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### Group of Experts on Population and Housing Censuses

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#### The future of population statistics

### Twenty years of rolling census in France: results and prospects

#### Note from the National Institute of Statistics and Economic Studies (INSEE)<sup>1</sup>

##### *Summary*

The document sets out the current thinking in France on the future of population statistics. It goes back over the demands that must be met (the need to know the population of each of the many municipalities, the lack of an administrative population register, etc.), the answers we have provided with the rolling census and the collaboration between INSEE and the communes in carrying it out, and the difficulties that remain and the new opportunities offered by the creation of a statistical population register.

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<sup>1</sup> This document was submitted late on account of the late issuance of the document by the National Institute of Statistics and Economic Studies, France.



## I. Introduction

1. France has conducted regular population censuses since 1801; they were exhaustive until 1999 and, since 2004, France has set up a rotating census system that allows for a census of one fifth of the country to be taken, and results to be provided, every year. This major methodological change was introduced to meet the various needs for data on populations at a lower cost, while spreading the burden and ensuring more efficient quality control. While the objectives have been achieved, user demands are becoming more exacting, both in terms of the timeliness and geographical detail of the results, and discussions are currently under way to make greater use of administrative data. However, there are still many uncertainties that need to be resolved before we can once again consider a major overhaul of the census process.

## II. What is census data used for? Some specific French features

### A. Many areas to cover

2. Census data is collected for three purposes, as set out in French law:
  - Population count
  - Description of the demographic and social characteristics of the population
  - Counting and description of housing characteristics
3. The population count is necessary not only for France as a whole, but also for all its administrative subdivisions. In fact, many administrative rules (around 300 to 400) depend on the official figures derived from the population census. Those with the greatest impact on the lives of people govern:
  - The calculation of State subsidies to local authorities
  - The setting up of certain services, such as pharmacies and postal services
  - Voting procedures for municipal elections
  - The maximum amount of remuneration received by local elected representatives
4. In addition, there are many administrative subdivisions, and they can be very small. The main subdivisions are regions, departments and communes. Metropolitan France has 13 regions, 96 departments and almost 35,000 communes. Counting the population of the communes can be particularly tedious, as many of them are very small. Some 17,000 communes have fewer than 500 inhabitants. However, many decisions are taken at local level, and this is an administrative level that is still very much involved in public decision-making and to which local residents are very attached.
5. In addition to demands at municipal level, certain public policies require information on the population of certain neighbourhoods. In particular, urban policy, which aims to reduce economic disparities within cities, restore equality in disadvantaged neighbourhoods and improve living conditions for their residents, requires knowledge of population characteristics in relatively small areas (at least 1,000 inhabitants) that may straddle several communes. These requirements for submunicipal data create an additional need for precise and localized data from these censuses.
6. Lastly, France has a number of overseas territories, each with its own specific characteristics and sometimes quite different levels of development from metropolitan France. These territories have a population of around 2.8 million. The French State is responsible for counting the number of inhabitants throughout its territory, i.e. in addition to metropolitan France, the five overseas departments (French Guiana, Martinique, Guadeloupe, Reunion and Mayotte) and six communities (Saint Pierre and Miquelon, Saint Martin, Saint-Barthélemy, Wallis and Futuna Islands, New Caledonia and French Polynesia). In addition to the geographical particularities of these territories (remoteness, insularity, climate, etc.),

the administrative data available to obtain information on the population may differ from those in metropolitan France, or even be extremely incomplete.

## **B. Administrative data that does not cover needs**

7. There are no alternative sources of data to the census that provide direct information on the population of communes. France does not have a population register. There are two registers that could come closest to this: the National Register for the Identification of Individuals and the Single Electoral Register, but they do not meet the needs expressed above. By its very purpose, the Single Electoral Register contains only persons of age and mainly of French nationality, i.e. 48 million people, or 20 million fewer than the resident population. The National Register for the Identification of Individuals contains no information on a person's place of residence; it includes people who have left the country; and it totals 113 million people.

8. The computerization of this national register in the 1970s raised many questions about the protection of personal data, leading to the creation of the National Commission for Information Technology and Civil Liberties (CNIL), the highest authority in France for the protection of personal data. As a result, the national register has remained limited to a few variables (surname, first names, date and place of birth and date and place of death where applicable) that make it possible to assign a unique social security number to each individual and to ascertain a person's vital status.

9. Other administrative data (tax data or social protection data) are interesting sources of information, but none of them covers the entire population usually resident in France. In fact, it is possible to reside in France without paying tax or benefiting from French social protection.

10. Another consequence of the debates on personal data protection in the 1970s is that there are no national identification numbers shared by all authorities. Each authority has its own identifier (social security, tax, education and higher education, etc.), with no link to those of other authorities. As a result, the various administrative data are difficult to match. Until recent technical advances and changes to the legal framework (2016), such matches for statistical purposes were made mainly on the basis of personal details (surname, first names, date and place of birth, if available) and with the support of administrators to handle the most complex cases and ensure a good level of quality. Before these very recent developments, the prospect of creating a statistical register of individuals was unthinkable.

11. Lastly, administrative data is generally limited to the variables required for the purposes intended by the authorities that hold it. For example, some information that is routinely collected as part of censuses is not available in any administrative data, or is only available in very aggregated form. The following are just a few examples:

- Nationality (which, when present in administrative data, contains only two or three categories: French; citizen of the European Union; national of countries outside the European Union)
- Date of arrival in France for citizens of the European Union: the absence of a register and the free movement of people mean that this date is not recorded in any administrative data source
- Qualifications, for which a flow of information may be accessed, with data coming from schools and institutions of higher education, but which is not stored for all residents

12. Other information that is widely used in current population census operations is also absent from administrative sources, such as means of transport or housing comfort characteristics.

### III. Why set up a rolling census?

13. The various characteristics described above probably explain why, for a long time, the question of moving from a traditional census to a register-based census, which would have had to be built, did not arise. However, in the late 1990s, a number of difficulties prompted INSEE to carry out a thorough reform of the census method.

14. First of all, the various actors, and in particular the local actors, were looking for regular and up-to-date information on the inhabitants of their area. In theory, general censuses were conducted every seven years but, in practice, because of funding problems, they were sometimes conducted every eight or nine years. Finding a method capable of providing information on the population every year for each commune was therefore a major objective of the discussions on redesigning the census.

15. The other concern was cost, which presented a twofold challenge: to ensure that the census was financed on a long-term basis, so that there was no need to negotiate with the Government every time, and to limit the overall cost of the operation. In particular, the new census method should not exceed the cost of a census every seven years. The method should also make it possible to spread the burden and “professionalize” most of the actors, which was difficult with irregular censuses.

16. In the end, the chosen method blends traditional census data (collected by questionnaire), statistical methodology (surveys) and the use of administrative data. It is based on rotating annual census surveys covering the whole country over a five-year period and allows for the dissemination of annually updated official population figures for each administrative subdivision, in particular for the 35,000 communes.

17. The annual census surveys are always carried out in two stages: a first exhaustive stage to identify housing and a second stage to collect data from residents, carried out by sampling in the most populous communes (over 10,000 inhabitants). Data collection is mainly the responsibility of local authorities and is carried out under the supervision of INSEE. Communes receive a lump-sum subsidy to cover part of the costs.

18. The housing identification phase continues to be the subject of field operations; tax data is not yet considered sufficiently reliable (double counting, different definitions of housing) to compile the lists of housing units required for the population census. However, tax data is used extensively to target checks to be carried out in the field. Similarly, in communes with more than 10,000 inhabitants, where lists of housing units are updated continuously, building permit data are systematically included, but are subject to human validation, notably to determine whether a housing unit is habitable. Lists of housing units are particularly important in the French census method; they are used to ensure that no household is missed during the data-collection process and to statistically adjust the data in the event of non-response from residents (less than 5 per cent of housing units); and the number of housing units is used to calculate the population of communes with more than 10,000 inhabitants.

19. The second stage of the collection process is a door-to-door survey of inhabitants, with the option since 2015 of responding by Internet (64.5 per cent of responses by Internet in 2023). It is not possible to collect data by post or email, as there is no exhaustive database that provides a reliable, up-to-date link between inhabitants and their addresses throughout the country. In order to contain the costs of the population census, it was decided to collect data from inhabitants in communes with more than 10,000 inhabitants on a sample basis. In these communes, 8 per cent of housing units are surveyed each year, i.e. 40 per cent over a five-year cycle. This method offers substantial cost savings, while providing results with acceptable accuracy (at least comparable to that provided by a general census, which is difficult to measure) and quality control. An exhaustive census of communes with fewer than 10,000 inhabitants is taken once every 5 years. Around 8,000 communes are thus covered by the census every year.

20. In addition to collecting data from ordinary housing units, additional surveys are organized to identify:

- Community residents (care homes, residential schools, prisons, accommodation centres, etc.), about 1,300,000 people
- Residents of mobile homes and homeless persons, about 120,000 people
- Boatmen, 900.

These additional surveys make it possible to count the entire usually resident population, including the population illegally present in the area. This dimension is particularly important in certain overseas territories, where this population can represent a significant proportion of the total population.

21. INSEE uses administrative data to produce population estimates that are updated every year, even for small communes that are only surveyed every five years. In particular, the number of housing units is extrapolated on the basis of changes in tax data. Other data sources were initially considered, but tax data was deemed to be the most reliable. Conversely, the number of inhabitants in the tax data is not used for extrapolations (only the number of housing units) because it is not considered sufficiently reliable. Tax optimization strategies can lead to changes in the number of inhabitants in the tax data without corresponding to any real population movement.

22. The rolling census method is applied throughout France, with the exception of Wallis and Futuna Islands, New Caledonia and French Polynesia, where traditional exhaustive censuses are taken every five years. The method is adapted to the distinctive characteristics of the overseas territories where necessary. In particular, official population calculations do not make use of tax data, which are of poor quality in these territories, and are based solely on the extension of trends. Other characteristics are taken into account, such as the presence of shanty towns in French Guiana and Mayotte, where it is not possible to collect data by sampling because of their rapid development and the difficulty of identifying housing units. It has been replaced by the exhaustive collection of data for these neighbourhoods alone. In French Guiana, it is also necessary to take into account the presence of dwellings that are not accessible by road but only by pirogue.

#### IV. What is the outcome of the rotating census 20 years on?

23. The 2024 annual census survey will be the twentieth census survey since the introduction of the rolling census. In addition, census results have been published every year since the end of 2008. The objectives initially set have therefore been achieved. In particular, every year the population of the 35,000 communes is updated, so that public policies can be continuously adapted to demographic changes. The quality of the results obtained is satisfactory.<sup>2</sup> Non-response is kept to a minimum, never exceeding 5 per cent, and census takers usually obtain an estimate of the number of people in the non-responding household from neighbours. Comparisons between population estimates from the census and other data sources (the quality of which is also open to question) never reveal any major discrepancies. Surveys to measure the quality of the local building register, which determines the number of housing units in large communes) show discrepancies of less than 1 per cent. Double counting, for example of people with two residences, is also limited, as questioning allows these people to be isolated and taken into account when establishing official figures.<sup>3</sup> As in

<sup>2</sup> See *La qualité des estimations de population dans le recensement*, Insee Méthodes No. 136, October 2020.

<sup>3</sup> INSEE publishes two official population figures for each commune: a statistical population, in which everyone is counted in one commune and one commune only, the one where they have the most ties; and a population “with double counting”, in which some people may be dual residents. Students living in Paris for their studies and returning to their parents’ home for the holidays will thus be counted in the statistical population of Paris and in the population “with double counting” of their parents’ commune. The population with double counting will be used to define State subsidies to communes; the statistical population will be used for all statistical analyses, but also to define election rules.

other countries, however, there is still underrepresentation of newborns that is difficult to explain.

24. The cost of the census is kept to a minimum even though it is a traditional data-collection exercise and involves a large number of actors each year: more than 400 people from INSEE and more than 30,000 people in the communes during the five-week data-collection period. However, the objective of not exceeding the cost of an exhaustive census every seven years has been achieved and, above all, the cost varies little from one year to the next (essentially according to changes in the population to be counted), which makes it easier to plan the budget. INSEE does not need a special budget every seven or eight years to carry out the population census. The annual frequency of census surveys also means that personnel of both INSEE and the communes are highly professional, which limits training costs, for example. Over the years, a number of developments have helped to reduce costs, notably the introduction of the option of responding online in 2015, which now accounts for the vast majority of responses.

25. Carrying out annual surveys provides greater flexibility and security for changes to the data-collection procedure: in addition to the ongoing improvements derived from the annual reviews, it has been possible to gradually test the introduction of the Internet (800 communes in 2014, before increasing to 8,000 in 2015) and, more recently, a streamlined procedure for delivering census materials to the housing units to be surveyed.

26. The system also proved its strength during the coronavirus disease (COVID-19) health crisis. Despite the cancellation of the 2021 survey for health reasons, it was still possible to release new population estimates at the end of 2021 by making greater use of administrative data and data from previous years' census surveys. Temporarily, it was possible to switch from a five-year to a six-year cycle fairly easily and without any objections from users.

27. Nevertheless, some expectations cannot be met with this data collection system. Currently, at the end of a five-year census cycle, INSEE publishes legal population figures with a reference date in the middle of the cycle, to ensure fairness between communes that were surveyed on different dates. Consequently, the legal population data used for public policy purposes correspond to the situation three years earlier. Although this is a marked improvement on the situation prior to 2008, when the last available census data was sometimes more than eight years old, it can be detrimental to areas with strong demographic growth.

28. Other phenomena may be difficult to document on the basis of data from the rolling census. In particular, as it takes five years to complete a full cycle, sudden changes in residential mobility trends, such as those caused by the health crisis or the war in Ukraine, can only be fully measured five years later. Nevertheless, each annual census is relatively large (5 million homes and 9 million people are counted each year) and representative at the regional level. So, even if it is not possible to obtain results for every commune from a single survey, it is still possible to obtain trends by type of area. In June 2023, INSEE published initial results on residential mobility in 2021 (following the health crisis) by type of area (rural/urban, region, size of urban area) and type of household based on data collected in the 2022 annual census survey. Similarly, when the questionnaire is changed, it takes five years to obtain results for the smallest areas, which is sometimes difficult to explain to partners of INSEE.

## **V. Expected benefits of a statistical population register**

29. Alongside the census, INSEE has also been working since 2021 on a project for a statistical register of individuals and housing units, based on different sources of administrative data and methods to indicate signs of life, in order to determine people's usual places of residence. This project has four aims:

- Offer a data matching service to improve efficiency, quality and harmonization of methods
- Provide a reference point for comparison to make it possible to measure the quality of administrative sources, which are one of the main resources of official statistics

- Construct a sampling frame, by building on existing systems, from which to draw samples for surveys of households carried out by the official statistical service, with even better coverage
- Provide the information needed to prepare and use the census, by replacing the one tax source currently used

30. The use of several administrative sources to update the statistical register of individuals and housing units meets a twofold objective: to ensure better coverage (for example the tax source's lack of data on young people is largely offset by the use of data on students or employees); and to be more resilient in the event of a major transformation, or even the elimination of an administrative source.

31. The register will also be georeferenced using the INSEE geographical reference system, which is also currently under construction, making it easier to link individuals and housing units to specific geographical areas.

32. This project offers excellent prospects for the production of official population figures. Initially, INSEE might consider using data from the register to improve the quality of estimates between two census surveys for small communes. At present, only data on changes in the number of housing units in tax files are used (with an extension of the trend for change in the number of people per housing unit), but it may be more relevant in a few years' time to use changes from the register, which will be more comprehensive by construction. It would also seem possible to use data from the register on changes in the number of inhabitants, or even changes by gender and age. This should make it possible to improve the quality of population projections and therefore support the possibility of bringing forward by one year the date of publication of the official population figures, which is already being considered in order to meet users' needs. This primary use of the register to produce population statistics would have no impact on current census data collection, but would improve the quality of the information made available on the basis of these data collections. In order for this to be the case, the information provided by the register of individuals and housing units must be relevant to the development of each of the 35,000 communes in France, which will obviously need to be verified.

33. A second use for the register would be to replace the census for counting inhabitants. This second use requires that the directory produced by this register provide high quality information for each commune. This second objective is more complex to achieve. Some populations are inherently more difficult to identify or locate on the basis of administrative data alone. There is as yet no comprehensive assessment of this subject, as the register is still under construction, but certain categories of the population will need to be assessed, in particular:

- Homeless persons, who by definition are not connected to a dwelling
- Persons in an irregular situation, who are not largely represented in administrative data
- Cross-border workers and their families who reside in France but will not be included in data on employees (which only concern French employers) or social security data (from which they do not necessarily benefit), two sources of data for the register
- Students who live away from home for their studies, who should be included in the administrative sources but whose location may vary from one source to another
- Residents of certain overseas departments

The comparison of the register with annual census surveys will make it possible to measure the quality of coverage of the register (and also of the census survey) each year.

34. Although these populations remain relatively modest in size when considered separately and at the level of France as a whole, their underrepresentation or difficulty in locating them can be very detrimental to certain communes or areas. This means that it will not necessarily be possible to replace traditional data collection with data derived solely from administrative sources as the reference data for calculating official population figures. In all

cases, this will require careful study at every level of government, in-depth consultation with local authorities and a political decision to amend the law governing censuses.

35. In addition, it will always be necessary to have an external source for the register in order to assess its quality. Coverage surveys will therefore be necessary, which could be coupled with the complementary surveys mentioned below.

36. Concerning the statistics on individuals and housing currently produced from the census, as mentioned above, some data currently present in the census and much used by local actors is not present in any administrative data source. Collecting such data will always require surveys of local residents, which will vary in scale depending on the degree of geographical accuracy required.

37. Conversely, some data currently collected directly from residents in the census, for example the employer's establishment, could be obtained by matching data currently collected in the census with administrative sources, using the services offered in this area by the ongoing register project. So without replacing census surveys, the register could initially make them lighter.

38. The register could also be used to consolidate, or even enhance, migration data, with the possibility of estimating the number of residents who have left the area and providing an age pyramid. It could also be used to identify which of the vital events occurring on the territory correspond to the resident population.

## **VI. Conclusion**

39. The subdivision of the country into 35,000 communes and the absence of a population register are the two major characteristics of France that impose a very specific framework for the production of statistics on population and housing. Although the traditional census method has been abandoned since the end of the 2000s in favour of a rolling census that provides more recent and more frequent statistics, there is still some way to go before user demands can be fully satisfied. The construction of a statistical register of individuals and housing units offers promising avenues to fill this gap, but careful confirmation of the quality of this register will be required before it can be implemented. However, some of the information currently produced is impossible to reconstruct from administrative data alone, and the coverage of such data needs to be measured by an independent source. The prospect of producing quality statistics on individuals and housing units without any data being collected from residents is therefore in any case inconceivable. Finally, the overseas territories also have other specific characteristics that require a range of methods to be employed to cover the entire territory.

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