

**Economic and Social Council**Distr.: General
26 March 2012

English only

Economic Commission for Europe

Conference of European Statisticians

Sixtieth plenary session

Paris, 6-8 June 2012

Item 3 (a) of the provisional agenda

2010 round of censuses – innovations and lessons learned**2011 register-based census in Slovenia - lessons learned****Note by the Statistical Office of the Republic of Slovenia***Summary*

The paper gives an overview of the experience and lessons learned in conducting register-based censuses in Slovenia. Use of registers in statistical production has a long tradition in Slovenia, for which the legal basis was established already in the early 1970s. The decision to move to a completely register-based census was taken in 2007. A well-adapted legal, cultural and organisational environment, as well as the high quality of administrative registers, are preconditions for introducing a completely register-based census. Yet there are both advantages and limitations, which have to be properly communicated to users. Continuity needs to be assured in close cooperation with administrative data holders at all levels. A pro-active role of the national statistical office is crucial in preserving the possibility for future register-based censuses.

I. Introduction

1. The register-based census is one of the regular statistical surveys conducted by the Statistical Office of the Republic of Slovenia (SORS), the content of which is governed by Regulation (European Commission (EC)) No. 763/2008 of the European Parliament and the Council of 9 July 2008 on Population and Housing Censuses, Official Journal of the European Union L 218/14, 13 August, 2008.
2. In accordance with Article 4 of the Regulation, the methods of data collection are left to European Union (EU) Member States. Slovenia's decision to use a register-based census as the method to collect and process data was adopted with the Medium-Term Programme of Statistical Surveys 2008-2012 (Official Journal of the Republic of Slovenia (RS), No. 119/2007) and the Annual Programme of Statistical Surveys for 2011 (Official Journal of the RS, No. 93/2010).
3. The method of data collection used in the register-based census where SORS links existing statistical and administrative data collections is also used in most of the statistical surveys. Acquisition and integration of data is permitted under Articles 32 and 33 of the National Statistics Act (Official Journal of the RS, No. 45/95 and 9/2001; consolidated text). The legal basis of all administrative sources from which we take data for primary collection are covered in the laws governing a particular source. The results of this integration and data processing are aggregated data, and the identification of individuals is impossible.
4. With the transition to the register-based census, Slovenia joins the few European countries that already have a tradition of implementing this method of collecting and processing data on population, households and dwellings (Denmark, Finland, the Netherlands, Iceland) and those that conducted censuses in this way for the first time in 2011 (Austria, Belgium, Sweden, Norway). In so doing, Slovenia has not only reduced the administrative burden but also saved euros (EUR) 14 million.

II. Background

5. The use of registers and records (hereinafter the AR) in statistical production has a long tradition in Slovenia. Following the long-term strategy to implement the Nordic model of statistics resulted in the development of the legal bases for the AR already in the early 1970s. At that time, SORS was an initiator and developer of the proposal for the legislation on infrastructural registers and PIN numbers. At the very beginning, SORS was appointed by law as the responsible authority for the AR as a part of its non-statistical function.
6. As there were no similar initiatives in the other governmental bodies, the Statistical Office itself as a producer established four basic registers in close cooperation with corresponding authorities:
 - (a) The first attempt to establish the Central Population Register (CPR) was prior to the 1971 Population Census. The second attempt was more successful when new PIN numbers (still in use in the same format) were delivered prior to the 1981 Population Census. The CPR has been kept by the Ministry of the Interior since 1998;
 - (b) The Register of Areas of Territorial Units and the Record of House Numbers (predecessors of the present Register of Spatial Units) were set up in the 1980s, together with the Surveying and Mapping Authority of Slovenia, which has also been the only keeper since 1995;

(c) The Statistical Register of Employment (the only one still kept by the Statistical Office) was set up on the basis of the Census of Employees in 1986 and it is updated by the registration data for pension, disability and health insurance, parental protection insurance, unemployment insurance and records on employment provided by the Health Insurance Institute of Slovenia;

(d) The Business Register has been available since 1976 and has been kept by the Agency for Public Legal Records and Related Services since 2002.

7. With the development of the new modern statistical act in the 1990s, all the AR were transferred to the relevant ministries and they started to function in the public administration in its full capacity. The intensive use of registers in public administration improved the quality of data. It is worth mentioning that the National Statistics Act requests all public authorities to use the general classifications and, where possible and feasible, to bring the data concepts and variables close to statistical concepts. In the last few years, new registers and records have been developed to complete the picture of the whole population concerning education, employment, housing and household composition.

8. With the intensive use of the AR for statistical purposes in recent years, the cooperation between SORS and keepers of registers and records has been strengthened in terms of discussing and improving the quality of data, cooperation agreements, technical and data security protocols and especially the quality of data. It is of general importance for the Slovenian statistical system, where more than 250 different AR are being used in the statistical production.

9. The decision to move to a completely register-based census was adopted in 2007 with the new Medium-Term Statistical Programme for 2008-2012. It means that the census becomes only one of the several statistical tasks in the programme and there is no need for special legislation. In past censuses, the main reason for adopting a special census act was because of the huge financial resources needed for the field operation and information technology (IT) equipment, while the register-based census was conducted by internal staff with no additional people and without any specific budget financing.

10. A register-based census is a method of producing data on population, households and dwellings by statistically linking together existing administrative and statistical data sources without using fieldwork enumeration. Prerequisites for undertaking such a project in Slovenia are:

(a) Legislation which enables the linkage of data from different sources (Statistical Office of the Republic of Slovenia has in accordance with Articles 32 and 33 of the National Statistics Act the right to collect, use and link data from different administrative and other collections for statistical purposes only);

(b) Establishment of appropriate administrative and/or statistical sources with unique identifier (e.g. PIN, address);

(c) Appropriate topics in the sources which cover all demands of users and legislation.

10. From a content point of view, the decision to go for a register-based census was possible because the Real Estate Register (RER) was established in 2007. In addition, the register of all households and household members was computerised (having been in paper form only for a long time) and it has become a very good source for deriving statistics on households and families.

III. Organization of the project

11. In 2009, SORS started the internal project Register-based Census 2011. See more at <http://www.stat.si/popis2011/eng/Default.aspx?lang=eng>. Good cooperation with data users and keepers of the AR was maintained during the entire project.

12. The project team was composed of only six employees and was led by a project manager from the Demography Statistics Department, which is traditionally responsible for carrying out the censuses. In addition to coordinating the project, the project manager, together with two other team members, was involved in subject-matter content of the census where three core topics were covered at expert level, the main task being to establish methodological solutions for integration of source data:

- (a) Population including economic, educational and migration topics;
- (b) Households and families;
- (c) Housing.

13. Three members of the project team were responsible for developing the data processing system:

- (a) An IT specialist for complete data integration using Oracle PL/SQL Procedures and for data warehousing;
- (b) A software and applications developer with the main tasks of deriving household and family data, and data warehousing;
- (c) A general methodology expert for data editing who was also responsible for the quality issues.

14. About 30 other employees of SORS supported the project team in minor roles (providing input data, methodological or IT support, tabulation of data, dissemination).

15. The highest level of the organizational structure consists of a four-member project council (Deputy Director-General and heads of Demography and Social Statistics, Dissemination and Infrastructure/Technology).

IV. Lessons learned

A. User needs should be discussed well in advance

16. Discussion with users started a few years before the final decision to move from a semi-classical to a complete register-based census was taken. It is a fact that some variables such as nationality (ethnic affiliation), religion, language spoken in the family, transport to work, etc. are not available in administrative records. According to the Slovenian Constitution and also implemented in previous field collections, respondents are free to give the answer to this type of questions.

17. Some users considered missing variables as a limitation of the register-based census. That was the reason why SORS began organising workshops and round tables to resolve this problem. The alternatives were found in obtaining these data through research projects or from other data producers. In the case of the Hungarian and Italian minority, it was agreed that SORS could provide methodological support for the research on these issues.

B. Intensive cooperation with administrative data records at all levels of organization is a must

18. What we have learned is that the formal agreements and protocols that we have in place for all AR are important but are not sufficient. What proved to be more important during the census project is the mutual trust and good will of staff from all institutions involved, above all from the main data providers such as the Ministry of the Interior (CPR and Household Register keeper) and the Surveying and Mapping Authority of Slovenia (responsible for the RER). SORS reached agreement with all partners to place priority on quality improvement of sources needed for the census. The partners also sped up the process in order to help SORS keep the deadlines for data publication and dissemination.

19. As quality assessments and implementing quality assurance depend to a large extent on the quality of input data, so recognized inconsistencies have to be suppressed already in the administrative sources. SORS focused most of its efforts on the preparation phase to persuade the data providers that the responsibility for the proper results is common. This is more important because two basic administrative registers (Household and the RER) were used for the first time in the statistical process.

20. SORS also helped with its own financial and human resources to improve the AR quality of the household register. Some recognized inconsistencies have been relatively easy to suppress with methodological support provided by SORS in cooperation with IT staff from the Ministry. On the other hand, SORS allocated some of the budget planned for the project to stimulate the Ministry of the Interior to send official letters to those households where mistakes were detected (the most common were missing data on the dwelling number of the household).

21. In the case of the RER, SORS received preliminary data in advance and their statistical analyses helped administrative staff to focus work on quality improvement.

C. Analyses of the differences between the statistical and administrative concepts were undertaken as a precondition to develop criteria and algorithms for statistical data editing.

22. The study of the concepts and contents of administrative sources and the methodological work on the difference between the statistical and administrative definitions was a precondition for further work on statistical data editing. It was crucial that the preparatory phase begin two years before the reference date. Data linkage of administrative and statistical sources confronted statisticians and general methodologists with many challenges in the process of statistical editing.

23. Such components as influence of legislation on administrative data, the mode of maintaining the register or other sources, use of data for statistical or administrative purposes, subjective aspect, inconsistency or incompleteness of data, and timeliness have been discussed at greater length.

D. Coherence of census results with other statistics

24. In order to maintain coherence with other population statistics, for the first time the census definition is harmonized with regular (quarterly) population statistics. The same database on population was used in the census production as that used in production of the quarterly population statistics. In fact, the pre-defined and statistically processed population

data from the administrative source (CPR) according to the EU Regulation on migration from 2007 are the basic input database in the register-based census.

25. With the transition to the registered-based census method, the new reference date is 1 January instead of 31 March. The reasons for a new reference date are:

- (a) Administrative sources are as a rule linked to the calendar year;
- (b) Easier comparability with annual demographic surveys;
- (c) Greater consistency of administrative sources at the end of the calendar year in many sources.

26. The same practice was also used for other census variables, e.g. data on employment were produced from the same database as SORS regularly publishes register-based statistics on active population. This approach enables SORS to publish similar figures for the same variables, the same reference period and, most important, the same subpopulation, and also to make the whole process more transparent, streamlined and cheaper.

27. Availability of data sources (from 3 to 9 months delay from the reference date of 1 January) was the basis for the dissemination schedule of the 2011 Register-based Census data following the three stages of the statistical process that was determined well in advance:

- (a) Integration of input data for population, households and housing (first release of final census data on basic population topics at the end of April 2011);
- (b) Processing of household and family data as the most complex statistical process (final data released on 30 June);
- (c) All other census topics (economic and educational characteristics, migration, housing) are processed lastly (four first releases at the end of December 2011).

28. In other words, the most important census topics were available to users only one year after the reference date.

E. Comparability with the previous censuses is very limited and, for many variables, impossible

29. Some users expected data sets to be comparable with previous censuses. With such a radical change in the data collection method and with the adjustment of definitions to EC legislation, the comparability with previous censuses has become difficult. There was a break in series and SORS put a lot of effort into informing their users about it.

F. A huge amount of personal data linked from different sources requires strict implementation of relevant information security standards

30. Privacy, statistical confidentiality and security standards are composed of several measures taken by the management and IT security experts, which are also transparent to the public. There were no sensitive data in census databases (such as name and surname); all public identifiers (PIN) were replaced by the statistical identifiers. Only members of the project team have full access to the census databases. Special dissemination databases were produced without any identifiers, including only variables needed for tabulations.

31. On the other hand, the public and the media never expressed any objections towards using administrative data for statistical purposes and SORS has never been accused of being a 'Big Brother'. SORS presumes that residents are aware of all the advantages of the

register-based approach, as the use of the PIN number is widespread and is considered normal for all citizens.

G. Is a register-based census still a census? Is there a future at all for traditional censuses?

32. The register-based approach has the right answers to four key objectives exposed in the CES 2012 seminar document Challenges for Future Population and Housing Censuses which will be held in Paris in June:

(a) Increasing concerns over costs (almost no additional budget in the case of SORS);

(b) Data quality (the main advantage is a controlled methodological approach in all stages of the process);

(c) Respondent burden and decreasing participation in the census (the comment not necessary at all);

(d) Privacy (few persons dealing with information in contrast to thousands of people having access to personal data).

33. On the other hand, the register-based method maintains the possibility of producing census data annually from all essential census features with an important distinction in periodicity (universality, individual enumeration, simultaneity, availability of small-area data), just like any other regular statistical survey.

V. Conclusion

34. Legal, cultural, organisational environment and high-quality AR are preconditions to introducing the complete register-based census. But even in a situation where registers are used, such as in the Nordic countries and Slovenia, it should be noted that there are limitations as well as advantages. And limitations have to be properly communicated with the user community in order to obtain their support, and help them to find alternative solutions. Continuity in relation to cooperation with AR data holders at all levels (managerial, statistical experts, technical) and the proactive role of national statistical offices in maintaining the possible changes in the administrative environment is a crucial element to preserving the possibility for future register-based censuses. Slovenia is planning to produce complete census results every three years (some topics besides basic demographic variables, such as educational attainment and activity, on an annual basis).
