Census in France: impact of the 2021 census delay on outcomes

Muriel Barlet

Head of demography department

Census in France: impact of the 2021 census delay on outcomes

- Principles of the rolling census in France

- Why did we delay the 2021 data collection ?

- How did we manage to produce population estimates without data collection?

- What do we learn for the future?

Principles of the rolling census in France

RÉPUBLIQUE
FRANÇAISE
Liberté
Égalité
Fraternité

Insee
en partenariat
avec votre commune

Principles of the rolling census in France

- A process based on 3 kinds of data :

    – Data from the enumeration of a part of the population each year (Annual census survey **ACS**)

    – Data from the register of residential buildings : the sampling frame for large municipalities

    – Local tax data on dwellings and their occupants

    – yield detailed results <u>every year</u> at <u>all relevant geographical levels</u> (from country to municipalities, even neighbourhood level)

- **Why are population estimates from the census very important ?**

Population estimates produced from the census are **"official" municipal populations :**

- It is a reference for about 350 measures mentioned in the law or decrees
- It determines the annual grant from state to municipalities, size of municipal council, authorization to set up a pharmacy...

➡ **Insee had to produce population estimates every year …. even without a census survey**

RÉPUBLIQUE FRANÇAISE
Liberté
Égalité
Fraternité

Insee
en partenariat
avec votre commune

- **How is the annual data collection carried out ?**

- **In small municipalities (with less than 10,000 inhabitants)**
  - Every year : 1/5 of municipalities, all the inhabitants
  - All the municipalities, all the inhabitants in a five year cycle
- **In large municipalities (10,000 inhabitants and more)**
  - Every year : 8 % of the inhabitants in each municipality (sampling in the register of residential buildings)
  - 40 % of the inhabitants during a five year cycle

RÉPUBLIQUE
FRANÇAISE
Liberté
Égalité
Fraternité

Insee
en partenariat
avec votre commune

The organisation of an annual census survey

- **8,000 municipalities are concerned each year (1,000 large, 7,000 small ones)**
- **5 billion dwellings and 8 billion inhabitants are enumerated**
- **33,000 people are hired by municipalities to carry out the data collection**
- **400 people from insee work during the collection period to supervise and control the data collecion**

➡ **A very large operation each year**

RÉPUBLIQUE FRANÇAISE
Liberté
Égalité
Fraternité

Insee
en partenariat
avec votre commune

- **Reference period**

- **1 January of the median year of the five year cycle**

  ➡ For the quality of population estimates

  ➡ For a fair treatment between municipalities

- Populations are disseminated at the end of year N+2

- *For example, in December 2022 population at January 1 2020 will be released*

RÉPUBLIQUE FRANÇAISE
Liberté
Égalité
Fraternité

Insee
en partenariat
avec votre commune

- **Method for population estimates in small municipalities**

- Depends on the date of the last data collection :
  - Enumeration **before** the reference period : population **extrapolation**, used growth rate of number of dwellings in **tax data** and a **decohabitation** rate
  - Enumeration **during** reference period : **results of enumeration**
  - Enumeration **after** reference period : **linear interpolation** between last disseminated population and enumeration

Method for population estimates in small municipalities

	2016	2017	2018	**2019**	2020	2021
Municipalities : RG 1				Enumeration		
Municipalities : RG 2				←	Enumeration	
Municipalities : RG 3	Enumeration			**Interpolation** ←		Enumera
Municipalities : RG 4		Enumeration →				
Municipalities : RG 5			Enumeration →	**Extrapolation**		

- RG : rotation group

RÉPUBLIQUE
FRANÇAISE
Liberté
Égalité
Fraternité

Insee
en partenariat
avec votre commune

- **Method for population estimates in large municipalities**

- Population = multiplication of
  - the **number of dwellings** in the register of residential buildings
  - the **average number of persons by dwelling**, estimated from the 5 last annual census surveys

Why did we delay de 2021 data collection ?

A worrying health situation

- In autumn 2020 :
  - A **second lockdown** during survey preparation (November 2020)
  - Vaccination not started yet
  - **Uncertainty** about the health situation in early 2021
  - **Reluctance** of some municipalities to carry out the survey in January-February 2021, despite protocol adaptation to reduce physical contact

RÉPUBLIQUE FRANÇAISE
Liberté
Égalité
Fraternité

Insee
en partenariat
avec votre commune

- **Three options for the census**

- **Maintaining** the census in January-February 2021 : dismissed because incompatible with a deteriorate health situation

- **Delaying** the census to the spring 2021 : dismissed because of uncertainty of health situation (a third lockdown...)

- **Postponing** the census to 2022 :
  - Selected option
  - Despite the need to disseminate results each year

How did we manage to produce population estimates without data collection ?

Principles for adaptation of the methods

- In small municipalities :
  - Increased use of **administrative data**

- In large municipalities :
  - The **register of residential buildings** is always available and up to date: the number of dwellings is known even if the survey is postponed
  - Extension of **past trends**

RÉPUBLIQUE FRANÇAISE
Liberté
Égalité
Fraternité

Insee
en partenariat
avec votre commune

- **In small municipalities**

- The gap between two surveys is increased by one year : from 5 to 6 years.

- For estimating the population the year the survey is postponed : **extrapolation** with tax data.

	2016	2017	2018	**2019**	2020	2021
Municipalities : RG 1				Collection		
Municipalities : RG 2					Collection	
Municipalities : RG 3	Collecti		**3rd extrapolation**			No collection
Municipalities : RG 4		Collection				
Municipalities : RG 5			Collection			

In small municipalities

- Each year :
  - Adaptation of the method for only 20 % of municipalities

- Quality of the produced data :
  - Simulation of the absence of an ACS in the past and comparison between the adapted method and the disseminated data
  - The estimated population is very close to disseminated one : 0.05% difference.
  - The deviation at the municipal level in absolute terms is less than 2 % for 92 % of municipalities.

In large municipalities

- Two components to the estimate :
  - Number of dwellings : always available thanks to the register of residential buildings
  - Average number of persons per dwelling :
    - Usually : the average of the last 5 ACS
    - **Creation of a pseudo 2021 ACS** by prolongation of past trends : rate of main residences, number of persons per main residences. Calibration of 2016 ACS on 2021 targets.

- Quality :
  - For 92 % of municipalities, the population of the adapted method lies within the 95 % confidence interval of the disseminated population

- **Socio-demographic data**

- Despite the postponement of 2021 survey, socio-demographic data are also available at a geographically detailed level

- In contrast to the population, socio-demographic structure is frozen for one year

- It is acceptable, because the aim of census is not to highlight short term phenomena

What do we learn for the future ?

Conclusion

- French rolling census is **resilient**.
- The availability of data from survey every year and other sources is essential: register of residential buildings and administrative data

- Producing population estimates one year earlier is **possible**
- To produce population estimate with one missing ACS is closed to produce advanced population estimate : the degradation of quality is acceptable

- The postponement allowed more time to prepare the first **survey during the health crisis**, in January-February 2022.
- It was a success, with a contained non-response rate : 4,8% (against 4,1% in 2020).