

Three examples of innovative data sources in 2021 Spanish Census

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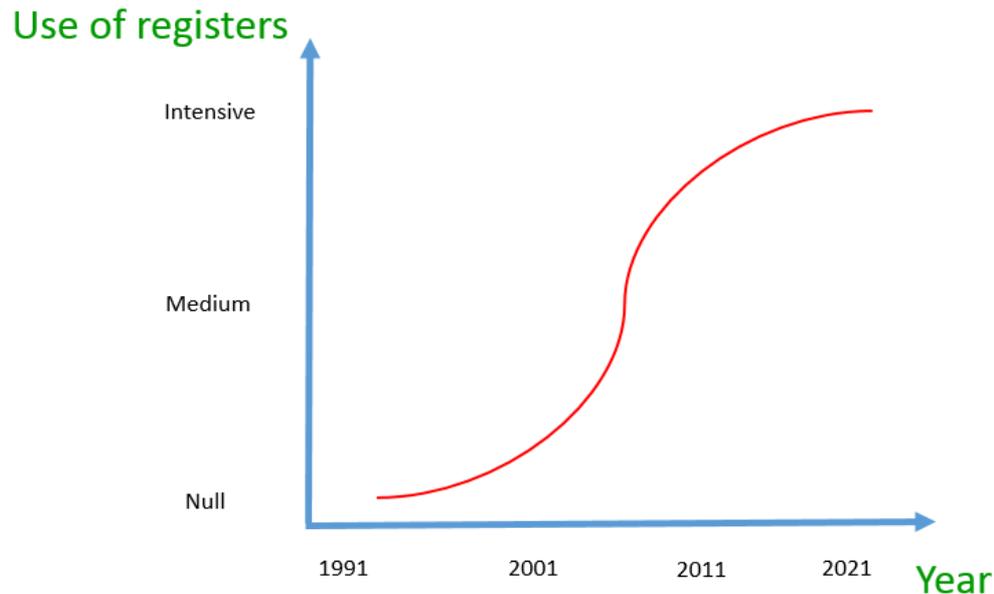
1- Introduction

Increase in the amount/quality of registers available

Population register consolidated (working since 1996)

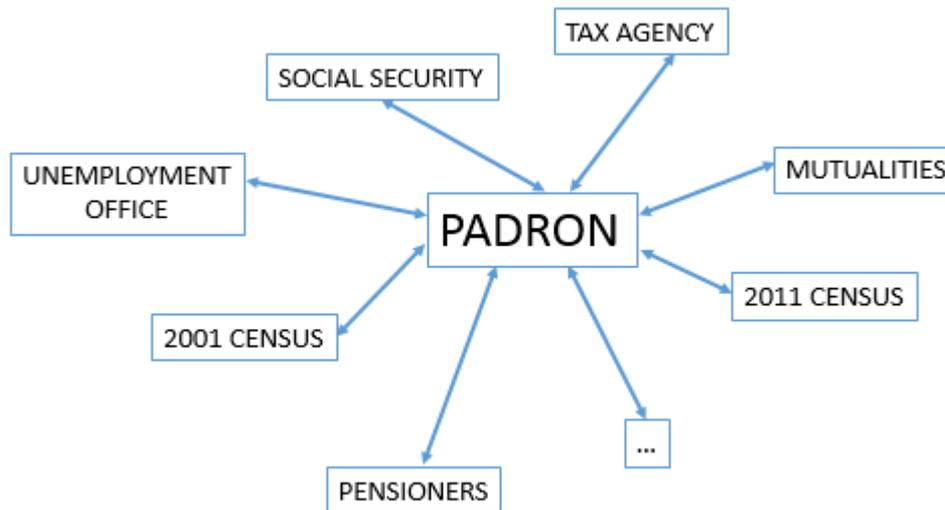
Good relations with other institutions

Mainly register based Census in 2021



1- Introduction

Tradicional data sources



Other data sources

In some cases, access to information is not possible at personal level (confidentiality or difficulties in linkage), but this does not mean that the data source is not useful for Census purposes.



2.1- Source examples: **Level of income**

The Tax Office allows INE to have income information at enumeration area level (average of income).



Spain (47M people) is divided into 36,000 enumeration areas → 1,300 people in average

For confidentiality reasons it is not possible to provide individual information, but this does not invalidate the use of the source!!!

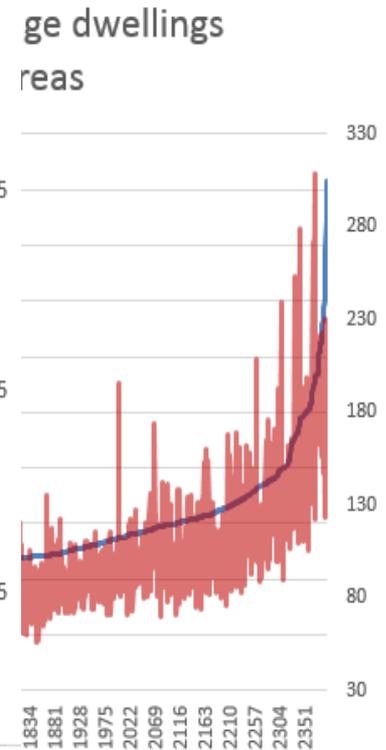
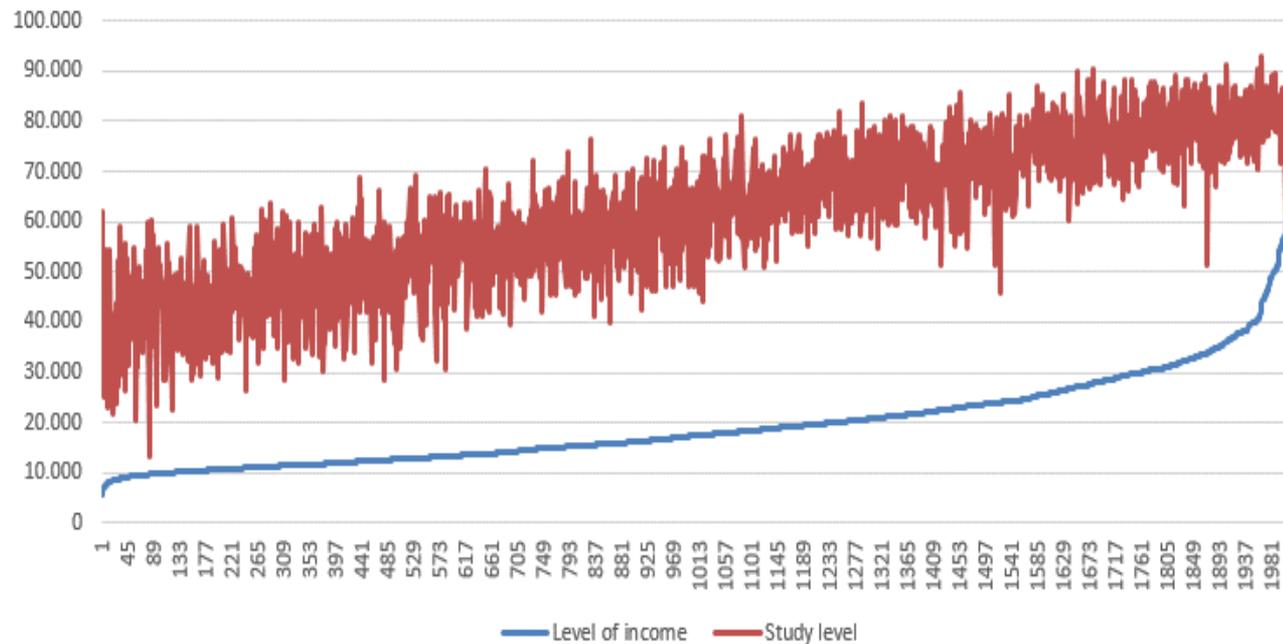
This information can be related at enumeration area level with other variables...and this will be of great interest to researches and general public.



2.1- Source examples: Level of income

Two examples:

Correlation between average level of income and average study level in 2,000
Madrid enumeration areas



— Level of income — Dwellings square meters



2.2- Source examples: Electricity consumption

Census provides information on the types of dwellings (occupied, seasonal and empty). Until 2011, this information was collected by enumerators which had a subjective point of view.

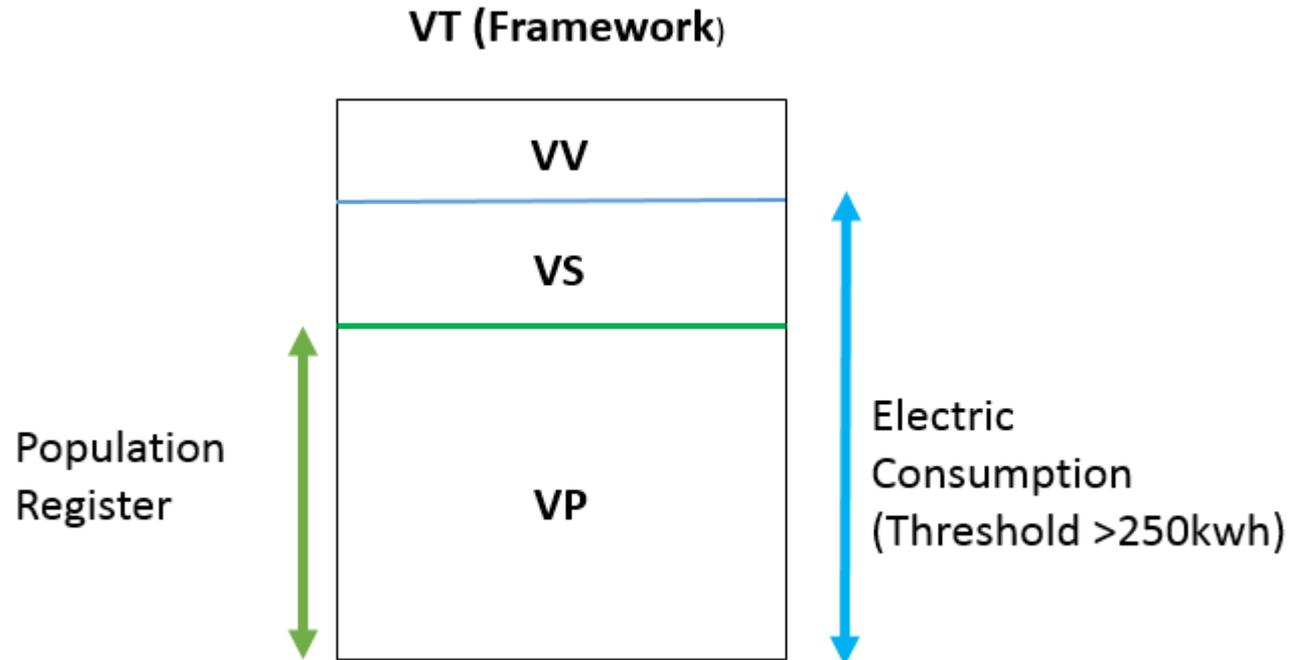


¿Empty or Seasonal?



2.2- Source examples: Electricity consumption

In 2021...use information about electricity consumption (electric companies are obliged to submit information to the Tax Office showing the amount of electricity consumed at a given address in one year).





2.2- Source examples: Electricity consumption

Important aspects:

*At first sight this algorithm seems straightforward but...linking data with territorial information is always complicated and the results are less satisfactory than those obtained from cross-referencing information on people.

*Some tests have been carried out and comparisons between 2011 Census and electricity consumption have proved quite satisfactory (even more credible results from electricity consumption!)

*Difficulties during the linkage process does not invalidate to use this information. It is possible to provide some indicators in enumeration areas.





2.3- Source examples: **Mobile telephones**

Mobility variables (place of work, place of study...) have been the most requested in the latest Census.

Mobility telephone companies have at their disposal a large quantity of information that can be very interesting for Census purposes.

We are trying to obtain this information, but up to now, there is no guarantee in this issue...

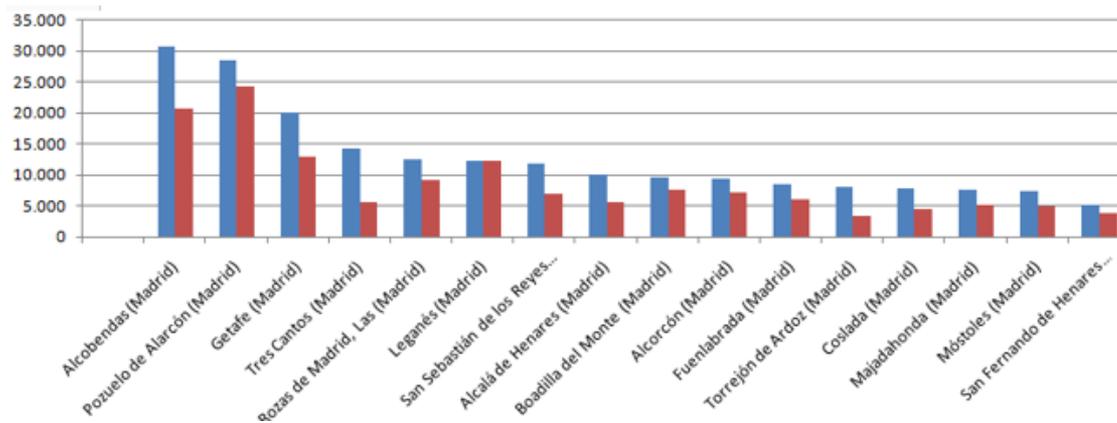
Using mobile phone information we will determine the enumeration area where a person lives and also the enumeration area where a person works or studies.



2.3- Source examples: Mobile telephones

Three products:

- 1) Matrix of population in enumeration areas at different times (00:00, 06:00, 12:00, 18:00) in a given day.
- 2) Matrix of daily movements between enumeration areas for a specific day.



- 3) Matrix of linked population for 10 different days.
The box “row A” – “column B” contains the number of people who live in A but can be found for a certain number of hours in B.



3- Conclusions

Data sources have improved in quality and coverage in recent years.

Register based Census allows a much greater depth and the possibility of publishing information periodically.

Even those **data sources** with missing data linkage or those that cannot be published for individuals but which offer interesting content, could also form part and enrich the Census.

Thank you very much for your attention...

Comments? Questions?

