



Economic and Social Council

Distr.: General
16 July 2014

Original: English

Economic Commission for Europe

Conference of European Statisticians

Group of Experts on Population and Housing Censuses

Sixteenth Meeting

Geneva, 23-26 September 2014

Item 5 of the provisional agenda

Operational aspects of censuses

Operational aspects of censuses - Draft text for the Conference of European Statisticians Recommendations for the 2020 census round

**Note by the UNECE Steering Group on Population and Housing
Censuses and the UNECE Task Force on Census Costs and Benefits**

Summary

This document presents the draft text on operational aspects of the census for the new Conference of European Statisticians Recommendations for the 2020 Round of Population and Housing Censuses. It was prepared by the UNECE Steering Group on Population and Housing Censuses and the UNECE Task Force on Census Costs and Benefits based on the first proposals discussed at the September 2013 meeting of the UNECE-Eurostat Group of Experts on Population and Housing Censuses, and on further discussion within the Task Force and the Steering Group.

I. Fundamental Principles of Official Statistics, Integrity, and Legal Basis for a Census

[NOTE: This is a new section of the CES Recommendations for the 2020 census round, except for para. 3 on “Integrity” that was included in the chapter on methodology of the CES Recommendations for the 2010 census round (para. 68)]

A. Fundamental principles of official statistics

1. The need for a set of principles governing official statistics became apparent at the end of the 1980s when countries in Central Europe began to change from centrally planned economies to market-oriented democracies. It was essential to ensure that national statistical systems in such countries would be able to produce appropriate and reliable data that adhered to certain professional and scientific standards. Towards this end, the Conference of European Statisticians developed and adopted the Fundamental Principles of Official Statistics in 1992. Statisticians in other parts of the world soon realized that the principles were of much wider, global significance. Following an international consultation process, a milestone in the history of international statistics was reached when the United Nations Statistical Commission at its Special Session of 11-15 April 1994 adopted the very same set of principles – with a revised preamble – as the United Nations Fundamental Principles of Official Statistics. (See Appendix II - The Fundamental Principles of Official Statistics).

2. At its forty-second session in 2011, the Statistical Commission discussed the Fundamental Principles of Official Statistics and acknowledged that the Principles were still as relevant today as they had been in the past and that no revision of the 10 Principles themselves was necessary. The Commission recommended, however, that a Friends of the Chair group revise and update the preamble of the Fundamental Principles in order to take into account new developments since the time when the Principles were first formulated. At its forty-fourth session in 2013, the Statistical Commission adopted the revised preamble.

B. Integrity

3. 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 Statistical Office 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.

4. 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. Principle 7 states that the laws, regulations and measure under which the statistical systems operate are to be made public. This implies that the legal basis is of fundamental importance for the census.

C. The legal basis for a census

5. In most countries, the preparation and conduct of a census regardless of the methodology adopted requires a legal basis, which may include regulating issues such as:

- (a) the allocation of funds for the census operations;
- (b) the general scope, content and timing of the census;
- (c) the obligation of citizens to provide complete and accurate census information, and of the enumerator to record the responses faithfully, and the sanctions and penalties to be imposed for failure to comply;
- (d) the relationships between the agency responsible for the census and other public administrations involved in the census operations; and
- (e) the uses and linkage of registers to produce census data or to support field operations.

6. In addition, the confidentiality of the individual information should be strongly and clearly established in the legislation and guaranteed by adequate sanctions so as to provide a basis for the confident cooperation of the public. In some cases, general purpose data-protection laws may include all the provisions necessary to cover the specific needs of censuses, including for instance the possible use of register data for censuses, or specific measures to be applied to census enumerators. In others cases, specific provisions on data confidentiality have to be included in the census acts, to take into account those aspects that are specific to the census.

7. In many countries, a specific census act or appropriate regulations are approved before each census, both to authorise the topic content and to deal with the issues mentioned above. In some countries, however, a more general statistics act includes all the necessary provisions required for the conduct of a population and housing census and/or the production and dissemination of statistical data, thereby obviating the need for specific census legislation.

8. In countries that lack permanent or primary legal authority for the taking of periodic censuses, or where secondary legislation is required to enable a particular census to take place, it is important to act early to establish the necessary legal authority. The legislative process, and the timeframe necessary to complete it, will of course, vary from country to country, but sufficient time should be allowed for the completion of such a process well before any activity that is dependent on the legislation (such as the appointment of field staff for example) is scheduled to begin. In planning such a timetable, countries should always build in a contingency to allow for unscheduled delays in the legislative process.

9. The principle of conceptual and organizational flexibility should be observed in drafting primary or framework census legislation. Thus, the inclusion of provisions that are too rigid or prescriptive regarding the type of data to be collected or the structure and relationships of the various parts of the census organisation should, if possible be avoided. Instead, the necessary detail should be contained in the census regulations promulgated by the census authorities. Moreover, provision should be made, in either the legislation or implementing regulations, for sanctioning the use of administrative procedures, including the appropriate delegations of authority for the procurement of equipment and supplies and the recruitment of personnel during the operational phase of the census. Where the authority for executing elements of the census is devolved to bodies or organizations not under the direct control of the National Statistical Institutes (such as local administrative committees), such power must be clearly prescribed in regulations or other statutory instruments so that the authority to act cannot be challenged.

10. Where census data is primarily collected or derived from administrative registers or other data sources, that will often be owned, held, and controlled by legal bodies or agencies other than the census agency, sufficient legal powers must be available to the

National Statistical Institutes (NSI) to allow it lawfully to access, hold, process and disseminate the necessary data, within the provisions of conventional national data protection and confidentiality legislation.

11. Countries moving from a census methodology based on a long-standing tradition of field enumeration to one based primarily on the use of shared and/or linked administrative data, or where the information is to be collected from mandatory sample surveys will, in particular, need to allow additional time for any necessary new legislation to be drafted, having previously demonstrated that such new legislation is publicly acceptable.

12. General or specific legislation will often also be necessary to provide the NSI with the authority to disseminate the census data, and/or to charge for the provisions of statistical services related to the census data such as the preparation and supply of customised cross-tabulations of variables not otherwise available in standard outputs. There will often be a requirement for the confidentiality of the data to be protected in law through, for example, the use statistical disclosure control measures, though it is not recommended that the details or parameter values of such measures be prescribed (see also the section on Confidentiality and security in the chapter on Methodology).

II. Communications and publicity

[NOTE: The text in paras. 13-19 below is new in the CES Recommendations for the 2020 census round. Sections A and B below present revised versions of the text that was included respectively in appendices VI and VII of the CES Recommendations for the 2010 census round]

13. An effective communications strategy, together with far reaching publicity and information campaigns, play an essential important role in ensuring the success of the census. This is especially so for those countries adopting a field enumeration methodology, either wholly or in part, where the general public is expected to actively participate in the census activities as respondents and, possibly, as temporary employees as part of either the field staff or in the data processing operation. But even among countries adopting an entirely register-based approach, where direct engagement with the public may be minimal, communication with key stakeholders is nevertheless important to ensure that acceptable levels of quality for such components as the relevance and accessibility of outputs can be achieved.

14. In the planning phases of the census, consultation with a wide range of stakeholders is necessary to ensure that user requirements are met, questionnaire design is effective, the methodology is accepted, working partnerships are forged, and that technical specifications are well understood.

15. During the operational phase, publicity and information campaigns are usually necessary to inform the public that a census is taking place and also to provide the necessary information to allow and encourage them to participate. Special attention is often given to identifying and targeting hard-to-reach population groups in order to ensure consistent levels of response across the country. In essence, the aim of these is to engage, educate, explain, and encourage, and (if necessary) enforce participation.

16. 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, through good communications and a publicity campaign, have become increasingly necessary for the purposes of ensuring a good coverage and the collection of reliable information, particularly in those countries adopting a field

enumeration methodology either fully (as in a traditional census) or in part (as a component of a combined approach).

17. The main task in any such publicity campaign, is the explanation of the importance of the census for the purposes of the depiction of society, the socio-economic development of the country, and the analysis of social, regional and national demographic change. The census has a large cultural and historical context, not only to the country itself, 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.

18. With particular reference to a traditional field enumeration, the main (and perhaps most important) practical goal is to encourage a positive attitude of the society to the census, prompting the inhabitants of the country to participate and give reliable information about themselves. But a good communications and publicity campaign should encompass a wider set of messages, whose components might conveniently be summarised as the "8 Es":

- (a) Engagement: to make people aware of the census;
- (b) Education: to tell people about the benefits (to them and to the country) of the census;
- (c) Explanation: to tell people what to do and when;
- (d) Encouragement: to persuade people who had not yet responded to do so;
- (e) Enforcement: to remind people about their legal obligation and duty to take part if they persistently refuse to do so;
- (f) Expression of thanks for taking part; and
- (g) Extolment of the value of the data in order to Expand the use of the published results.

19. 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 the data collection operation. The implementation of a communications and publicity campaign — before, during, and after data collection — is described in more detail below.

A. The scope and design of consultation programs

20. 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. In order to ensure that the census is fit for purpose, consultations should cover (where appropriate):

- (a) Enumeration methodology;
- (b) Identifying hard-to-count populations;
- (c) Language, community liaison and outreach programs;
- (d) User requirements for census topics and questions;
- (e) Definitions;
- (f) Classifications;
- (g) Sampling;
- (h) Planned tabulations;

- (i) Geographic boundaries;
- (j) Processing;
- (k) Edit and imputation;
- (l) Confidentiality and disclosure control;
- (m) Coverage and data quality;
- (n) Design, content and dissemination of output and conditions of use of the data; and
- (o) Evaluations.

21. Some of these topics will be aimed more at users and others at informed experts, but all such consultations will assist the census authorities in planning for a census that is as responsive as possible to the needs and views of all stakeholders, 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.

22. The key user communities to be encompassed by such a program of consultation should include (either individually or collectively):

- (a) Central government departments and agencies;
- (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 and education service providers;
- (f) Market researchers and other professional and/or private sector bodies; and
- (g) Other organisations or individuals representing the economic, social, and cultural life of the country.

23. Many countries will want to include in the latter group organisations or bodies representing in particular, ethnic communities, religious/faith groups, the disabled, housing associations and those agencies with particular interests in catering for the homeless.

24. Other key stakeholders may include partners, with whom the Census Office collaborates for the provision of specialist services, and donors who may help fund elements of the census operation. It is also important not to overlook the role that the press and other media can play in the success (or otherwise) of the census. These, too, should therefore, be engaged wherever practicable.

25. 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 and social media such as Facebook, YouTube and Twitter enables such direct consultation and feedback to be carried out among a much wider 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.

26. It is often more useful to conduct consultation separately with different types of user or stakeholder with common interests and perspectives, such as administrators, planners,

policy makers, finance controllers, demographers, market researchers, community leaders etc., rather than adopting a strategy of holding simultaneous meetings for all data users. Such combined meetings often prove to be less effective because there are substantial differences among users and stakeholders in their technical background and expertise, and in the level of their interest in the detail of the census content and operation.

27. Cognitive tests, pilot tests, focus groups, and other tools can be used to understand how respondents interpret and react to census questions and instructions, in order to design better questionnaires. This type of testing can also evaluate different field techniques to increase response and participation, and can help to sort out the meaning of survey responses. During a pilot, the effectiveness of census questions and instructions can be better evaluated under typical field conditions.

28. 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 NSIs will want to collect information to fulfil international obligations (such as the EU Census Regulations), 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 for the information at both national and local area level;

(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.

29. In order to complete the preparatory work for the census and to carry out the enumeration, the Census Office will often have to expand its staff substantially and may require 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 may have to be trained and/or specialist consultants recruited, and the contribution of a diverse group of national and local organisations may have to be effectively mobilised.

30. Because of the particular importance of the role that local government authorities can play in planning and assisting in carrying out the census, National Statistical Institutes 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 and other stakeholders 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.

B. Implementation of a publicity and information campaign

31. Particularly in the case of countries that undertake a significant field operation, 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 itself, and it may therefore be appropriate to outsource some or all of this work. The publicity program may include:

- (a) a public relations campaign;
- (b) a community liaison (or outreach) program;
- (c) an advertising campaign;
- (d) monitoring of public opinion; and
- (e) media relations including monitoring of the mass media.

32. Following the data collection phase of 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 will continue to be respected. This will have the effect of strengthening the image of the national statistical service.

1. Defining issues and target audiences

33. The pre-enumeration 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.

34. An important first step is the identification of the specific data collection issues and the target audiences for the publicity.

35. The key issues relevant to the censuses should be defined on the basis of the existing situation of each 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.

36. Some basic issues common to most countries relate to those individuals who:

- (a) refuse to participate in social or communal activities;
- (b) provide unreliable information about themselves; or
- (c) are difficult to locate, especially the more mobile youth.

37. 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 with an unwillingness to participate in public activities; and

(c) Desire from lobby groups or individuals to express a protest against the census on the grounds of cost, perceived intrusiveness, confidentiality and/or for reasons of ethical reasons.

38. In particular the public's concerns may include one or more of the following: that the census is/will be used:

(a) for fiscal (taxation) purposes;

(b) to build a government database;

(c) for the oppression of minority national and religious groups;

(d) to reveal illegal migrants; and

(e) identify and to control 'anti-social elements', and persons on the outside of established society;

and that criminal elements will impersonate census-takers in order to gain access to property or personal information for the purposes, for example, of identity theft.

39. Target audiences can be both broad as well as specific. Some examples are given here:

Social-demographic groups:

(a) Population in particular age groups (young babies, children of school age and teenagers, youth under 30 years, elderly people);

(b) Social groups by employment type (school children, students, the employed, housewives and unemployed population);

(c) Professional groups (workers, businessmen); and

(d) Inhabitants of inner cities or other densely urban areas, large, and (in contrast) people living in remote rural areas.

Groups with specific concerns or living in particular circumstances:

(a) Persons with high incomes;

(b) Illegal migrants;

(c) Persons without a fixed or legal residence;

(d) Uncooperative landlords who may not wish to report the presence of tenants such as economic migrants;

(e) Persons working far from their usual residence and family, or who may find it difficult to participate in the census procedures due to long periods of stay at work; and

(f) Inhabitants of areas where there are ethnic or religious tensions or conflicts.

2. Main messages

40. 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 is 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.

41. 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.

42. 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.

43. Many countries successfully develop a census 'brand' including a 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. The aim should be to encourage the respondent to may feel more reassured that the census is an inclusive and beneficial activity.

44. Examples of slogans used in the 2010 round of censuses in the UNECE region included:

- (a) "The future starts here" (Italy)
- (b) "Everyone counts" (Estonia)
- (c) "We count on you" (Luxembourg and Portugal)
- (d) "Help tomorrow take shape" (the United Kingdom).

3. Publicity campaign activities

45. 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 methods and media may readily be utilised in any part of the publicity campaign to reach one or more sectors of the community:

- (a) National and local press and magazines;
- (b) National, regional and local TV and radio;
- (c) Community-based media;

- (d) Press conferences, round table discussions and briefings;
- (e) Ad hoc statistical or scientific conferences/events;
- (f) Internet websites and social media;
- (g) Leaflets, posters, billboards;
- (h) Call centres (telephone helplines) and local drop-in help centres;
- (i) Paid/free advertising;
- (j) SMS texting;
- (k) Audio tapes, CDs, DVDs;
- (l) School promotions.

46. Locations used to promote the census during the publicity campaign may include:

- (a) Regional or local government offices
- (b) Schools, colleges and universities
- (c) Banks, post offices, police stations and other public user facilities
- (d) Stations, airports and seaports
- (e) Public libraries
- (f) Local information help points
- (g) Places of religious worship
- (h) Factories and other workplaces
- (i) Bars, pubs theatres and other places of entertainment
- (j) Sports facilities.

47. Choice of location, the content of the publicity material and the mode of dissemination will often reflect the need to attract the attention of particular hard-to-reach groups. As noted above, schoolchildren and students (particularly older students living away from home) are notoriously difficult to reach in a census with a traditional field enumeration. But young men (particularly those in urban areas), the elderly, the infirm or disabled and recent immigrants also represented population groups that are generally hard to enumerate. Furthermore, many parents often forget to include recently born babies in their census returns. Other groups that may need to be specially targeted included the homeless, people with literacy and language difficulties and inner city populations.

48. Any advertising campaign should seek to ensure the greatest possible coverage of its audience. It should be based on specially developed creative concepts through rigorous 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.

49. As noted above the publicity campaign can consist of a number of phased stages to time with different elements of the census operation. Initial engagement in the run-in to the census (but not too soon) should make people aware of the importance of the census, and to explain the benefits not only to the country as a whole but to the individuals themselves. As the enumeration phase come into operation the publicity messages should focus on explaining what people have to do and when and to encourage them to take part. Some (but not too much) emphasis should be given to mandatory nature of the obligation to take part,

but far more attention should be given to public assurances about confidentiality and data security at this stage — though, of course, the importance of confidentiality should always be emphasised throughout their entire census operation. More emphasis can then be given to enforcement at the stage when the follow-up of non-response and refusal takes place after census day.

50. Census Offices may then want to extend their communications program to include messages of thanks and appreciation to the general public for taking part in the census, and then in due course to go on to promote the availability of the census results and to encourage their use.

51. Introduction of central and regional television and radio channels at different stages depends on the publicity strategy developed. It is not essential to film professional actors in advertising clips or promotional films, although commercial advertising agencies, if employed, will tend to do so. It may sometimes, however, be more persuasive to use non-actors.

52. The languages used for advertising and other publicity media should reflect the variety of languages that may be spoken in the country or in specific regions. This will help to ensure inclusivity across a wide of minority groups in the population.

53. At the last stage, directly before the census, placement of direct publicity is possible — outdoor advertisement boards, posters, distribution of leaflets and souvenirs.

54. 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 on-going publicity campaign with materials for press conferences, press releases, and direct advertising campaigns in response to emerging public attitudes.

55. Monitoring of mass media involves an analysis of mass-media publications concerning the issues of the census, and particularly the extent to which different population groups have been targeted. It is an on-going 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. Increasingly the media has a significant influence on people's behaviour and even minor distractions and mistruths can have a detrimental effect on the outcome of the census. Therefore, in developing its publicity campaign (whether outsourced or done in-house) NSIs should give particular attention to preparing for unexpected events (such as negative attitudes, malicious lobbying, technical difficulties, delays, misleading information, etc.). It is advisable to have in advance up-to date and flexible responses to a wide variety of questions and issues, and to be able to react quickly to unexpected, negative (or positive), or unusual events in order to maintain a smooth census operation. It is also recommended that all official participants involved, from senior NSI officials to field managers, to know their roles in the communication process both with the media and the public at large.

III. Dissemination, documentation, metadata and archiving

A Dissemination

[NOTE: In the CES Recommendations for the 2010 census round, this topic was included in the chapter on methodology (paragraphs 92-99)]

56. A census is not complete until the information collected is made available to users in a form, and to a timetable, suited to their ever changing 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 the section on Confidentiality and Security in Chapter I – Methodology).

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

(a) as published reports (either in hard copy or, more commonly, in digital media) 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 other outlets;

(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 datasets available online through NSI websites or other electronic media, with or without dynamic or interactive data visualisation tools to enhance the value of the statistics;

(d) as commissioned or customised output produced from a database, comprising customised cross-tabulations of variables not otherwise available from standard reports or abstracts but which should conform to the same statistical disclosure controls applied to standard outputs; and

(e) as microdata (often referred to as public use samples), usually available in a restricted format only and often supplied or accessed under secure and strictly controlled conditions where thorough steps have been taken to protect the confidentiality of the data.

58. Tabulations required by only a few users, such as certain government offices or specialized research organizations, can be supplied in unpublished form (that is to say, unpublished hard copy tables or tabulations in electronic format). Such data need not be tabulated until they are required.

59. Due to their ever increasing production costs, printed hard copy publications are becoming less the preferred choice for the main dissemination method of census results, though paper still provides a medium that does not readily deteriorate and does not require the user to have any particular hardware, software or technical skills. The role of traditional publication, though they may still often be in printed form, is changing. Such publications can provide coherent and consistent commentary on individual topics and therefore may suit particular users or markets, but users will generally expect outputs to move from their previous static hard copy or PDF format to more interactive, dynamic, digital forms of dissemination.

60. Concurrent release of large data sets may, however, be made possible only by distribution through the use of high capacity electronic media. Moreover, when data are provided in electronic format, or online, 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 spread sheet format for easy retrieval and manipulation. Dissemination strategies should also be harmonised with any national government policies on open data.

61. With the increasing importance of, and the users' familiarity with, 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 (see the section on Confidentiality and Security in the chapter on Methodology). In the design of census outputs, consideration should be given to all forms of developing technology used by users, such as smart phones and other portable devices. Social media such as Facebook, Twitter and You Tube, are likely to become an increasingly popular and effective means of disseminating small amounts of output, particularly to the non-specialist user. Moreover, use of such media will often demonstrate an NSI's commitment to engage and establish a dialogue with users in order to more readily respond to their questions and concerns.

62. While online access or dissemination of such micro- and/or macro-databases on computer media can greatly contribute to an enlargement of the user base and thus to a greater demand for census data, two cautionary notes are important to keep in mind. First, certain cross-tabulations may be of questionable value from a substantive viewpoint because of non-response, sampling or processing errors, or because of processing or imputation procedures. The census authorities should establish procedures for warning potential users about such problems to help safeguard the credibility of the entire census. Some census organizations refuse to permit the release of certain cross-tabulations for reasons related to substantive quality, although such a policy may often alienate users. Other organizations will release such cross-tabulations only where there is a clear policy that takes into account both substantive and technical considerations. Second, some detailed cross-tabulations and all files with individual records potentially pose problems in respect of disclosing information about identifiable individual respondents in violation of the rules on census confidentiality. This issue is more fully discussed in [NOTE: The appropriate cross-reference should be provided]. Both the substantive quality and confidentiality issues need to be addressed and appropriate safeguards established. On the other hand, neither issue should pose any problem with respect to the dissemination of a wide range of census products.

63. 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 area 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) Population profiles or key summary statistics for small areas and small population groups;
- (d) Spatial and graphical analyses;
- (e) Value added products such as area and/or household classifications; and
- (f) Supplementary metadata covering definitions, classifications, and coverage and quality assessments.

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

65. The initial release of population counts is generally awaited with anticipation among users ranging from the general public to programme and policy administrators. Thus, some countries release provisional results very soon after enumeration is completed. Subject to change once the full data-processing and verification operations have been completed, these nevertheless provide a general picture of population trends. Data users should, however, be made aware of implications of using provisional population counts. The schedule and description of upcoming releases of final results and products should be made public early in the process in order to maintain public interest in the census. The releases can be staggered, from simple, short descriptive summaries, covering a country's major geographical divisions initially, to more comprehensive cross-tabulations and descriptive thematic and analytical reports later on.

66. Data should in principle be free at the point of access or delivery, but charges, where they are necessary (for example in the case of customised outputs), should be set to make access to the results affordable to all types of users. There may, for example, be a requirement for NSIs to provide a paid print-on-demand service to supply census material to users who prefer paper copies. Such users should not be disadvantaged by the lack of paper-based output.

67. Products should be developed which will allow statistical and geographical information to be delivered together with Geographical Information Systems (GIS) and/or the use of other application programme interfaces (APIs) to meet as widespread an interest, and with as much flexibility and inter-connectivity, as possible commensurate with the necessary assurances on confidentiality. Users should be able to find information quickly and simply and in a mobile format. By having associated graphic and mapping capabilities, NSIs will greatly increase the usefulness of their census data. 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 countries now produce this kind of census product, sometimes in co-operation with commercial agencies. The mashing-up of census information with other databases will offer even further opportunity for the data to be more widely utilised.

68. Thematic mapping and data visualisation will become an increasingly important element of dissemination of outputs and is likely to appeal to NSIs because of its ability to engage with users and increase the outreach of census data. But data visualisation is a broad field, with content and structures ranging from simple info graphics through to sophisticated tools for exploring multi-dimensional data analysis. Moreover, data visualisation may present difficulties for some census agencies. It may be the case that the skills required for effective visualisation are in short supply, and there are problems with dedicating sufficient resources to its development, especially given the budgetary constraints that are being faced by many agencies during the decennial period. However, users are increasingly expecting web content to be visual, engaging and personal, so developing a data visualisation capability should be a high priority on many NSIs' wish list.

B. Documentation and metadata

[NOTE: In the CES Recommendations for the 2010 census round, this topic was included in the chapter on methodology (paragraphs 65-67)]

69. An important component of any country's programme of disseminating the results of its census is a comprehensive portfolio of supporting documentation and metadata to help explain, clarify, and enhance the value of the statistical outputs, particularly with regards to making comparisons with previous censuses and other data sources.

70. A metadata system provides supplementary information on characteristics of surveyed and published data. Each NSI will use its own metadata system based on international standards while corresponding, at the same time, to the specifics of national requirements. Since a census and its results are often closely connected with other areas of statistical activities, it is recommended that the census metadata system in each country should use the same elements as the entire metadata system of the particular NSI. What is also usually necessary, however, is that the census metadata should contain some elements that are used only for that census. The metadata system should also ensure the widest possible comparability of data internationally.

71. The census for the 2020 round should also ensure comparability with data from the previous censuses while at the same time including new elements relevant for any development that has taken place during the time since that previous census. Thus the metadata system should also be comparable with that of the previous census but updated in line with the needs arising from subsequent developments. The metadata systems of individual NSIs should also reflect the extent to which they use traditional and/or administrative data sources.

72. A metadata system should at least encompass:

- (a) definitions of terms and concepts used;
- (b) data dictionary or glossary of terms;
- (c) explanatory notes to the tables;
- (d) classifications and nomenclatures;
- (e) the census questions (in the case where the information is collected through a conventional field enumeration process; and
- (f) the purposes for which the information is collected, particularly in the case of administrative data

73. 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. Supporting documentation might cover a wide range of specific issues such as: basic methodology, coverage, response, data sources, pilots and tests, derived variables, internet responses, imputation, and post-enumeration surveys, as well as reports covering more general descriptions of the census operation as a whole and the quality of the data. The extent of documentation and dealing specifically with coverage and quality issues is covered in [NOTE: The appropriate reference should be provided] but it is recommended here that, as a minimum, countries should include specific quality and coverage measurements such as levels of response (nationally and locally) and levels of data imputation for the data source as a whole and for individual topics) as part of the census metadata. Methodological reports are particularly important where the underlying methodology has changed since the previous census (such as moving from a traditional field enumeration to a wholly or

partially register-based approach). Such changes are likely to affect the definitions and concepts used and hence the comparability between censuses.

C. Archiving

[NOTE: This is a new section]

74. The Census is a special statistical data source where continuous and comparable information covering a period of up to 100-150 years may be available. This provides the opportunity to create a unique source of data but puts a big responsibility on the NSI (or appropriate national archive agency) to keep this special historical picture of society for the future. Census data is thus valuable not only for present decision makers and users but also for future generations. The NSI has the responsibility to handle, archive and store this 'treasure'.

75. Many countries retain the census information relating to individual persons and households only for as long it is required for data processing and the production of the statistical result, or until the census is conducted. However, the scientific, socio-historical and genealogical value of the individual records should not be underestimated when considering the overall cost benefits of the census. If countries do intend to retain the records for such research, they should ensure that there is a robust legal and physical framework in place to protect the security and confidentiality of the records until they become open to the public.

76. Closure of census records should extend to cover a period that is sufficient to protect the confidentiality of the information, particularly any sensitive information, about living people, or at least minimise the risk of breaching such confidentiality. Countries should resist any move among the genealogical and family history community to seek to reduce the closure period to an extent that this risk becomes critical. A period of 100 years is therefore recommended, although with life expectancy ever increasing, countries may wish to consider extending that, depending on national circumstances.

77. In addition to the archiving of the census records (for those countries that do so) it is equally important - more so in fact - for all countries to ensure the preservation of, and easy access to, all the metadata and procedural/operational material, including all project management documentation, created during the entire census process. Not only does this provide a valuable audit trail when coming to evaluate the success and effectiveness of the census, but will also enable future census planners to learn from the successes achieved, and the challenges faced, by their predecessors.

78. In doing so, Census Offices should ensure that, as technology rapidly develops, the media and systems on which this valuable information is archived, is regularly reviewed in order to ensure that it can be readily retrieved whenever it may be required in future years 20-50 years hence.

III. Costs and Benefits

[NOTE: This is a new section]

A. Planning and monitoring costs

79. Since financial practices vary greatly among countries it is not possible, or appropriate, to recommend a single approach to census budgeting and cost control. Nonetheless a few generally accepted principles should be noted.

80. First and foremost, effective planning and control of the various census operations are not possible without a careful financial estimate of the cost of the census operation, including all of its key components. It is recommended that a detailed list of census activities is drafted and, as far as possible, that the budget is designed to correspond to this list of activities.

81. Because practice varies so widely it is not possible to specify a definitive list of such activities but in defining these activities account should be taken of what is appropriate to allow monitoring of costs, effective audit and planning of future operations. For many purposes it may be helpful to make use of the six main operational phases : (a) preparatory work, (b) enumeration/data collection, (c) data processing, (d) tabulation and the dissemination of results, (e) evaluation and (f) analysis. These phases might be applied both to traditional and register based censuses.

82. Consideration of the potential cost of each element, and where appropriate alternative approaches, will obviously play a role in deciding the approach to future census taking.

83. Second, (where appropriate) it is critical that this census plan and budget is presented by national statistical agencies to their respective Governments with adequate lead time, to ensure the availability of sufficient resources from national budgets. Practice on this will differ but the lead time for obtaining funds must be taken into account at the planning stage. Culture or historical reasons may determine the public perception of conducting a census and how much a country is willing to spend on collecting census data. In some countries the benefits of conducting a census are well-recognized or considered 'obvious' while in others the census costs are the focus of close attention and challenge.

84. Information on expenditures from previous operations will provide an important basis for estimating the budget of the census and this is one key reason why careful monitoring and recording of costs is critical. Figures from the previous census will of course have to be modified in order to take into account of changes in costs (for example, related to changes in technological or wage rates) and anticipated changes in the population itself (for example, total size, the percentage in urban (and usually more difficult to enumerate) areas, and the average household size), all of which may affect the cost structure of the census.

85. National statistical offices should set up appropriate robust financial management systems that will ensure speedy disbursement of wages and other funds, proper receipting of their expenditure and an efficient audit. As far as possible, transparent and consistent accounting procedures should be applied at all stages and at all levels of the census operation, and all significant costs should be recorded to an agreed classification as discussed above.

86. Effective recording of costs is critical not only to ensure control of spending but also to allow the examination of the trade-offs in terms of costs and benefits of alternative ways of carrying out census operations. Although cost experience from a previous census in a country may provide useful experience for planning the next census, considerably more caution should be exercised in using the cost parameters from other countries. Differences in census content, organisation and operations, as well as different approaches to cost accounting, can introduce serious incompatibilities into such country-to-country cost comparisons.

87. There may be value in involving staff at the administrative and supervisory levels in estimating and monitoring costs locally in order to help promote "cost-consciousness" throughout all levels of the census operation.

88. The complexity of carrying out a census means that the operation (and so the costs) will rarely align exactly with plans. A perfect correspondence between the estimates and the final costs is not to be expected. Changes in the prices of major components of census costs should be monitored on a regular basis with either the census budget adjusted accordingly or the census plans modified. The development of the census budget is usually an incremental process in which rough initial estimates are replaced by more detailed and precise statements of resource requirements. As far as possible the approach should be discussed and agreed with funding agencies in advance and any risks associated with changes of costs fully assessed.

89. Costs associated with approaches to census that depend upon use of a population register or other administrative sources will require a rather different approach — although many of the same principles hold. Censuses often use a public infrastructure (e.g. administrative registers) which is not set-up for census purposes, and accounting for the associated costs and benefits of using such an infrastructure is generally complex. Depending upon national practice and how these sources are funded, it may be appropriate to record the whole or part of the cost of these sources — or just the costs of those elements of work required to prepare data to support the census or statistical purposes. In all cases the approach taken should be considered and transparent in reporting.

90. Again the principle is the same — budgeting and recording of costs should be at a level appropriate to support effective monitoring and audit of spend and to help inform future decisions on approach.

91. For each stage of the census the costs must be optimized, and this will be assisted by making careful choice of the appropriate technology. Recent advances in technologies such as scanning, data processing and data management may be of assistance in achieving significant reductions in cost (or doing more within the same cost). In addition, the use of such technologies will speed up the computation of results and enhance their preservation. However, the choice of technology should be made only after carefully evaluating the costs and benefits of possible options. Some potential risks to canvass include the following: some approaches only become cost effective for large operations; some are dependent on expensive and scarce inputs (for example very high quality paper); and others require significant upfront investments in high quality computers. The options examined in the benefit/cost analysis could incorporate consideration of leasing (rather than purchasing) equipment and/or sharing it between countries that are undertaking censuses at convenient times.

92. Outsourcing with the private sector could be considered as another cost-saving option, particularly in the context of publicity or for systems development for data collection or data processing. While not necessarily less costly, it may contribute technical expertise or resources not available within the national statistical office.

B. Assessing the benefits

93. Practice and experience on assessing the benefit that arises from census data also varies a great deal between countries. Accordingly, and even more so than with costs, it is not possible to recommend a universal approach to assessing benefits.

94. Nonetheless countries are strongly encouraged to carry out and publish an assessment of the benefits that arise from their census outputs.

95. It is only by assessing the social and economic benefit that arises from census that it is possible to truly justify the (often) significant expenditure involved. Equally, only by understanding the benefit that arises from particular outputs is it possible to assess whether the (marginal) effort involved in their production is appropriate. In some cases individual

outputs are mandated by law — but even in this case there is value in understanding how the data is used — and where it adds benefit.

96. Assessing the benefits of statistics is often problematic because the social benefit is difficult to equate to any measurable financial benefit. Equally the value of data often extends far beyond direct use — for example, where data is used as the denominator in other statistics, or, looking further ahead, where the individual census records are subsequently used for socio-historical and genealogical research.

97. Nonetheless some general advice is possible. There may be value in:

(a) identifying where census is adding real value in resource allocation — by comparing outcomes with those that would arise using the best possible available data if census data were not available;

(b) identifying where particular census outputs contribute to delivering or monitoring particular policy goals — particularly where there are funds directly associated with the policy;

(c) considering how much users would spend on purchasing other data sources or on commissioning their own surveys if census data were not available.

98. In cases where there are clear social or economic benefits — but no easily quantifiable financial benefit it may be appropriate to record ‘case-studies’ which can be used to support any future case or decision making.

99. In assessing the overall benefit of the census it may also be appropriate to consider the economic and social value of employment and other spend associated with the operation.

100. As ever the approach to benefit assessment and any assumptions made in the process should be clearly documented.
