of the information. The responsibility for the concept and the terminology lies with user outside the statistical system.

Institutional safeguards for the NSO following from professional independence and impartiality

33. Confidentiality, professional independence and impartiality are the key ingredients for the integrity of the NSO and the whole statistical system from the point of view of users and respondents. It is not sufficient that these principles are mentioned in laws. They have to be associated by institutional and organisational safeguards for the NSO and its head. For building and maintaining trust in the eyes of the media, the public, all users, and respondents alike, both the existence (and respect) of these safeguards and the clear implementation of all fundamental principles in everyday practice by the NSO are essential.

34. First and foremost, the NSO has to be free of non-statistical assignments that may create conflict of interests with its core task of producing unbiased statistics about relevant phenomena in the society, or with its obligation to use individual data exclusively for statistical purposes. Any such assignments would prevent the NSO from being perceived as impartial, and would risk in being equated with an advocacy instrument for government policies.

35. Secondly, it is essential that there is no official or unofficial clearance process involving government bodies outside the statistical system for the release of results, for whatever area of official statistics including the census. NSOs must have the right to communicate directly with the media in order to fulfil their dissemination function, without being forced to channel their messages through intermediate government bodies.

36. Thirdly, as a corollary of professional independence, the head of the NSO has the full responsibility for the professional quality of the results, for the integrity of the whole chain of processes leading to these results and for the strict application of the confidentiality rules for individual data. The process of selecting and appointing the head of the NSO and other senior staff, and the legal an other means of protecting the head against any interference from government or pressure from other interest groups in matters falling under professional independence, or affecting impartiality or confidentiality, is crucial for the integrity, and the perception of integrity, of official statistics.

37. In the context of the census, a special organisational issue with implication for integrity may arise through the involvement of government bodies in the data collection process of traditional censuses that are not considered part of the statistical system, notably bodies at local and regional level. Such bodies may have responsibilities other than official statistics that have the potential to create conflicts of interest. It is therefore important that, in addition to stipulating in the law that they are fully subject to the fundamental principles, notably for confidentiality, for

all activities in the context of the census, methods to check their compliance are set up and implemented as part of the quality control processes. In view of the eligibility (or non-eligibility) criteria, local administrations may also be tempted to influence the overall results for their area in order to increase (or reduce) the prospects of falling under a certain government scheme (for example introducing bilingual administration if the linguistic minority reaches a certain percentage of the total population). In such cases, special organisational measures that ensure checks and balances at local level may have to be set up on a mandatory basis through the census legislation in addition to the quality control measures of the NSO.

38. In the case where certain parts of activities of official statistics are outsourced to private operators (which can be a cost-effective solution for a large and infrequent operation like the census), the respective contracts should specify the obligations of the contractors in the same way as if the same activity were carried out within the NSO. Any data processed by such contractors must be used by a private contractor only within the terms of the contract, excluding any other purposes, be they statistical or other. The census law should prescribe that penalty provisions are applicable also to staff from such contractors working for the census in the case of violations, for example of confidentiality provisions. It is in the interest of private contractors to respect these contract terms, as failure to do so would jeopardise future contract from the NSO.

39. Any form of delegation of parts of the census activity to either public or private organisations does not in anyway diminish the full responsibility of the NSO for the integrity of the whole process from the beginning to the end, and for the official results.

Transparency

40. The principle of transparency (3rd fundamental principle) is a necessary counterpart to professional independence. It ensures that official statisticians are fully accountable to the community of users, respondents and taxpayers for their decisions under the umbrella of professional independence. All methods used in the production and dissemination process should be made transparent, so that critical users can question the choices made and ask for reasons. The IMF DQAF asks that for major changes in methodologies advance notice be given before results are disseminated. All dissemination of results must be accompanied by detailed information on sources and methods, which should be accessible to anybody. If results do not reach predefined quality levels, they should be marked accordingly, or not released at all, with the reasons explained publicly, and the background material for this decision being open to scrutiny. Any quality assessment of census operations, or parts of it, should also be publicly accessible.

41. If the principle of transparency seems to impose a burden on NSOs, it is necessary to prevent and counter any accusation of unaccountable “black box” behaviour, which is frequently the first step in accusing statisticians to give in to interference or pressure aimed at shaping results in a certain direction. Transparency is necessary in today’s official statistics, since even in the case of exhaustive operations like censuses results are no longer compiled exclusively as frequency counts, sums or averages, but as a complex and iterative sequence of algorithms including components of “estimation” based on editing, imputing, extrapolating and combining different sources. Transparency is also the prerequisite of making use of the 4th principle, which entitles all statistical producers to comment on erroneous interpretation and misuse of statistics by a third party (including government users of statistics). The decisions on when to make use of

this right comes under professional independence, and lies with statisticians without the need for approval from outside the statistical system.

42. Another element of transparency is the 7th principle, by which the "laws, regulations and measures under which the statistical system operate are to be made public". Censuses have a particularly voluminous range of regulations, instructions and manuals, given the large number of staff used for most types of censuses, especially traditional ones. Such material should be available to anybody either on request, or made generally accessible through the web.

Relationship to respondents

43. According to the 5th principle, burden on respondents is a mandatory consideration for all decisions regarding the choice between primary and secondary data collection, and the design of primary data collection. The way this principle is applied in reality is, together with the confidentiality pledge, the essence of the integrity aspect for the relationship between the NSO and respondents. This is especially relevant for a primary data collection in form of a traditional census where all persons in a country are subject to a response obligation.

44. The elements of integrity in the relationship to respondents are:

a) A selection of questions, strictly based on relevance and the proven inadequacy of less burdensome forms of data collection such as sample surveys;
b) A serious effort of testing questionnaires in various local environments through pilot surveys, and of drawing the necessary conclusions by dropping problematic items from the census and directing users towards other forms of data collection;
c) A well designed publicity campaign, starting well ahead of the census date;
d) Disseminating clear information to each household, at the latest when the data are collected, about the purposes of the census, the legal basis, the use of the data and the public authorities that have access to individual data, the confidentiality measures, the obligations for respondents and the possible consequences of non-compliance, combined with information where and how additional information about the census can be obtained;
e) A way of contacting households and persons at the time of data collection that is proportionate, non-intrusive, and takes into account the sensitivities of special population groups. This implies that field staff is well instructed and trained, and selected so as not to increase resistance from respondents; and
f) A carefully designed stepwise policy of reminder/re-contact, and a clearly stated policy when to make use of penalty provisions for non-compliance and for starting infringement procedure.

Appendix IV: Quality assurance framework and implementation

1. This appendix outlines a quality assurance management framework, including comments on each dimension of quality. Finally, this is followed by discussion of techniques and implementation for a number of specific activities in census taking.

Management framework

2. Quality must be managed in an integrated fashion within the broader context of undertaking the entire census programme. Census management will require input and support from all functional areas and it is within this context that trade-offs necessary to ensure an appropriate balance between quality and concerns of cost, response burden and other factors will be made. There needs to be adequate staff with people able to speak with expertise and authority while being sensitive to the need to weigh competing pressures regarding dimensions of quality and other factors to reach consensus. Those responsible for each aspect of census work must be equipped with appropriate expertise. Each of these will develop and implement strategies addressing many aspects of quality. In doing so they must be sensitive not only to their local quality concerns but also to their interactions with quality concerns of others. Strategies to facilitate the necessary information sharing and joint consideration of cross-cutting quality issues are vital.

3. Quality concerns need to receive appropriate attention during design, implementation and assessment. Subject matter experts will bring knowledge of content, client needs, relevance and coherence. Statistical methodologists bring their expertise on statistical methods and data quality trade-offs, especially with respect to accuracy, timeliness and cost. Operations experts bring experience in operational methods, and concerns for practicality, efficiency, field staff, respondents and operational quality assurance and control. The systems experts bring knowledge of technology standards and tools that will help facilitate achievement of quality, particularly in the timeliness and accuracy dimensions. In collaboration with subject matter experts, dissemination experts will bring a focus to accessibility and interpretability.

Managing relevance

4. The programs and outputs of a National Statistical Office must reflect the country's most important information needs. Relevance for the census must therefore be managed within this broader context. This is done through processes to assess the relevance of previous census content and to identify new or emerging information gaps that may be appropriately filled via the census. Major processes to achieve this can be described as: client and stakeholder feedback mechanisms; program review and data analysis. Information from these processes can then be used to ensure the relevance of census content and outputs.

5. Important feedback mechanisms might include consultations with key government departments and agencies, advice from professional advisory committees in major subject matter areas; user feedback and market research; ad hoc consultations with interested groups; and liaison with statistical offices from other countries.

6. While the primary purpose of data analysis is to advance understanding of phenomena, it also provides feedback on the adequacy and completeness of the data used in the analysis. By identifying questions the census data cannot answer it can pinpoint gaps and weaknesses. This

must be taken in the context of the analytic potential of other data holdings of the Statistical Office.

Managing accuracy

7. Management of accuracy requires attention during three key stages of the census process: design, implementation and evaluation.

8. Design parameters and decisions will have a direct impact on accuracy. The accuracy achieved – as well as the degree of timeliness and coherence – will depend on the explicit methods put in place and the quality assurance processes built in to identify and control potential errors at the various stages of the census. A number of key aspects of design must be considered in every census to ensure that accuracy concerns are given appropriate attention:

a) Explicit consideration of overall trade-offs between accuracy, cost, timeliness and respondent burden during the design phase;
b) Adequate justification for each question asked and appropriate pre-testing of questions and questionnaires in each mode of collection, while also ensuring that the set of questions is sufficient to meet requirements;
c) Assessment of the coverage of the target population. This relates to the adequacy of the geographic infrastructure upon which collection and dissemination geography will be based. It may also relate to the adequacy of address lists to be used in areas where mail out of census questionnaires takes place;
d) Proper consideration of sampling and estimation options. For example, sampling could be used at the collection stage through the use of short and long form questionnaires in order to reduce respondent burden and collection costs. Alternatively, sampling could be introduced after collection, by processing only a sample of records, at least for a subset of characteristics, in order to produce more timely results or to control processing costs. In either case, careful consideration must be given to the size and design of the sample and to the weighting and other estimation procedures needed;
e) Adequate measures in place for facilitating and encouraging accurate response, following up non-response and dealing with missing data;
f) Proper consideration of the need for quality control and other quality assurance processes for all stages of collection and processing; and
g) Appropriate internal and external consistency checking of data.

9. While individual program managers have considerable flexibility in implementing specific practices and methods, it must be done in an integrated fashion within the overall management of census data quality.

10. A good design will always contain protection against implementation errors through for example adequate selection and training of staff; suitable supervisory structures, carefully written and tested procedures and systems and quality assurance and quality control procedures. Mechanisms for monitoring implementation should be built into all processes as part of the design. Information is needed to monitor and correct problems arising during implementation. This requires a timely information system that provides managers with the information they need to adjust or correct problems while work is in progress. Information is also needed to assess whether the design was carried out as planned, identify problem areas and lessons learned from

operations to aid design for future censuses. Some examples of activities that could be undertaken to manage and monitor accuracy during implementation and operations are:

a) Regular reporting and analysis of response rates and completion rates during collection;
b) Monitoring non-response follow-up rates;
c) Monitoring interviewer feedback;
d) Monitoring coverage checks and controls;
e) Monitoring of edit failure rates and the progress of corrective actions;
f) Monitoring of results of quality control procedures during collection and processing;
g) Monitoring of expenditures against progress; and
h) Development, implementation and monitoring of contingency plans.

11. Where applicable, the activities outlined in paragraph 10 should be at different geographic levels or aggregations useful for each level of management, including those suitable for supervising and correcting the actions of groups or individuals involved.

12. Assessment of accuracy needs to be a consideration at the design phase since the measurement of accuracy often requires information to be recorded once census collection and processing is under way.

13. Accuracy is multidimensional. Indicators may touch on many aspects of census collection, processing and estimation. Primary areas of assessment include the following:

a) Assessment of coverage error, both under-coverage and over-coverage. In most countries this is done via a post-censal coverage survey and dual system estimation methods. Comparisons to official population estimates, typically projections from the previous census, are often also used as an assessment tool;
b) Non-response rates and imputation rates;
c) Data capture error rates, coding error rates;
d) Measures of sampling error, where applicable; and
e) Any other serious accuracy or consistency problems with the results. This relates closely to coherence and allows for the possibility that problems were experienced with a particular aspect of the census resulting in a need for caution in using results.

Managing timeliness

14. Planned timeliness is a design decision, often based on trade-offs with accuracy and relevance. More timely information may be more relevant but less accurate. So, although timeliness is important it is not an unconditional objective. Many of the factors described under accuracy apply equally here. Timeliness is also directly affected by fundamental time requirements to collect and process census data with an adequate degree of quality in the other dimensions.

15. Major information releases should have release dates announced well in advance. This helps users plan and provides internal discipline in working towards these important dates.

16. For customized information retrieval services, the appropriate timeliness measure is the elapsed time between the receipt of a clear request and the delivery of the information product to the client. Service standards should be in place for such services.

Managing accessibility

17. Census information must be readily accessible to users. Statistical information that users don't know about, can't locate, can't access or can't afford, is of no value to them. In most statistical offices, corporate-wide dissemination policies and delivery systems will determine most aspects of accessibility.

18. In determining information product definition and design, managers must take careful account of client demands. Market research and client liaison will help determine this.

19. In today's world the Internet has the potential to play a role as the primary dissemination vehicle. It should include not only the data released but also information about the data (metadata) such as data quality statements and descriptions of the concepts and methods used. Appropriate links or use should be made of statistical office corporate dissemination vehicles.

20. Finally, client feedback must be monitored on the content of information products and on the mode of dissemination with a view to future improvements.

21. The information needs of the analytic community present some particular requirements. Analysts often need access to microdata records to facilitate analyses. This presents special challenges in order to continue to respect requirements for confidentiality of census data. A number of means could be used to address these needs. Public use microdata files, typically a sample of census records, that have been pre-screened to protect confidentiality can be valuable for analysts. Custom retrieval services where specific analyses, designed by external analysts, can be conducted by staff of the statistical office may meet the needs of some analysts.

Managing interpretability

22. Managing interpretability is primarily concerned with providing metadata. Information needed by users to understand census information falls under three broad headings: the concepts and classifications that underlie the data; the methods used to collect and process the data; and measures of data quality. The first of these also relates to coherence.

23. A further aid to users is interpretation of census information as it is released. Commentary on the primary messages that the new information contains can assist users in initial understanding of the information.

Managing coherence

24. Coherence is multidimensional. Objectives for coherence of census data include: coherence of census data within itself; coherence with data and information from prior censuses; coherence with other statistical information available from the statistical office on the same or related phenomena; coherence with information from censuses of other countries.

25. The first element is the development and use of standard frameworks, concepts, variables, classifications and nomenclature for all subject matters that are measured. This aims to ensure measurement is standard across programs and, for international standards, between countries.

26. Second, the census must ensure that the process of measurement does not introduce inconsistency between its data and that from other sources. Managers for other statistical programs are of course equally responsible for this aspect of coherence.

27. Third, validation, evaluation and analysis of census data that focuses on the comparison and integration of information from the census and other sources will illuminate the degree to which quality is achieved in coherence. The census data should be analyzed for domains and aggregations, both large and small that are considered important. Such analysis should consider totals, distributions, relations between variables or sets of variables, relations between domains, growth rates, etc. as appropriate. Comparisons should be made to data from prior censuses and to comparable survey data. The analysis should be done with some reference to planned tabulations.

Quality control techniques

28. Clearly a census quality assurance regime comprises a wide variety of mechanisms and processes acting at various levels throughout the census programme. An important technique applicable in many census operations is statistical quality control. It primarily addresses accuracy, although depending on the operation it may also address other elements of quality. What follows is a very brief outline of quality control basics. For a complete explanation of these methods, the reader should refer to a standard text or reference such as Duncan (1986), Hald (1981) or Schilling (1982)[67].

29. The success of any quality control and improvement programme depends on: laying down quality standards or requirements; determining appropriate verification techniques; measuring quality; and providing for timely feedback from the results of the programme so that effective corrective action may be taken.

30. Sample verification, complete (or 100%) verification or spot checks are the usual quality control techniques adopted in censuses.

31. Verification can be dependent or independent. In dependent verification, a verifier assesses the work of a census worker by examining that work. However, the verifier may be influenced by the results obtained in the initial operation. In independent verification a job is verified independently by a verifier without reference to the original work. The original results and those of the verifier are compared; if the results agree then the work is considered correct; if not a third, often expert, verifier may resolve the difference.

32. Complete verification theoretically assures a complete check of the work in an operation. However, verifying all items can be time consuming and very costly. In many operations, complete verification is only used as the operation is starting up. Once it is shown that the quality is meeting the required standard, sample verification procedures may be implemented. Usually, this transition is managed on an employee-by-employee basis.

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[67] Duncan, A.J. 1986. *Quality Control and Industrial Statistics*. Fifth edition. R.D. Irwin Inc., Illinois. Hald, A. 1981. *Statistical Theory of Sampling Inspection by Attributes*. Academic Press, New York. Schilling, for example 1982. *Acceptance Sampling in Quality Control*. Marcel Dekker, New York.

33. Sample verification reduces the cost and can yield results almost as reliable as 100% verification. More experienced and skilled staff often do verification. To be effective the sample must be selected on a scientific basis using probability sampling. It will be designed on the basis of the expected or observed error rates of workers, the outgoing quality to be achieved, the cost of the operation in question and the cost of operating the quality control plan. It will be adaptable to adjust as the quality of work may change. For example, as outgoing quality improves then a reduced rate of quality control sampling may be suitable. Two types of sampling procedures are commonly used: acceptance sampling and continuous sampling.

34. Acceptance sampling is a quality control technique that establishes a sample design and decision rules to determine which batches are acceptable or unacceptable and is usually used in jobs like manual editing, coding, and key entry data capture where work is assembled in lots or batches. Each batch is either accepted or rejected on the basis of the verification of a sample chosen from the batch based on probability methods. The sampling plan is designed so as to provide an outgoing error rate below a certain value, called the average outgoing quality limit.

35. When work is continuous and it may not be possible to group the output into batches for verification, a continuous sampling plan or process control approach may be used. This method is applicable to processes which are fairly predictable in terms of their outputs and which consistently produce output that meets the quality standard – the process is 'in control'. Statistical process control is a methodology to ensure that such processes stay in control and to provide feedback for corrective action when not in control. Census operations where this may be applicable include: the printing of forms; automated data capture via intelligent character recognition (ICR) or optical mark recognition (OMR); and the scanning of forms for ICR/OMR.

Implementing a quality assurance and improvement programme

36. The programme of quality assurance needs to be implemented in an integrated fashion throughout the design, development and execution of the steps in the census process. As examples, this section provides specific comments on quality assurance approaches applicable to a number of these steps.

37. The design of the census questionnaire(s) takes into account the statistical requirements of the data users, administrative requirements of the census, requirements for data processing as well as characteristics of the population. Because censuses often involve multiple collection methods, testing must be performed to ensure that questionnaires will work properly for all applicable methods. The questionnaire should include elements aimed at ensuring accurate coverage of the population (for example who to include, who not to include, where to be enumerated). Qualitative testing is required to check these issues and should cover an adequate variety of situations encountered in the population. In terms of content, quality assurance approaches for a census are similar to those for a sample-based survey. Qualitative tests and cognitive interviews should be planned to ensure that questions are clear and properly understood not only by the general population but also by special groups to whom certain questions are targeted or for whom there are particular issues of concern (for example the elderly, persons living alone, language difficulties).

38. With the advent of new technologies, introducing web-based questionnaires can provide options not available on their printed counterparts. These options can ensure greater quality in terms of question response and coverage. Such checks serve as opportunities for detecting

inconsistencies and presenting them to respondents for correction or confirmation. The design and presentation of a web-based questionnaire to the respondent will differ from the paper version. This means that special care must be taken to minimize any potential mode effects arising from differences between the paper and electronic versions of the questionnaire. Hence, this should be an important topic to be considered in the testing program for the questionnaire.

39. A particular challenge in questionnaire design is to design the questionnaire to be respondent friendly while at the same time, meeting requirements for subsequent processing steps, especially for data capture and coding operations. The testing program must also ensure that these features are thoroughly tested prior to questionnaire finalization.

40. All of these factors should be tested on a small scale (qualitative testing) and then on a large one with a significant number of respondents. A large-scale test can detect a variety of potential issues that qualitative testing cannot. As well such tests make it possible to compare different design and format possibilities via split sample designs. The large-scale test also facilitates assessing how well the questionnaire fits into other census operations (for example collection, data input, coding).

41. Coverage is a critical element of accuracy. It has a direct influence on the quality of population counts and an indirect impact on the quality of all other data produced by the census. Thus the coverage concerns should be taken into consideration in the design and implementation of most census activities and their quality assurance programmes. Enumeration area boundaries must be carefully defined and mapped to ensure no area is omitted or included twice. Instructions and training on dwelling coverage for staff engaged in dwelling listing and enumeration must be clear, explicit and easy to understand. The target population must be well defined and related instructions and questions for both interviewers and respondents need to be carefully developed and thoroughly tested. Clarity and simplicity of instructions concerning place of residence for enumeration is vital to help ensure people are enumerated exactly once and at the correct location. This is particularly important in minimizing overcoverage. Questionnaires should included guidance or questions to assist with situations where it may be unclear whether certain persons should be included or not. Special procedures should be developed for difficult to enumerate population groups (for example remote areas, collectives or group quarters, persons with literacy or language difficulties). Processing procedures should be developed with a view to minimizing the risk of erroneously cancelling, losing or artificially creating households. A well-crafted publicity campaign can play an important role in promoting census awareness and response, thus helping minimizing coverage error.

42. All of these steps, along with appropriate training, supervisory checks and quality assurance approaches during operations will help minimize coverage error. Nonetheless some coverage error is unavoidable. Hence it is important to measure, analyze and report on coverage error. This is best done via an independent post-census enumeration survey of a sample of census areas or via a Reverse Record Check methodology. Results of coverage studies provide an important evaluation of the current census and can also provide valuable guidance for the next census. Results in conjunction with the census counts themselves are a critical input for population estimation programmes. Analysis of census results vis-à-vis demographic projections of the population from the previous census can also be informative.

43. A second cross cutting topic, which can have a major impact on quality, is that of systems development. In particular the related dimensions of quality are accuracy, timeliness and

accessibility. A modern census makes use of numerous automated computer driven systems to operate, manage and control everything from payroll to data capture, edit and imputation, coding, dissemination and others. This pervasive influence makes it very important that an integrated view be taken in the design of the overall architecture as well as the individual design and implementation of systems.

44. A standard methodology for systems development should be implemented and should include steps like: overall system architecture design; design and analysis of individual systems; programming or building of systems; functional testing of components and then of systems; testing of interfaces between systems; volume testing and user acceptance testing; system delivery and implementation; and evaluation. This should be done within a configuration management approach to: manage change; accommodate the reuse of standards and best practices; ensure that all requirements remain clear and valid; communicate each of these to developers and users promptly and precisely; and ensure that results conform to requirements.

45. Specifications must be well written and carefully analyzed to produce functional requirements. A standardized approach for change management is required. Ensuring the interoperability of different systems that must communicate with each other is particularly important. At each stage performance (timeliness) should be evaluated and outputs should be checked to conform to requirements. Many of the systems developed for a census will be used by numerous key entry, coding, editing and other clerical staff. Consequently it is very important that user interfaces be carefully designed and thoroughly tested. More generally, a well-developed standardized testing strategy should be applied throughout in an integrated fashion.

46. As well, there are a number of census processes that involve massive operations, either manual or automated. Examples of such operations include: dwelling listing operations, preparation of maps, printing of census materials, enumeration procedures, data capture and editing and coding (both manual and automated). Quality control procedures are particularly relevant and important for each of these.

47. Dwelling listing operations are commonly conducted by enumerators prior to or as questionnaires are dropped off at dwellings. It is particularly important at this stage to minimize both under-coverage and over-coverage of dwellings. To that end, enumerators' procedures must include quality checks to ensure the quality of their work. As well, supervisors should have planned spot checks as listing work starts and planned quality control procedures to be applied as work is completed.

48. When census questionnaires are mailed out, it is usually done on the basis of a list of addresses extracted from an address register. Address register maintenance itself will involve several steps of quality control. Nonetheless, prior to its use, the address list should be validated to confirm that each dwelling is included with correct address and geo-coding information and that no non-dwellings are included. Allowance must be made for dwellings under construction that may be completed prior to the census. This validation is a large operation in the field and is subject to errors. Since this work must be parcelled out to individual employees in batches, acceptance sampling quality control procedures will be appropriate. Again, spot-checking and close communications with supervisors will be important quality assurance steps.

49. Enumeration, whether by interviewing or by collecting completed questionnaires from the dwellings on the list, is similar. Usually one enumerator is responsible for all work in an

enumeration area and will be required to implement a number of quality checks on their own work. Further acceptance sampling procedures, implemented by supervisors, will ensure the quality of various aspects of the enumerators' work.

50. Data processing is one of the crucial steps by which raw census data are converted into a complete edited, and coded master file useable for tabulations. In some of these processes the data are being transformed (for example data capture, coding) while in others the data are being corrected (for example edit and imputation). New errors can occur in any of these operations and all three types of quality control techniques can be useful.

51. A first step where errors can occur is data capture. In conventional key entry data capture, where clerks read questionnaires and key in the data, range checks and certain consistency checks can be built into the data entry software so that when a potential error is identified the data entry clerk can be required to re-key the field. Data entry must be independently verified. At this stage dependent or independent verification on a 100 per cent basis or acceptance sampling procedures can be adopted. Feedback of error rates and related information must be available operator-wise, batch-wise and field-wise.

52. In data capture operations involving scanning of questionnaires and data capture via ICR/OCR, quality control procedures will be necessary as well. First, operation of the scanning equipment will incorporate quality control procedures to ensure the equipment continues to work properly; this could take the form of process control. Such operations will typically also require a key entry step – with quality control steps as outlined above -for data capture of questionnaires that could not be scanned or where the image was unusable by the ICR/OCR software.

53. Manual editing and coding, including computer-assisted methods, should be thoroughly verified by another set of personnel. This verification can be dependent or independent. Depending on the resources available, verification may be done on a sample or 100 per cent basis or incorporate both approaches in an adaptive methodology. Again, a number of techniques are applicable and the resulting information must be made available operator-wise, batch-wise and field-wise to best facilitate corrective action and for post-hoc analysis.

54. Computer edits play an important role in error detection and correction. Detailed consistency and other checks can be laid out in consultation with subject matter experts. In some circumstances, errors may require follow-up with respondents for correction. More commonly errors can be corrected manually by reference to original questionnaires (or questionnaire images) or automatically. Careful control has to be exercised over the quality of incoming data. Batch statistics giving number and percentage of edits field-wise would give an idea of the kind of errors that the documents are subject to. Any particular problem areas should be thoroughly investigated.

Appendix V: Methods of census evaluation

1. The choice of evaluation methods to be used depends upon the evaluation objectives. Both gross and net error must be taken into account in developing the overall evaluation plan. Gross coverage error in a census is defined as the total of all persons omitted, duplicated, or erroneously enumerated. Net coverage error takes into account the underestimates due to omissions and the overestimates due to duplications and erroneous inclusions. When omissions exceed the sum of duplications and erroneous inclusions, a net undercount is said to exist; otherwise, a net over-count results. Similarly, both gross and net content errors have to be considered in the evaluation design.

2. A number of methods are available to estimate the coverage and content error of censuses. These include:

a) Quality control techniques such as internal consistency checks;
b) Comparisons of results with other data sources including previous censuses, current household surveys, and/or administrative records;
c) Record-checking, in which individual census records are matched against alternative sources and specific data items are checked for accuracy;
d) Some evaluations analyze, interpret, and synthesize the effectiveness of census components and their impact on data quality or census coverage;
e) Post-enumeration surveys are used to estimate census coverage error;
f) Post-census surveys designed to measure content error are usually known as re-interview surveys; and
g) Ethnographic and social network methods provide a way to study the effects of mobility on census coverage or to measure census coverage of specific sub-populations.

3. Other evaluation methods are also used. These include:

a) Surveys to determine customer satisfaction with data collection instruments or questionnaire assistance; and
b) Focus group interviews to learn how or why respondents behave in a certain way.

Designing an evaluation program

4. The following basic recommendations can be applied to any evaluation program:

a) Begin planning the evaluation program early in the census cycle. Early planning and design of a structured evaluation program allows appropriate consideration and accommodation of evaluation and experiment needs during the census design;
b) Decide the high-level scope and focus of research programs before developing research proposals. Define general selection guidelines or criteria, select research topics, and identify high-level research questions before designing the evaluations and experiments. Identify areas to meet the needs of external data users and internal census planners and set evaluation priorities accordingly;
c) Develop study plans for each evaluation and experiment. These project-level plans become the designated baseline documentation for achieving program research goals;

d) Develop a standardized Change Control Plan, which describes a protocol to initiate a change process. Recommendations for change (including the reasons for the change and critical implications) are submitted to a Change Control Board. The Change Control Board assesses implications of the change and approves or disapproves it;
e) Develop a milestone schedule for planning, designing, and implementing the research program. Include in the milestone schedule dates for issuing results of the operational assessments, evaluations, and experiments. Changes to the schedule should also go through the Change Control process;
f) Anticipate delays or the need to cancel some planned evaluations. During a census, staff may become overburdened with either too much evaluation work or too much of a combination of evaluation and production work. Attrition of project managers is virtually inevitable and can also be a reason to delay or cancel evaluations;
g) Explore ways to incorporate real-time evaluations during the course of the census; and
h) Develop a Risk Management Plan which identifies potential risk events and their probability of occurring, provides measures of potential impact, offers strategies for dealing with risks if they occur, and identifies the area(s) responsible for addressing each risk event. The Risk Management Plan should be a "living" document where risks can be modified as needed.

5. Register based censuses also need to be evaluated. There are a number of methods of evaluation that could be used.

6. One approach could be to compare data from a past traditional census with register data from the same time. If countries have used I-D numbers in the census then comparisons could be undertaken at the individual level, thus enabling estimation of under and over coverage. Longitudinal databases would enable estimates to be carried forward.

7. Labour force surveys provide another source to check the validity of register based censuses. Again, checks can be made at the individual level where I-D numbers have been used. One problem is that it may not always be possible to determine unambiguously which data source is the correct one.

Appendix VI: The scope and design of consultation programs

1. Consultation on a range of subject areas is an indispensable step in the preparations for the census and should be instigated early in the planning cycle. Consultations should cover (where necessary):

a) Enumeration methodology;
b) Census topics and questions;
c) Definitions;
d) Classifications;
e) Sampling;
f) Planned tabulations;
g) Geographic boundaries;
h) Processing;
i) Edit and imputation;
j) Confidentiality and disclosure control;
k) Coverage and data quality; and
l) Dissemination and conditions of use of the data.

2. Such consultations will assist the census authorities in planning for a census that is as responsive as possible to the needs of users, and can also serve to foster a wider and more informed understanding of, and support for, census plans and activities. The ultimate goal will be a greater participation in the census enumeration.

3. The user communities to be encompassed by such a programme of consultation should include (either individually or collectively):

a) Central government departments and ministries;
b) Local government authorities;
c) Health service providers;
d) Public and utility services, such as energy suppliers, water authorities, fire departments, the police, etc;
e) Academics;
f) Market researchers and other professional and/or private sector bodies; and
g) Other organisations or individuals representing the economic, social, educational and cultural life of the country.

4. Consultation may be conducted through a variety of means and media. It can, for example, be carried out through formal and regular meetings of Advisory Groups or Working Groups comprising invited representatives of the user communities and census authorities, or more directly, by means of public consultation papers and questionnaires. The increasing accessibility and use of census authorities' websites enables such direct consultation to be carried out among a wide audience including individual organisations and members of the public alike. In addition, census authorities may wish to consider *ad hoc* public meetings or bilateral meetings as means of discussing either particular census issues or more general plans and developments.

5. It is often more useful to conduct consultation separately with different types of user with common interests and perspectives, such as administrators, planners, policy makers, finance controllers, demographers or market researchers etc, rather than adopting a strategy of holding

simultaneous meetings for all data users. Such combined meetings often prove frustrating because there are substantial differences among users in their technical background and expertise and in the level of their interest in the detail of the census content and operation.

6. A particularly key area for consultation with users will be in establishing the requirements for statistical data on each census topic. Though there will likely be a set of core topics by means of which National Statistical Institutes will want to collect information to fulfil international obligations, many questions will be included to meet purely national and local requirements. To justify the inclusion of particular census topics, therefore, consultation with the user community should aim to ascertain the business cases for a range of topics to be considered. The criteria for accepting these topics should be that:

a) There is a clearly demonstrated need;
b) Users' requirements cannot adequately be met by information from other sources;
c) Relevant questions should be shown, in tests, to have no significantly adverse effect on the census as a whole, particularly the level of public response; and that
d) Practicable questions can be devised to collect data that is sufficiently accurate to meet users' requirements.

7. In order to complete the preparatory work for the census and to carry out the enumeration, the Census Office will have to expand its staff substantially and involve the co-operation of numerous government and non-governmental bodies to assist in providing personnel, equipment, supplies, accommodation, transportation or communication facilities to help in the census work. As a result, large numbers of temporary personnel will have to be trained and the contribution of a diverse group of national and local organisations will have to be effectively mobilised.

8. Because of the particular importance of the role that local government authorities can play in planning and assisting in carrying out the census, NSOs may wish to establish special working relationships with such bodies through separate liaison mechanisms. Areas in which such partnerships can be beneficial to both the national Census Office and local authorities themselves are in:

a) Establishing mutually agreed address lists for enumeration (since local authorities may often have access to alternative address lists than those generally available to census takers, particularly if there is no standard national address register established);
b) Local authorities appointing their own census liaison officer to act as a focus for ensuring that local needs and conditions are well understood by the census authority and that good communication with local census field staff is established;
c) Advising on the characteristics of local populations, particularly the location of hard-to-count groups (such as the elderly or infirm) in order to determine the most effective means of carrying out the enumeration at the local area level; and
d) Assisting with local recruitment of field staff, publicity and helpfulness.

Appendix VII: Implementation of a publicity and information campaign

1. Public acceptance and cooperation is essential to ensure the success of the census. A large-scale publicity and information campaign is recommended to inform the population of the census and to explain its purpose. Implementation of the publicity program is best undertaken by experts in the field of public relations, advertising and sociology. Such expertise is frequently not found within the national statistical office, and it may be appropriate to outsource some or all of this work. The publicity program may include:

a) Public Relations-campaign;
b) Advertising campaign;
c) Monitoring of public opinion; and
d) Monitoring of the mass media.

2. Following the census, a second information campaign is necessary to inform the public about the census results, to demonstrate how the statistical data collected are being used, and to thank the general public for participating in the census. Reassurances can also be given that privacy and confidentiality continue to be respected. This will have the effect of strengthening the image of the national statistical service.

Defining issues and target audiences

3. The before-census campaign is the main part of the program, and will have the strongest influence on the success of the population and housing censuses and on the quality of data produced.

4. An important first step is the identification of the specific census collection issues and the target audiences for the publicity.

5. The issues for the population and housing censuses should be defined on the basis of the existing situation of the country, taking into account the demographic, economic, ethnic, language and religious structure of the population. It is necessary to identify citizens' concerns to define the particular target audiences, as well as to select appropriate implementation methods to effectively reach these groups, inform them about the census, and foster a more positive attitude toward the census.

6. Some basic issues common to most countries:

a) Individuals refusing to participate in the census;
b) Individuals providing unreliable information about themselves; and
c) Individuals difficult to locate, especially the more mobile youth.

7. Specific issues can include the following:

a) Presence within the country of territories with unstable political and social conditions, where relations between the people and state authorities may be volatile;
b) Presence of socially uncooperative population groups, their unwillingness to participate in public activities; and

c) Desire from a party of citizens to express a protest towards the state in the form of refusal to take part in the census.

8. Common citizens' concerns include the following:

a) The census is used for fiscal purposes
b) The census is used to build a government database
c) The census will be used for oppression of minority national and religious groups
d) The census will be used to reveal illegal migrants
e) The census will be used to reveal or to control "anti-social elements", persons on the outside of established society
f) Criminal elements will impersonate census-takers in order to gain access to property or information

9. Target audiences can be both broad as well as specific. Examples follow:

10. Social-demographic groups:

a) Population by age groups (children of school age and teenagers, youth under 30 years, middle-aged persons, elderly people);
b) Social groups by employment type (school children, students, employed and unemployed population);
c) Professional groups (workers, businessmen, housewives); and
d) Inhabitants of megalopolises, large, medium and small cities, village settlements, people living in remote areas.

11. Groups with concerns:

a) Persons with high incomes;
b) Illegal migrants;
c) Persons without a fixed or legal residence;
d) Persons working far from their residence and family, or who may find it difficult to participate in the census procedures due to long periods of stay at work; and
e) Inhabitants of areas where there are national or religious tensions or conflicts.

Main messages

12. There are a wide variety of potential issues that can affect a census publicity campaign, and identifying them is an important part of the before-census campaign, for example:

a) Privacy and confidentiality of information given;
b) Whether the information provided was actually put to good use;
c) Cost of the census;
d) Potential use of census information for non-statistical purposes;
e) Requirement that name and address be included on the census form; and
f) Concerns about potential government intrusion into private affairs.

13. There are several main messages that census agencies will need to communicate to the public in order maximize outcomes for the census, for example:

a) Privacy and confidentiality will be protected (there are penalties for enumerators and other staff who misuse information, the information will not be used for administrative purposes, individuals will not be identified in any published information)
b) The census serves the public good as an important source of information to plan for the future;
c) Filling in the form is a duty of the citizen, which will benefit the person's country and community;
d) Cooperation is mandatory.

14. Care is necessary in finding the correct balance between these different messages. For example, an over-emphasis on the obligatory nature of the census may serve to reinforce negative perceptions that the census is an imposition by the state on the population, rather than an activity for the common good.

15. Many countries successfully develop a census logo and slogan. A simple but effective slogan and distinct logo can be used in all national and local advertising campaign and in all types of media, booklets, posters, brochures and souvenirs. The slogan and logo should be memorable and positively perceived. A logo and/or slogan that are well recognised from initial stages of the publicity campaign may serve to improve 'brand recognition' for the census. A respondent may therefore feel more reassured that the enumerator is part of the official census process.

Examples of slogan:
United Kingdom in 2001 – "*Count me in Census 2001*"
Russian Federation in 2002 – "*Write down yourself in the history of Russia*"

Publicity campaign activities

16. The public relations campaign may represent interactions with:national and regional mass-medias; regional statistical institutes; municipal bodies, the general public and other organizations. The following activities may be part of the publicity campaign:

Organization and advertisement of press conferences, round tables, briefings (including internet press-conferences), scientific conferences. These can also be part of television and radio newscasts.	Participants can be heads of national statistical services and their territorial bodies; members of Government and Parliament; parliamentarians and regional officials; important and influential public and political leaders, scientists-demographers, economists, politicians, leaders of religious groups and national communities, famous people.

Informing of support of the census from high level officials	Distribution of official documents in support of the census by high ranking national and regional government officials or the personal position of public opinion leaders.
Media relations	Discussions with journalists on issues of census content and relevance; creation of journalistic pool; organization of visits of the journalists to observe census preparations; preparation of information for mass media press releases on census preparations.
Organization and advertisement of special projects for separate target audiences	Concerts, competitions, exhibitions with the purpose of attraction of youth and national minorities; creative measures such as quizzes; thematic programs on radio and television and census materials for children to attract adults to the census through
Dispatching messages to public opinion leaders	Direct dispatch of letters to public opinion leaders with the appeal to act in support of the participation in the census.
Direct information and advertising	Use of leaflets, booklets, posters, brochures, souvenir production as the traditional form of attracting public attention to the issue.

17. The advertising campaign *e*nsures the greatest possible coverage of the audience through the use of central and regional television, radio, and printing of outdoor advertising on boards established in cities and highways.

18. The advertising campaign should be based on specially developed creative concepts through rigourous use of expert testing including focus groups, keeping in mind the needs and concerns of various target groups and regional features. The census is not a 'conventional' product or service, and innovative forms of advertising may need to be considered, particularly to target certain 'problem' groups in the population.

19. The advertising campaign on radio and television can be carried out in multiple stages:

a) The first stage of advertising campaign should have a motivational and informational character;
b) The second stage can be directed towards explaining the importance of participation in the census; and
c) The third stage - should reiterate even more strongly the importance of participation in the census, addressing possible issues of concern such as confidentiality of information collected.

20. Introduction of central and regional television and radio channels at different stages depends on the advertising strategy developed. It is not essential to film professional actors in advertising clips. It may be more persuasive to use non-actors in advertising clips.

21. The languages used for advertising and other publicity should reflect the variety of languages that may be spoken in the country or in specific regions. This will help to ensure that the necessary information reaches minority groups in the population.

22. At the last stage, directly before the census, placement of direct publicity is possible - outdoor advertisement boards, posters, distribution of leaflets and souvenirs.

23. *Monitoring public* opinion can be carried out through social surveys, with increasing intensity. These surveys can provide information on ::

a) Monitoring of dynamics of public opinion attitude to the census;
b) Testing of advertising production; and
c) Support the ongoing publicity campaign with materials for press conferences, press releases, and direct advertising campaigns in response to emerging public attitudes.

24. *Monitoring of mass media* envisages an analysis of mass-media publications concerning the issues of the census. It is an ongoing accumulation of information, detection and prevention of the development of negative published comments on the census, and preparation of adequate answers to negative reports and information..

During data collection

25. During the census, the publicity and information campaign activities undertaken during the pre-collection stage should be put into action as appropriate. This includes the following methods:

a) The advertising campaign (the third stage) in central and regional television, radio, newspapers, outdoor advertising on billboards and posters;
b) Organization of press conferences, round tables, briefings with participating of the influential people and census staff; and
c) Advertisement in mass-media of the census operation procedure with politicians including national and local government politicians, local community leaders, religious leaders. This should also inform the public how to take part in the census: for example, what to do if they do not receive a census form, where to get further information.

Post-census campaign

26. The basic methods of realization of a post-census program on informational support of results of the population and housing census can be the same as those of the preparation campaign:

PR-measures	Organization of press conferences, briefings, round tables; publications in the mass-media, organization of thematic TV and radio programs; availability of the information on a specially developed Web-site, organization of special creative competitions;
Direct advertising	Distribution of popular brochures and booklets with the basic results of the census; accommodation of brief results on stands located on the central streets of cities; organization of radio and video clips; dissemination of means of direct propaganda with brief results - on calendars, bookmarks, souvenirs;
Monitoring of public opinion	Implementation of population interviewing on sources of collecting the information on results of the past census and trust towards the results

Financial Resources

27. The cost of the Publicity and Information Campaign should be included in the budget of the population and housing census.

28. In-kind resources may also be possible within the framework of sponsorship programs - large firms, enterprises, banks, insurance companies etc. These can help, for example, in implementing motivational measures, manufacturing souvenir production with logo of the census, measures of direct promotion (posters, leaflets, booklets), video and video-clips, etc. However, caution is necessary to ensure that such sponsorship does not lead the public to perceive that the census operation is undertaken for commercial reasons, or that the sponsoring firms receive privileged access to the census data (or even to individual respondent information).

Appendix VIII - Main concepts, terms and definitions of the international classification of functioning, disability and health

1. The main concepts, terms and definitions of the ICF are:

Body functions	are the physiological functions of body systems (including psychological functions).
Body structures	are anatomical parts of the body such as organs, limbs and their components
Impairments	are problems in body function or structure such as a significant deviation or loss
Activity	is the execution of a task or action by an individual
Activity limitations	are difficulties an individual may have in executing activities
Participation	is involvement in a life situation
Participation restrictions	are problems an individual may experience in involvement in life situations
Functioning	is the umbrella term for body function, structure, activity and participation
Disability	is the umbrella term for impairment, activity limitation and participation restriction
Environmental factors	make up the physical, social and attitudinal environment in which people live and conduct their life
Personal factors	are the particular background of an individual's life and living and comprise features of the individual that are not part of a health condition or health states, such as gender, race, age, fitness, lifestyle habits, coping styles, social background, education, profession, etc. The ICF does not include a classification of personal factors
Contextual factors	represent the complete background of an individual's life and living including two components, being environmental factors and personal factors which may have an impact on the individual with a health condition and that individual's health and health related states.

One level classification

2. In order to get a better idea of the content of the ICF we mention the first-level or parent categories of classification (chapter headings) of each of the classifications included in the ICF.

Body functions:

(1.0) Mental functions
(2.0) Sensory functions and pain
(3.0) Voice and speech functions
(4.0) Functions of the cardiovascular, haematological, immunological and respiratory systems
(5.0) Functions of digestive, metabolic and endocrine systems
(6.0) Genitoury and reproductive functions
(7.0) Neuromusculoskeletal and movement related structures
(8.0) Functions of the skin and related structures

Body structures:

(1.0) Structures of the nervous system
(2.0) The eye, ear and related structures
(3.0) Structures involved in voice and speech
(4.0) Structures of the cardiovascular, immunological and respiratory systems
(5.0) Structures related to the digestive, metabolic and endocrine systems
(6.0) Structures related to the genitourinary and reproductive systems
(7.0) Structures related to movement
(8.0) Skin and related structures

Activity and Participation[68]:

(1.0) Learning and applying knowledge
(2.0) General tasks and demands
(3.0) Communication
(4.0) Mobility
(5.0) Self-care
(6.0) Domestic life
(7.0) Interpersonal interactions and relationships
(8.0) Major life areas (such as education, work and employment, economic life)
(9.0) Community, social and civic life

Environmental factors

(1.0) Products and technology
(2.0) Natural environment and human-made changes to environment
(3.0) Support and relationships
(4.0) Attitudes
(5.0) Services, systems and policies

[68] At the time the revision process of the ICIDH was in a final stage it seemed to be possible to distinguish activity and participation at the level of definitions. However it was not possible to reach agreement about the related classifications. For this reason there is one classification for activity and participation (domains) with four suggestions how to use this in an activity or participation mode.

3. Personal factors are mentioned as important factors but are not classified in the ICF. For health conditions (disorder, disease, injuries and congenital causes of disability) reference is made to the ICD-10[69] and the ICECI [70].

4. In order to specify the functioning and disability situation of a person, qualifiers are available to indicate the extent and level of functioning/disability and the environmental factors as being facilitators or barriers. The advantage of the ICF is the broad spectrum offered from the body function/structure (impairment) point of view up to the participation one including the influence of environmental factors. It is recommended to use this broad spectrum as often as possible.

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[69] International Statistical Classification of Diseases and Related Health Problems, Tenth Revision, Vols. 1-3, Geneva, World Health Organization, 1992-1994.
[70] International Classification of External Causes of Injuries, Geneva World Health Organization, 2004.