

The 2020 round of population and housing censuses: An overview

Srdjan Mrkić

Demographic Statistics, United Nations Statistics Division, New York, NY 10017, USA

E-mail: mrkic@un.org

Abstract. This overview focuses on the implementation of the 2020 World Population and Housing Census Programme; the methodological framework and international recommendations for census-taking in the 2020 Round of Censuses (2015–2024); the state of the art of the world’s census-taking midway through the census decade; the preliminary results of the survey launched by the United Nations Statistics Division; and the trends in census-taking after the 2020 round.

Keywords: The 2020 World Population and Housing Census Programme, definitions and essential features, UN methodological framework, census practices in the 2020 round, traditional census, register-based census, combined census, data collection methods, challenges, censuses after 2020 round

1. Introduction

The population and housing census is the cornerstone of national official statistics as it provides the full and small area counts of people and their housing conditions as well as the sample frame for in-depth statistical surveys. Its importance and critical value for assessing overall progress and changes in the country, as well as for providing detailed statistics, prompts the United Nations to mobilize all countries every ten years to conduct a population and housing census or otherwise generate detailed small area statistics. Consequently, the 2020 Round of Population and Housing Censuses was launched by the Economic and Social Council of the United Nations by adoption of its 2015/10 Resolution on the 2020 World Population and Housing Census Programme on 10 June 2015. The Resolution urges Member States to conduct at least one population and housing census under the 2020 World Population and Housing Census Programme, covering the period 2015–2024, taking into account international and regional recommendations relating to population and housing censuses and giving particular attention to advance planning, cost efficiency, coverage and the timely dissemination of, and easy access to, census results for national stakeholders, the United

Nations and other appropriate intergovernmental organizations in order to inform decisions and facilitate the effective implementation of development plans and programmes.¹

The Resolution requests the Secretary-General of the United Nations to prepare international statistical standards, methods and guidelines to facilitate activities for the 2020 World Population and Housing Census Programme, to ensure coordination of activities among stakeholders in assisting Member States in the implementation of the Programme, and to monitor and regularly report to the United Nations Statistical Commission on the implementation of the Programme.²

Subsequently, the United Nations Statistics Division undertook the preparation of the methodological framework for population and housing censuses in the 2020 round. This framework was anchored by the revised set of *Principles and Recommendations for Population and Housing Censuses, Revision 3*, issued

¹United Nations Economic and Social Council, Resolution 2015/10, 2020 World Population and Housing Census Programme, E/RES/2015/10, 5 August 2015.

²United Nations Economic and Social Council, Resolution 2015/10, 2020 World Population and Housing Census Programme, E/RES/2015/10, 5 August 2015.

in 2015.³ It was accompanied by a set of additional handbooks on population and housing census management,⁴ use of contemporary technology for population and housing census data collection⁵ and on the use of censuses in measuring international migration.⁶ The work on the production of the handbook on population and housing census editing, including real time editing, at the moment of drafting this paper⁷ is in final stages.

2. Definitions and essential features

A population census is the total process of planning, collecting, compiling, evaluating, disseminating and analyzing demographic, economic and social data at the smallest geographic level pertaining, at a specified time, to all persons in a country or in a well-delimited part of a country. A housing census is the total process of planning, collecting, compiling, evaluating, disseminating and analyzing statistical data relating to the number and condition of housing units and facilities as available to the households pertaining, at a specified time, to all living quarters and occupants thereof in a country or in a well-delimited part of a country.

The essential features of population and housing censuses are individual enumeration, universality within a defined territory, simultaneity, defined periodicity and small-area statistics.

Individual enumeration – The term “census” implies that each individual and each set of living quarters is enumerated separately and that the characteristics thereof are separately recorded. Only by this procedure can the data on the various characteristics be cross-classified. The requirement of individual enumeration can be met by the collection of information in the field,

by the use of information contained in an appropriate administrative register or set of registers, or by a combination of these methods.

Universality within a defined territory – The census should cover a precisely defined territory (for example, the entire country or a well-delimited part of it). The population census should include every person present and/or residing within its scope, depending upon the type of population count required. The housing census should include every set of living quarters irrespective of type. This does not preclude the use of sampling techniques for obtaining data on specified characteristics, provided that the sample design is consistent with the size of the areas for which the data are to be tabulated and the degree of detail in the cross-tabulations to be made.

Simultaneity – Each person and each set of living quarters should be enumerated as of the same well-defined point in time and the data collected should refer to a well-defined reference period. The time reference period need not, however, be identical for all of the data collected. For most of the data, it will be the day of the census; in some instances, it may be a period prior to the census.

Defined periodicity – Censuses should be taken at regular intervals so that comparable information is made available in a fixed sequence. A series of censuses makes it possible to appraise the past, accurately describe the present and estimate the future. It is recommended that a national census be taken at least every 10 years. Some countries may find it necessary to carry out censuses more frequently because of the rapidity of major changes in their population and/or its housing circumstances.

The census data of any country are of greater value nationally, regionally and internationally if they can be compared with the results of censuses of other countries that were taken at approximately the same time. Therefore, countries should make all efforts to undertake a census in years ending in “0” or “1” or at a time as near to those years as possible. It is obvious, however, that legal, administrative, financial and other considerations often make it inadvisable for a country to adhere to a standard international pattern in the timing of its censuses. In fixing a census date, therefore, such national factors should be given greater weight than the desirability of international simultaneity.

Capacity to produce small area statistics – The census should produce data on the number and characteristics of the population and housing units down to the lowest appropriate geographic level, compatible

³United Nations, Principles and Recommendations for Population and Housing Censuses, Revision 3, United Nations Publication, Sales No. E. XVII. 10, New York, 2017.

⁴United Nations, Handbook on the Management of Population and Housing Censuses, Revision 2, New York, 2017, available at: https://unstats.un.org/unsd/publication/seriesF/Series_F83Rev2en.pdf.

⁵United Nations, Guidelines on the use of electronic data collection technologies in population and housing censuses, New York, 2019, available at: <https://unstats.un.org/unsd/demographic/standmeth/handbooks/data-collection-census-201901.pdf>.

⁶United Nations, Handbook on Measuring International Migration through Population Censuses, New York, 2017, available at: <https://unstats.un.org/unsd/demographic-social/Standards-and-Methods/files/Handbooks/international-migration/2017-draft-E.pdf>.

⁷August 2019.

with national circumstance, and for small population groups, all the while protecting confidentiality of personal information on each individual.

3. Census practices in the 2020 round

The 2020 Round of Population and Housing Censuses is characterized by three major classes of census-taking approaches: traditional, register-based and combined.

Traditional population and housing census refers to an operation whereby each household in the country is approached with a request to provide the necessary information, irrespective of the data collection methods used for the purpose.

Register-based censuses do not require the provision of any information from households in the country and small area census statistics is produced based on administrative sources and registers, primarily the population register. By linking the information from the population register with data from other registers, such as employment register, educational register, health register and so forth, the census master file is generated and processed into census statistics.⁸

Combined censuses are characterized by using registers for a number of necessary data points and supplementing the remaining information by approaching households in the country, either with full enumeration or on a sample basis. This concept takes advantage of the information already available in administrative sources, primarily the population registers, and requires directly collecting only the missing pieces.

The United Nations Statistics Division launched a Survey on the 2020 round of population and housing censuses in August 2019 in order to provide an overview of the implementation of the 2020 World Population and Housing Census Programme midway through the 2020 Round. The survey consists of a very short list of essential questions regarding organizing and conducting a population and housing census in the periods 2015–2024.⁹ At the moment of preparing this paper,¹⁰ the survey is still ongoing; the essential pur-

Table 1
Number of responding countries on the census method

Census method	Number	Percent
Total	138	100
Traditional census	95	69
Register based	42	30
Fully register based	15	11
Combined 1 (registers and full field enumeration)	19	14
Combined 2 (registers and sample surveys)	8	6
Rolling census	1	1

pose of the survey is to provide information for the report on the 2020 Round of censuses scheduled to be presented to the 51st session of the United Nations Statistical Commission in March 2020. Thus, the results presented here are preliminary and for illustrative purposes only; the final results and the detailed analysis will be available by the end of 2019.

By the time of preparing this paper, UNSD has received 138 replies. The results regarding the census method were as follows:

The preliminary results show that a considerable majority of countries applied or is planning to apply the traditional census approach (70 percent) in this census round, thus approaching each household in the country with a request to provide the relevant information, irrespective of the method of enumeration. Around one-third of the countries have used or will use registers, either producing small area census statistics from registers only (11 percent), complimenting the registers with full field enumeration (14 percent) or with sample surveys (6 percent).

As for the data collection methods in the 2020 Rounds of Censuses, a substantive majority of countries are planning (or already implemented, depending on the census date) to apply more than one data collection method. The major data collection methods consist of: face-to-face, pen and paper interview (PAPI), replacing the paper with a tablet or similar portable electronic device – computer-assisted personal interviewing (CAPI), and the use of computer-assisted telephone interview (CATI – albeit to a much lesser extent for initial data collection compared to a follow-up on missing values and non-response). In terms of self-enumeration, while it was applied in previous census rounds primarily in a paper form – paper-questionnaire with self-enumeration (PASI), in this census round a large number of countries will administer computer assisted self-interviewing (CAWI), using an electronic

⁸For detailed elaboration on the use of registers and administrative data please see United Nations, Guidelines on the use of registers and administrative data for population and housing censuses, United Nations Publication Sales No. E. 19. II. E. 4, New York and Geneva, 2018.

⁹The survey's questionnaire is available at: <https://tinyurl.com/y4es2mo7>.

¹⁰End of August/beginning of September 2019.

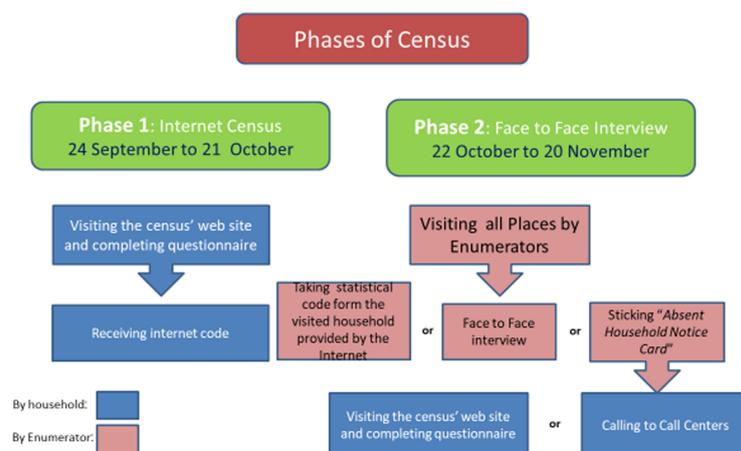


Fig. 1. Illustration of Iran's paperless census, 2016.

questionnaire by means of an internet browser application.¹¹

Thus, a considerable number of countries that are conducting a traditional census in the 2020 Census Round apply a multi-mode data collection method, in an effort to reduce as much as possible canvassing all the country, resulting in significant savings of resources that would be otherwise deployed for hiring, training and dispatching a number of enumerators. Figure 1 illustrates a paperless population and housing census in Iran in 2016¹² – an approach adopted by a number of countries in the 2020 Round as a follow-up on the United Nations recommendation delivered by a series of workshops¹³ since the beginning of the census round – combine the use of internet self-enumeration with using tablet computers for face-to-face enumeration of households that did not respond using internet self-enumeration.

In addition to achieving overall savings, the justification for countries for implementing multi-mode approach is based on a number of factors: demand

for timely and quality data, demand for improved efficiency, cost reduction and cost-effectiveness, demand for minimizing respondent burden. Another set of drivers for the use of multi-mode approach refers to the availability of less-expensive technology, expectation of users and stakeholders in terms of using contemporary technologies and an overall pressure to modernize national statistical exercises.

In most countries the decision to use tablet computers is also developed on experiences with CAPI in statistical surveys preceding the census. These experiences provided countries with a better and comprehensive assessment of the advantages associated with the utilization of tablet computers for data collection purposes and enabled them to develop necessary capacities to expand this practice to the census itself, as well as achieving an increase in the quality of collected data using real time validation and editing.

With regard to monitoring and supervising census operations, tablet computers provide a significant improvement over paper questionnaire-based collection in terms of enabling much more efficient administration and execution of the data collection process. These devices by default enable tracking of the enumerators, generating the information regarding the duration of the interview, time needed to answer each question and a whole set of other *paradata* (or side data) that ensure close supervision, increased quality and overall effectiveness of the exercise.¹⁴

¹¹For a more detailed elaboration, please see United Nations, Guidelines on the use of electronic data collection technologies in population and housing censuses, paragraphs B4-B18, New York, 2019, available at: <https://unstats.un.org/unsd/demographic/standmeth/handbooks/data-collection-census-201901.pdf>.

¹²Statistical Centre of Iran, Islamic Republic of Iran's Population and Housing Census 2016: Use of Handheld Electronic Devices for Data Collection, a presentation delivered at the Regional Workshop on the 2020 World Programme on Population and Housing Censuses: International Standards and Contemporary Technologies, March 2019, Ankara, Turkey, available at: <https://unstats.un.org/unsd/demographic-social/meetings/2019/ankara-census-ws/>.

¹³The complete list of all workshops, together with presentations, is available at: <https://unstats.un.org/unsd/demographic-social/meetings/>.

¹⁴See, for example, Brazilian Institute of Geography and Statistics (IBGE), Paradata as data source for census data collection monitoring: Brazilian census of agriculture case, presentation at the side event of the 50th session of the United Na-

Table 2
Number of responding countries on the enumeration method

Enumeration method	Number	Percent
Total	123	100
PAPI	52	42
CAPI	88	72
Self-response paper questionnaire (mailed in/mailed back)	12	10
Self-response paper questionnaire (delivered/collected by enumerator)	18	15
CAWI internet self-response	47	38
Telephone interview (paper questionnaire)	2	2
CATI– telephone interview, electronic questionnaire	15	12
Not decided	2	2

Note: The sum of categories exceeds the total as one response could include more than one category; countries were asked to select all that apply.

The UNSD survey includes a question regarding the enumeration methods used by the countries in this census round. The vast majority of the countries undertaking any form of field enumeration (that is the traditional census, combining registers and full field enumeration or combining registers and sample surveys and the rolling census – 123 out of the 138 total number of countries replying to the UNSD survey) intended to use or already used a combination of enumeration methods, Table 2 illustrates this point.

By far the most frequent enumeration method (72 percent) refers to administering face-to-face interview using portable devices, primarily tablet computers (CAPI), for field enumeration, followed by the face-to-face interview using paper questionnaire (PAPI) – 42 percent and the use of internet self-enumeration (CAWI) with 38 percent.

The increased use of GPS technology in the previous, 2010 round of censuses, is well documented as countries took advantage of this approach to ensure more efficient census mapping. In this, 2020 round of censuses, international recommendations pointed out the need to extend the use of GPS technology to ensure the geo-referencing of census statistics in the dissemination phase. In order to achieve such an outcome, it would be necessary to attach geographical coordinates to the census enumeration area as a minimum and to each building and housing unit as an optimum. As Table 3 below presents, a vast majority of countries responding to the UNSD survey heeded the recommendation.

tions Statistical Commission *Implementing 2020 World Programme on Population and Housing Censuses*, March 2019, New York, available at: <https://unstats.un.org/unsd/statcom/50th-session/side-events/documents/20190306-1L-Brazil.pdf>.

Table 3
Number of responding countries on the collection of GPS coordinates

GPS coordinates	Number	Percent
Total	138	100
Not collecting coordinates	21	15
Enumeration area (centroid and/or boundary)	105	76
Building and housing unit location	97	70
Roads and other features (such as railroads, water bodies, landmarks, facilities...)	29	21
Other	12	9

Note: The sum of categories exceeds the total as one response could include more than one category; countries were asked to select all that apply.

There were 21 countries (15 percent) that were not collecting geographical coordinates at all. Mostly those would be countries that are applying fully register-based census or where the geographical coordinates would already be available in some forms of registers, such as address register, for example. According to the UNSD survey, 105 countries (76 percent) will geo-reference census enumeration areas.¹⁵ And 97 countries (70 percent) will (or already did) collect geographical coordinates for each building and housing unit,¹⁶ thus potentially providing for full exploitation of tablet devices for guiding and supervising enumeration operations.

As population and housing censuses require an immense effort and resources in general, it is important to understand the major challenges and obstacles that census-takers face in conducting censuses in the 2020 round. The results from the UNSD survey are presented below:

Three issues were identified as the major challenge by countries responding to the UNSD survey midway through the 2020 census round: implementing new technologies (75 percent), improving coverage and data quality (72 percent) and insufficient financial resources (70 percent).

That the challenges have adverse impact already in this census round is documented by the responses to

¹⁵The total number of 105 countries is imputed by UNSD and represents a sum of 50 countries that indicated geo-referencing of enumeration areas and 55 countries that did not indicate geo-referencing enumeration areas but indicated geo-referencing each building and housing unit. The imputation is based on the premise that geo-referencing smaller units (building and housing units) always enables geo-referencing at aggregate, bigger units level (enumeration areas).

¹⁶In some countries the georeferencing of buildings and housing units was limited to urban areas, or in municipalities with the number of population above a specified threshold level.

Table 4

Number of responding countries on the challenges in conducting censuses

Challenges	Number	Percent
Total	138	100
Implementing new technologies	103	75
Financial resources	97	70
Improving coverage and data quality	99	72
Managing public trust/perception about the census	91	66
Improving data dissemination	90	65
Timeliness	90	65
Implementing new methodologies	88	64
Keeping the budget	86	62
Recruiting and training field staff	78	57
Privacy and confidentiality concerns	71	51
Identifying residential addresses	63	46
Legal authority/government support	48	35
Other	14	10

Table 5

Number of responding countries on the postponing census date

Countries postponing census date	Number	Percent
Total	29	100
Lack of budget	21	72
Problems/delays with preparative phases	11	38
Lack of legal authority/government support (e.g. Decree/proclamation for census not issued yet)	9	31
Political or civil disturbance	7	24
Lack of technical skills/capacity	2	7
Other	7	24

Note: The sum of categories exceeds the total as one response could include more than one category; countries were asked to select all that apply.

the question on postponement of scheduled census date by 29 countries replying to the UNSD survey (21 percent) as presented in Table 5.

Out of the 29 countries that already had to postpone the census date, 21 (72 percent) had to do it as a consequence of lack of funding, clearly re-emphasizing the findings related to major challenges in the 2020 round of censuses.¹⁷ Problems with census preparation, including acquiring tablets and lack of legal authority were also causing delays and postponements (38 percent and 31 percent, respectively) of the countries that reported the need to postpone the previously planned census date.

4. After 2020 round

Census-taking trends in the 2010 and 2020 round clearly indicate the increasing use of registers and ad-

ministrative sources, either exclusively, or in combination with some form of enumeration. In that context, accurate, reliable and comprehensive population register becomes an indispensable tool for generating census-like small area statistics – a characteristic which differentiates censuses from surveys. A fully functioning population register, in turn, depends on the existence and functioning of civil registration of all vital events in the country, especially birth, deaths, marriages and divorces.¹⁸ Civil registration is also the ideal and internationally recommended source of regular, reliable and complete vital statistics.¹⁹

Concerned that the focus on issuing biometric identity cards in an increasing number of countries that was not coordinated with improved functioning of civil registration and production of vital statistics at the national level, thus possibly resulting in gaps that would be costly to fill later on, the United Nations launched the United Nations Legal Identity Agenda (UN LIA). The UN LIA refers to the holistic approach to civil registration of all vital events, production of vital statistics, the establishment and maintenance of population registers and identity management apparatus from birth to death, and there should be full interoperability²⁰ between these functions in a simultaneous manner, according to international standards and recommendations and in compliance with human rights of all people concerned, including the right to privacy.²¹

As more and more countries are encouraged and supported to implement the UN LIA, it can be expected that a considerable number of countries will build their approaches to producing census-like small area statistics in the 2030 round of censuses around the population and other registers, thus overcoming criticisms and obstacles such as high census costs, increased unwillingness of population to participate and provide necessary information, pressure for more frequent production of relevant statistics and so forth.

¹⁸For complete elaboration of vital statistics system, see United Nations, Principles and Recommendations for a Vital Statistics System, Revision 3, United Nations Publication, Sales No. E. 13. XVII. 10, New York, 2014.

¹⁹Ibid, paragraph 281.

²⁰Interoperability in this context refers primarily to ensuring that systems are using the same set of definitions, classifications and methodology, as well as technologically compatible platforms allowing for fully harmonization of interfaces and access protocols. Interoperability between functions does not infer allowing full access and manipulating records and content of any single system.

²¹For more details, please see: <https://unstats.un.org/legal-identity-agenda/>.

¹⁷See Table 4 above.

5. Concluding remarks

At this point of time²² it would not be possible to assess whether the goals of the 2020 World Population and Housing Census Programme will be successfully achieved by 2024 – that every country conducts at least one population and housing census or otherwise produce small area census-like statistics at least once in the period 2015–2024. The fact that 29 countries replying to the UNSD survey already postponed the previously planned census date (about 20 percent of responding countries) – and most of them due to the lack of funding – raises concerns in that respect. Another fact – that a number of countries are experiencing internal turmoil and conflicts will also have an adverse effect on the successful implementation of the 2020 World Programme.

The majority of countries that will conduct a population and housing census will use the traditional method – approaching all the households in the country with request to provide information, albeit it is also noticeable that the number of countries relying on registers (either solely on registers or complemented with full field enumeration or survey) is increasing. What is also evident is that countries are shifting to the use of contemporary technologies, often combining two or more in order to ensure completeness of coverage, timeliness and production of census statistics in line with expectation and demand.

Therein lies the most significant challenge – developing in parallel several applications for the use of a different enumeration method. In the case of the use of internet self-enumeration combined with the use of tablet computer for face-to-face interviews, census takers need to develop separate strategies and planning for each of the two in a simultaneous manner, involving different expertise and skills, the need for extended testing of two solutions, developing meticulous procedures for avoiding duplication of information, and harmonizing the records, to name a few. If a country needs to add another method, for example, face-to-face interview with paper questionnaire for remote areas where there is lack of infrastructure, then the complexity of the exercise is only exacerbated by the necessity to develop procedures to minimize any possible mode-effect.²³

While it is undisputable that the use of contemporary technologies significantly increases the efficiency and timeliness of collection, processing and dissemination of census statistics, it also requires additional efforts to ensure that the planning, development, testing and implementation of these different tools is successfully achieved. And as emphasized by the 75 percent of respondents to the UNSD survey, it is exactly the use of new technologies that is seen as a significant or moderate challenge.

Yet, as it appears that the contemporary approach to conducting population and housing censuses is enthusiastically embraced by national statistical authorities and census takers worldwide, such enthusiasm in terms of financially securing the use of these new methods would not be that evident. These devices and technologies come at a price and their use after the census is often questioned as is reflected in the 70 percent of replies to the UNSD survey pointing to financial resources hampering their work.

The 2020 round indicates a significant progress in georeferencing census data through collecting GPS information in an integrated manner with data collection. Adding geo-referenced information to a census database presents significant opportunities for disseminating census results with more effective means and formats. This will allow analysts and planners to undertake policy analysis and research that can more readily identify thematic and geographic priority areas and thus contribute to evidence based and better-informed policy and decision-making at different level of geography.

Census-taking in this 2020 round is evidently a much more complex undertaking due to the use of contemporary technologies, including tablet computers, internet self-enumeration, the need for geo-referencing units, population attitudes, costs and the constant pressure for more comprehensive and timelier, “fresh” statistics. Mid-way through the 2020 round, it is also evident that census-taking – through the use of tablet computers, internet self-enumeration, registers with or without field-based data collection – is acquiring a modern and contemporary look – a welcome transformation.

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²²Early September 2019.

²³For a more detailed elaboration, please see United Nations, Guidelines on the use of electronic data collection technologies in population and housing censuses, Chapter E, New York, 2019, available at: <https://unstats.un.org/unsd/demographic/standmeth/handbooks/data-collection-census-201901.pdf>.

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