Using a combination of administrative registers and sample surveys instead of a census: some general remarks and the situation in the Netherlands

A.H. Kroese
CONTENTS

A. Introduction
B. Using administrative sources
C. The situation in the Netherlands
D. Conditions to be fulfilled in order to have a register-based
References
A. Introduction

1. In the Netherlands, a combination of administrative registers and household sample surveys is the alternative for a conventional census. In some other countries the census is entirely register-based. In this short statement the use of administrative registers in replacing a census is discussed. Some general remarks are made and the situation in the Netherlands is described. The conditions are given under which the approach is feasible.

B. Using administrative sources

2. There are a number of advantages of using administrative registers for producing statistics in general.

   · **Costs.** Usually, a register is constructed and maintained for administrative purposes by a non-statistical institute and contains some information about a large population. If the information in the register is useful from a statistical point of view, it is very cost-effective to use such an information source, especially if it can be obtained for free by the national statistical institute.

   · **Level of detail.** Usually, an administrative register contains a limited number of characteristics for a large number of units. This in contrast to a sample survey, which usually results in a large number of characteristics for a relatively small number of units. A second advantage of using administrative registers over sample surveys alone is that much more detailed statistics can be obtained, at least for a number of variables.

   · **Quality.** The information in a register may be more correct than answers given to a questionnaire, both from a sample survey and from a census. A notorious example is the variable “income”, which is more likely to be measured correctly in tax files than by interviewing. Experience shows that also relatively straightforward concepts like “number of rooms in the house” are not always measured correctly in a survey: a respondent may give different answers, for unknown reasons, in different questionnaires. On the other hand, the impression in the Netherlands is that the quality of information, especially in the population register, is good. It is extremely difficult to function in Dutch society without being included in the population administration, and the data in the register are important for a large number of aspects of daily life in our country.

3. The advantages listed are the reasons that many national statistical institutes are interested in using administrative registers in their statistical process. There are a number of complications, however.

   · **Permission to obtain and use administrative registers.** For continuity reasons, it is important that the national statistical institute is guaranteed access to a register over a long period of time. A statistical law in which this is settled is very helpful. In the Netherlands there is such a law.

   · **Undercoverage.** A register may contain only a selective part of the population of interest. For example, the population register may miss a number of aliens. Another example is provided by the employee insurance scheme registration system in the Netherlands, which misses some “small jobs” like delivering newspapers.

   · **Different statistical units.** The units in the administrative register may differ from the required statistical units. For example, a benefits register may give information about families, while information about households may be required.

   · **Different concepts.** The concepts measured in an administrative register may differ from the required
statistical concepts. For example, in the Netherlands we tried to use the information about “educational attainment” in the employment exchange register. It turned out, however, that the variable is defined in a different way than the statistical concept.

- **Quality.** The quality of an administrative register may be poor and, even more problematical, may not be constant. In the Netherlands we experienced this with the employee insurance scheme registration system. It is important for a national statistical institute to be involved in changes in key registration systems, but this influence is not easy to obtain.

- **Missing variables.** Some important variables may not be available in administrative registers, for example “occupation”.

- **Matching.** Matching various sources may be problematic. In the Netherlands, for example, there is no unique way to write addresses and this complicates the matching of our valuation of real estate registration system and the dwellings register.

4. If all traditional census variables can be obtained from administrative registers that are of sufficient quality, one may decide that a census is not necessary anymore. In that case, census tables can be published much more frequently than once every decade, as is usually the case with a traditional census.

5. If some, but not all, relevant variables can be obtained in this way, a country can decide to have a traditional census and ask only the information that is missing (the available individual register information can be preprinted on the census form in order to be checked). A country can also decide not to have a census, but to complement the administrative information by having sample surveys. The latter choice has been made in the Netherlands.

C. The situation in the Netherlands

6. In 1991 the Dutch Parliament officially cancelled Statistics Netherlands’ obligation to carry out a population census. The last traditional census was held in 1971. The main reasons for abolishing the census were the estimated low compliance among the population and the availability of equivalent data sources at substantially lower costs. Another important aspect is that the census results were not used for administrative purposes like the allocation of central government funds to municipalities.

7. To meet the demands of the 2001 round of population and housing censuses in the European Union, linked microdata are used from various sources. Actually, the census programme is integrated in the new statistical process that Statistics Netherlands is implementing at the moment.

8. In this new statistical process interrelated micro-databases are constructed for a number of object-types (persons, jobs, benefits, dwellings, businesses, etc.). In each micro-database, data about the object type are matched on the microlevel. A micro-database can best be seen as a matrix with the objects as rows and the variables as columns. In order to construct it, it is essential to have a “frame”, that is, a list with all the objects and some basic properties. The frame of the micro-database for persons is the population register; the frame of the micro-database for jobs is constructed by combining information from the employee insurance schemes registration system, the survey on employment and earnings and the income tax register. Matched to these frames are microdata from various sources: administrative registers, sample surveys and EDI. The micro-databases are edited and partially imputed. Moreover, the input concepts underlying the data of the sources are translated into the output concepts underlying the statistical estimates we wish to publish.

9. In the new statistical process the micro-databases are the start of the estimation process. Based on the matched, edited and harmonized microdata, statistical estimates are produced, which can be simple counts.
from an administrative register.

10. The new statistical process depends heavily on the use of administrative registers. In implementing it we encounter all the complications mentioned in the previous paragraph. This is described in much more detail by van der Laan (2000).

11. As stated before, the Dutch census programme is based on a system of micro-databases. The main advantages of this approach, compared to a traditional census, are

- Relatively low costs and response burden;
- Integration of the census programme with the regular statistical programme; and
- Census tables are available on a regular basis instead of only once every decade.

Disadvantages are

- Dependence on the content and quality of administrative registers;
- Consistency problems in the estimation stage; and
- Less detail in publications about variables that are available only in sample surveys and not in a complete administrative register (in the Netherlands “educational attainment” and “occupation” are the most important cases).
D. Conditions to be fulfilled in order to have a register-based (and survey-based) census

12. It is important to understand the conditions that have to be fulfilled in order for a country to rely on registers (and surveys) instead of a census. We feel that the following conditions are essential:

- There should be a good actual population register. If there is no list with all persons living in a country with some basic demographic information (sex, age, municipality), a traditional census seems unavoidable.

- There should be a good register about jobs in one form or the other. Detailed regional information about employment seems essential to have.

- There should be a housing register in some form. At least a list should be available of all dwellings.

- The level of detail required for variables that are observed only in the sample surveys should not be too great.

- Only statistical use should be made of the results (unless they can directly be obtained from an administrative register used). In combining information from various sources a lot of methodological choices have to be made with respect to matching, editing, harmonization, etc. We feel that we can obtain good estimates in this way, but we know that the estimates are not precisely correct. If money is distributed to municipalities on the basis of the results, or if the number of seats in Parliament is based on it, it will be hard to follow such an approach.

NOTE

The views expressed in this paper are those of the author and do not necessarily reflect the policies of Statistics Netherlands.
Some general remarks and the situation in the Netherlands

References


* This document was reproduced without formal editing
** Statistics Netherlands. The views expressed in the paper are those of the author and do not imply the expression of any opinion on the part of the United Nations Secretariat.