



Economic and Social Council

Distr.
GENERAL

CES/AC.71/1999/23
16 November 1998

ENGLISH ONLY

STATISTICAL COMMISSION and ECONOMIC COMMISSION FOR EUROPE

CONFERENCE OF EUROPEAN STATISTICIANS

Meeting on the Management of Statistical Information Technology
(Geneva, Switzerland, 15-17 February 1999)

Topic (iv): The technologies and methods in the implementation of the 2000 round of Censuses

PRINCIPLES OF THE PREPARATION AND IMPLEMENTATION OF THE POPULATION CENSUS IN 2001

Submitted by the Czech Statistical Office¹

I. BACKGROUND

1. The population and housing Censuses in the territory of the Czech Republic have been carried out at ten-year intervals since 1869. Various forms of population censuses were already being undertaken in the 14th century. Since the foundation of independent Czechoslovakia in 1918, seven population censuses have been conducted.

2. Great importance is given to the Census 2000 at the international level. The "Recommendations for the year 2000 round of population and housing censuses in the ECE region", set out by UN-ECE and Eurostat, aims at providing guidance and assistance to ECE member countries in planning the content of their censuses.

II. LEGAL BASIS

3. For the census 2001, the Czech Statistical Office (CSO) has prepared a new draft of the Law on the Census, specifying the following conditions:

¹ Prepared by Ebbo Petrikovits and Dusan Loutocky.

- scope of the census (specification of the persons, houses and dwellings to which the Census applies);
- date of the census;
- Census program (presentation of surveyed data on population, dwellings and houses);
- CSO tasks;
- tasks of the local administration and self-government bodies;
- tasks of other government institutions (Ministries of Local Development, Defence, Justice, Interior, Foreign Affairs, and Office for Geodesy and Cadastres);
- obligation of physical and legal persons to provide data;
- ensuring individual data protection;
- conditions and methods of data use;
- conditions and methods of data archiving;
- sanctions for violation of the Law on the Census.

At the time of writing, a draft of the Law is being prepared for submission to the Government.

III. BASIC PRINCIPLES OF THE CENSUS PREPARATION

4. The following basic principles for the preparation and implementation of the Population Census were specified by the Census Management Group:

- The Census will be based , as in the past, on the method of self-counting of the present population;
- Census questionnaires will be prepared in a form enabling electronic data capture, i.e. the use of OCR and ICR technology;
- Data input will be implemented using optical reading and following digitalization of surveyed data. The questionnaire image, together with its digital record, will be maintained throughout the data processing cycle;
- Logical checking procedures, corrections and auto-corrections of the entry data will be made at the specialized work place of the CSO;
- The clean data will be stored in the central database of the Census under the Oracle RDBMS;
- The Census data processing will result in (i) printed outputs in the form of standard tables, (ii) electronic dissemination on the Internet and on the CD-ROM, and (iii) producing ad hoc outputs within the coming years using the Census data bank;
- All technological operations will be carried out using the CSO facilities and CSO specialists, except a part of data input (optical reading and digitalization), which will be performed by a specialized company;
- Strict protection of all individual data in the course of Census data processing. The confidentiality requirements are based on the Act on State Statistical Service and on the EU Directive 95/46/EC.

IV. CENSUS IMPLEMENTATION

5. Enumeration districts

The enumeration districts are based on the administrative division of the state territory into regions, districts and communities (or parts of communities). Enumeration district is the basic territorial element used in the Census. Scope of the enumeration districts is specified so that they entail a maximum of about 200 dwellings or 400 persons. Enumeration district

is defined by the numbers of houses or by their description on the community map. It is expected that about 50 000 enumeration districts will be needed.

6. Enumeration questionnaires

A set of questionnaires suitable for optical reading and for the following digitalization of entry data will be used. It is expected that 3 types of questionnaire will be needed: (i) questionnaire on the surveyed person, (ii) questionnaire on the dwelling, and (iii) questionnaire on the house. The questionnaires will be in A4 format, one-sided; the questionnaire on persons will be printed on both sides of the paper. As the citizens will fill in the questionnaires themselves, there is an effort to maximize the number of questions permitting selection from the list of possible answers (application of mark-sensing). In the case of questions where the number of possible answers is too large, the citizen will fill in the text which will be coded afterwards either manually or automatically. We expect that identification data (name and address) will be completed on the table form and will then be digitalized, if permitted by the Law on Census.

7. Distribution and collection of questionnaires

Distribution of questionnaires into households before the Census date and their collection afterwards will be made by census enumerators within their specified enumeration district. Although people will fill in the questionnaires themselves, the enumerators will be ready to assist. Completed questionnaires will be submitted by the enumerators to so-called completion workplaces of the CSO, responsible for data collection. Completion workplaces will check the completeness of submitted questionnaires, and will produce a summary report for the whole enumeration district. These summaries will include only some figures on the enumeration district and will help in the processing of "preliminary results" of the Census (separate branch of processing).

8. Data entry

Acquisition of entry data will be made centrally by an external company using optical scanning and digitalization of documents. Two data formats will be created: one will include the scanned image of the document, the other will include the digitalized form. Both forms will be linked and it will be possible to recall both formats of the original document. Whereas this requires complex equipment for scanning, the equipment is needed only for a short time. The optical reading will be checked at the centres of optical scanning. The link between the enumeration form and digitalized data will be secured by control numbers.

9. Data editing and data storage

Primary checking and corrections of entry data will be made at the central work place of the Census division. Working in two shifts may be considered. The work place will be equipped with PCs operating the network environment. The estimated number of workers is 50 during one year. The duration depends on the number of errors and conditions for editing procedures. Special software will be developed for these purposes. Throughout the process, the image of the enumeration document and its digitalized records will be accessible. Checked and verified data will be stored in the central server for Census processing in the form of a central database under RDBMS Oracle. In addition, all other data sets for use in the Census processing, auto-corrections and derived variables will be stored and processed with this central server for the Census.

10. Outputs and archiving

Census outputs will be produced in two forms: (i) printed outputs in the form of tables, to be created by a specially developed table generator; and

(ii) electronic outputs created with standard Web technology used in the CSO public information system. It is expected also to publish the Census results on CD-ROM. The Census data will be archived using suitable media (CD-ROM, optical discs, etc,) depending on the technology available at that time. Archiving will include entry data of the Census 2001, images of the enumeration documents, aggregated data, table outputs and data from the previous Censuses (1970, 1980, 1991). The archiving principles will be controlled by the rules specified in the special Law on Population Census.

11. Management of the Census organization

The highest coordinating body of the Census is the Central Commission for the Population Census, which will be appointed by the President of the CSO. The main task of the Commission will be to coordinate activities of the public administration and self-government, participating in the Census preparation and implementation. The CSO, namely the Division of Populations Censes, is the main executive body responsible for the whole Census project. This unit is responsible for the detailed methodological, organizational and technical tasks. It collaborates with other central offices and with bodies of state administration and self-government. Executive components in the process of Census implementation are the central workplace of census in Prague and the network of about 90 regional centres in districts. The regional centres are responsible for the selection, appointment and training of Census enumerators and their supervisors, and their management in the course of the Census. Their main task is to distribute Census questionnaires to enumerators, to collect completed questionnaires from supervisors, to check territorial completeness and to code some texts. The lowest executive components are enumerators, on-place interviewers in the individual enumeration districts. This group (the largest in number) distributes the questionnaires to the households, assists citizens in completing the questionnaires where necessary, and collects completed questionnaires. Enumerators are responsible for the completeness of the Census in their enumeration districts. It is expected that about 50 thousand Census enumerators will be involved.

12. Organization of the Census project in CSO

The preparation and implementation of the Census project will be carried out by project teams. A Steering Committee has been established consisting of the heads of units participating in the project. Its members are representatives of the Population Census Division, informatics, processing units and regional statistical workplaces. Their main task is to coordinate activities of the project teams and to take decisions on conceptual questions. For concrete tasks, the Steering Committee sets up project teams, comprising specialists from different units of the office. At present there are several such teams for the preparation of the Census Law, for content specification of the Census and for the transformation of the Census data of 1970, 1980 and 1991 into the new technical environment (Unix/Oracle). Teams for the technical specifications of the Census and for the specification and purchase of necessary hardware and software are planned to be put together shortly.

13. The software "Projektman" (developed within the CSO) will be used for documenting the technical specifications of the Census and the following phases of the Census project. The Census documentation will be maintained in the database and will be accessible by users electronically. A documentation administrator for the Census project will be appointed who will be the only person authorized to make any changes and update the documentation. In the course of Census processing, only those changes registered in the Projektman will be considered relevant. This product will be used to coordinate all activities related to the preparation of the Population Census.