

UNECE

Keeping Count

Conducting the 2020 round of population and housing censuses during the Covid pandemic



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KEEPING COUNT: CONDUCTING CENSUSES
DURING THE COVID-19 PANDEMIC



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1 Introduction

1. On 11 March 2020 the World Health Organization declared the Covid-19 outbreak a global pandemic. At that time, preparations for the 2020 round of population and housing censuses were well underway for most countries in the UNECE region. Azerbaijan and Belarus conducted data collection in 2019, thus escaping the impacts of the pandemic on data collection (although this is not to say that they necessarily escaped all impacts on their censuses, since collection is only one aspect). The United States of America was starting census operations as the pandemic was declared. Their census collection took place from March to mid October 2020. Tajikistan proceeded with enumeration in October 2020. Most censuses for the other countries in the region are or were planned for later in 2020, or for 2021.

2. The effects of the pandemic on social and economic activity in the countries in the UNECE region are still unfolding and their magnitude and duration remain to be seen. Most countries not exclusively relying on registers for their censuses will therefore see the plans for their next census impacted in some form or another, whether in the form of delayed census collection, in preparatory activities, or in the processes undertaken to ensure quality of the outputs.

3. This analysis aims to shed some light on the impacts of the pandemic on the 2020 round of censuses in the region, to the extent that these impacts are currently known. Information on changes being implemented by some countries because of the pandemic was presented at the [UNECE Online Expert Meeting](#) in September 2020. Other information was collected in a survey of census experts in each country in the region conducted in October-November 2020.

4. The observations in this paper complement the recent work conducted by the Conference of European Statisticians (CES) Steering Group on Population and Housing Censuses, [New Frontiers for Censuses Beyond 2020](#). In combination, these two analyses are intended to serve as a guide for updating the CES Recommendations for Population and Housing Censuses for the 2030 round.

2 Reviewing the impacts of the pandemic on the current round of censuses in the UNECE region

2.1 Gathering information from countries about impacts of the pandemic on censuses

5. A meeting of census experts in the UNECE region took place online from 29 September to 1 October 2020, with specific emphasis during the first day on the countries of Eastern Europe, the Caucasus and Central Asia, followed by sessions for all countries of the region on the next two days. Many of the presentations and discussions at the meeting focused

on the current state of preparations for upcoming censuses, and on changes being introduced to deal with the actual or anticipated effects of the Covid-19 pandemic.

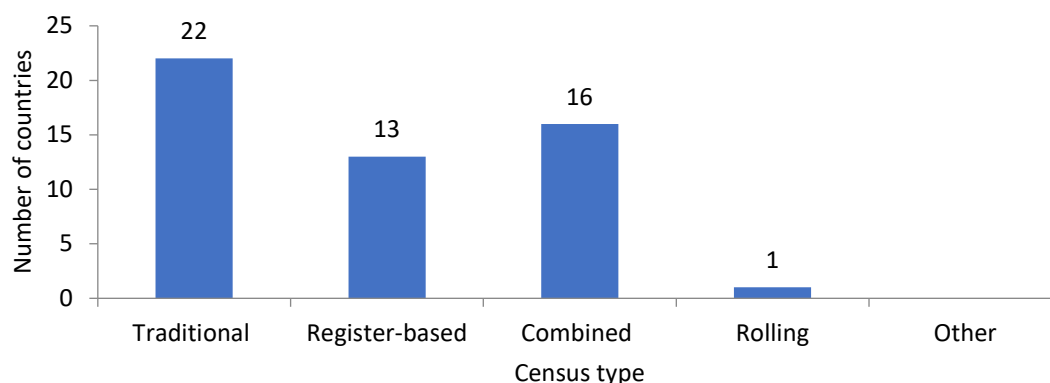
6. Complementing the information presented during this meeting, all countries in the UNECE region were also sent a survey in October 2020 which had the dual purpose of gathering information to update the publicly-available [UNECE Census wiki](#) and of investigating more deeply the impacts of the pandemic on censuses¹.

7. The survey asked whether any changes have been made or are planned for the current round of censuses because of the pandemic, across several areas: collection mode, field operations, data processing, use of administrative data, questionnaire(s), timelines for dissemination, communication and outreach activities, and any other changes. Where changes were reported, countries were asked to give details. They were also asked about their perspectives on the overall level of risk to the successful completion of a census in this round, and relatedly their thoughts on whether and how the CES Recommendations for Population and Housing Censuses may need to be revised in future in the light of the current experiences.

8. Fifty-two countries² from the region responded to the survey. Of these, 22 reported conducting their census using a traditional approach, 16 are using a combined approach which involves some direct collection from respondents, one is using a rolling census approach, and 13 are conducting a register-based census (see Figure I).

9. The methods used for the production of census information are especially important in the current circumstances. Any approach requiring direct contact with respondents is liable to be impacted by the pandemic to some degree. Some countries using a register-based approach also indicated that they rely on some sample survey data as part of their approach. Sample survey data could also be impacted by the pandemic. Hence even those countries with a fully register-based approach are not fully protected from the impact of limitations on in-person contact.

Figure I: Responding countries by main census type



¹ Countries are not identified by name in this section, except for when referring to census dates and main census methodologies, since some of the anticipated changes to censuses have not yet been publicly communicated at the time of publication of this report.

² The United Kingdom is considered here as one response, although the answers to some questions are different for England and Wales, Scotland and/or Northern Ireland, each of which conducts a separate census.

2.2 Impacts of the pandemic on censuses of the 2020 round

2.2.1 Delayed collections and census reference dates

10. Fifteen countries indicated that they are moving their census to a later date. Armenia, Kazakhstan, Kyrgyzstan, Israel the Russian Federation, all of which had planned a 2020 collection, have moved their censuses to 2021, while Albania and Ukraine, also with planned 2020 censuses, have decided upon a longer delay (2022 for Albania and 2023 for Ukraine). Some countries with censuses planned for 2021 also announced delays: either to a later date within the same year (Luxembourg, Portugal, Serbia, Romania, Greece), or to 2022 (Ireland, Scotland³ and Germany). Uzbekistan has delayed its planned 2022 census to 2023.

2.2.2 Changes in methodology

11. Countries which do not rely on registers for their census generally indicated that they are attempting to move away as much as possible from approaches requiring direct collection from respondents. Many countries that rely primarily on self-response will be attempting to increase the uptake of their online questionnaires. The push for this approach will be supported by the addition of specific messaging in census communication campaigns. Some countries will also attempt to conduct more interviews or follow-ups by telephone (e.g. Canada, France), with the challenge that sources of up-to-date telephone numbers may be difficult to obtain as the quality of this information may have suffered during the pandemic.

12. Many countries indicated that they will increase the use of administrative data, either as a direct replacement for non-response during collection, or to support data processing and estimation activities. For some countries the extent to which they will use administrative data will depend on actual conditions at the time of collection; they are treating the use of administrative sources as a contingency in case direct collection becomes impossible or unreliable. In those cases, the aim will still be to maximize response at the time of collection.

13. Existing administrative sources that remain available for statistical purposes during the pandemic may sometimes show a reduction quality because of less timely updates, resulting from administrative delays. Nevertheless, using these existing sources presents less of a risk for use in the current censuses than using newly-created administrative sources, which may be subject to the same kind of limitations as sample surveys and traditional censuses. If newly-created administrative sources are used for census purposes, thorough testing is needed.

14. In many cases, changes being introduced to deal with the anticipated effects of the pandemic actually represent an acceleration of original plans for the implementation of such changes, as is the case for example for online questionnaires solutions or the use of administrative data. In most cases, the implementation of such changes will be challenged by limited opportunities for extensive testing before census operations. Countries delaying their census collection may benefit from the extra time to prepare for operational changes, on condition that they conduct the requisite tests and make the necessary changes to their plans in the meantime.

³ Not included in the 15: see footnote 2.

15. The survey asked whether census operations are being or have been impacted by the pandemic, in nine different areas of operations. Table 1 summarizes the impacts reported by the experts.

Table 1: Impact of the Covid-19 pandemic on census activities

<i>Area of operations</i>	<i>Census method for 2020 round</i>				Total
	<i>Traditional</i>	<i>Register-based</i>	<i>Combined</i>	<i>Rolling</i>	
<i>Census date</i>	9	-	6	-	15
<i>Collection mode</i>	4	-	3	1	8
<i>Field operations</i>	9	-	5	1	15
<i>Data processing</i>	3	1	1	1	6
<i>Use of administrative data</i>	5	-	-	1	6
<i>Questionnaire(s)</i>	5	-	-	-	5
<i>Timeline for dissemination of results</i>	5	-	3	-	8
<i>Communication & outreach activities</i>	8	1	8	-	17
<i>Other changes in plans or methodology</i>	3	-	1	-	4

16. The activity most impacted is communications and outreach, with 17 countries indicating some changes in this area. In most cases, the changes will aim to adjust communications campaigns to promote self-response, particularly via the Internet, as countries look to minimize direct contact with respondents. Relatedly, eight countries are also making changes to their collection mode, primarily to increase the use of self-enumeration, or to increase collection approaches by telephone such as Computer-Assisted Telephone Interviewing (CATI).

17. For those requiring some field operations, 15 countries indicated that they are making changes to this part of their census. These changes vary in nature, including partially or entirely eliminating in-person follow-ups; changing the field structure by implementing remote offices; virtual training; and providing personal protective equipment to field staff in cases where some in-person collection will continue to take place.

In data processing, six countries indicated some level of change; only one of which is a country that uses a register-based approach. The reported changes in data processing include system adaptations because of changes in collection tools, and increases in the use of administrative data during processing to make up for potential increases in total or partial non-response at the time of collection.

18. In all, six countries indicated that they plan to increase the use of administrative data in this census round. In addition to the uses of administrative data in data processing, some countries are also anticipating that certain census variables may be impacted due to changes in response patterns (such as for questions related to labour market). One country indicated that they will be using additional procedures to validate results. Finally, two countries indicated the possibility of introducing the use administrative data as part of their imputation process.

19. Five countries are making changes to some parts of their census questionnaires, either by reducing the number of questions to focus primarily on core topics, or by adapting the

questionnaire to populations at higher risk such as those residing in institutions or collective living quarters. Although not directly indicated in the survey responses, such changes would logically also imply changes in processing systems.

20. It is noteworthy that data processing and communication are the only two areas of operations in which any country using a register-based approach reports that they foresee a change in their plans because of the pandemic— and only one country indicated a change in each case. The changes envisaged by the one register-based country reporting adaptations in communications and outreach have to do with moving all stakeholder communication and interaction with data users to online formats. The changes envisaged by the one register-based country reporting adaptations in data processing are alterations to take account of the volatility in both quality and timeliness of administrative files, including delays in sending the files to the NSO and possible impacts of Covid restrictions on the applicability of algorithms used to construct census variables from the administrative files. In general, then, it would seem that **censuses in the countries using a register-based approach have been best protected from the operational impacts of the pandemic.**

2.2.3 Changes in perceived risk to completing a successful census

21. Experts were asked to evaluate the risk to successful completion of a census in this round, given the changes in their plans brought about by the pandemic. Of responding countries, 13 indicated an increased risk, 6 indicated a reduced risk, and 14 felt that there is no change to their risk level. Sixteen countries, including most of the register-based countries (10), indicated that there were no changes to their plans, which could, in principle, be interpreted as no change to their risk level (although adverse impacts on the quality of administrative data sources could create some degree of risk).

Table 2: Perceived change in level of risk to completing a successful census

Change in level of risk*	Census method for 2020 round				Total
	Traditional	Register-based	Combined	Rolling	
Less risk than with original plan	2	-	3	1	6
Same level of risk as with original plan	6	2	6	-	14
More risk than with original plan	8	1	4	-	13
(No change to plan)	4	10	2	-	16

*3 countries did not provide an answer to this question

3 Potential areas for change or expansion for the next version of the Recommendations

22. As changes to census plans are being contemplated or enacted in the 2020 round because of the Covid-19 pandemic – in many cases much sooner than had been envisaged – it becomes apparent that some sections will need to be expanded or added to the CES Recommendations on Population and Housing Censuses for the 2030 round. Seventeen countries indicated that they feel the experiences of tackling the challenges of the pandemic necessitate changes in the Recommendations. The following topics for

potential addition or expansion in the next Recommendations are based on the information shared during the 2020 Online Expert Meeting and in the survey of experts.

3.1 Contingency planning

23. For most countries, developing and conducting a thorough and robust census can present many challenges even in the best of conditions. This is becoming increasingly true as census designs become more complex, with the expansion in the simultaneous use of a combination of different collection methods (e.g. direct enumeration approaches combined with the use of administrative sources to produce part of the population count or to replace questions), and the increased reliance on self-enumeration methods in traditional and combined census approaches. The complexity is further multiplied in many cases by the use of new collection technologies, such as Internet response and handheld devices in field operations, and the introduction of other innovations in data processing and dissemination of results.

24. This increase in complexity can increase the risk of some process failure, even with the best of preparation; as observed for example in the 2016 census of Australia. Their online questionnaire site was down for several days at the start of collection, impacting census response severely in the early days.

25. Although it has been several decades since an event has had a global impact on the scale of the Covid-19 pandemic, major hazardous events and disasters impacting the conduct of censuses of population within individual countries are not rare. The level of risk related to complex census designs may be compounded further by the observed increase in the occurrence of such events in recent years. These events can have a major impact on census preparation and operations. Examples include the 2020 census in the United States of America, with hurricanes hitting the Eastern states, and very large forest fires in Western states, disrupting collection operations. A serious earthquake in Albania in 2019 was partially responsible for a delay of their planned 2020 census by two years, and large forest fires in Canada in 2016 resulted in the evacuation a community of more than 100,000 people, preventing data collection for the entire census period.

26. It is not, however, inevitable that greater complexity should equal greater risk for census operations. A multifaceted design with sufficient built-in redundancies can offer the possibility for one part of the process to act as a backup should another part of the process experience a failure. The introduction of the e-questionnaire in the United States in 2020, for example, served to offset some of the difficulties entailed in non-response follow-up, despite the fact that it made the overall census operation more complex.

27. With increased complexity of census designs comes an increasing necessity to perform an assessment of potential problems that may be encountered, along with plans to mitigate against each of these. Development of such a list of potential problems could be critical to the success of a census, yet has often not been considered a high priority in census planning in many countries before now; and with the heavy workloads entailed in complex census designs, this endeavour may be accorded secondary priority.

28. The [CES Recommendations for the 2020 Censuses of Population and Housing](#) are generally silent on contingency planning. Paragraph 2.90 of the global [Principles and Recommendations for Population and Housing Censuses](#) (revision 3) states that “as with any project, particularly ones as large and complex as the census, it will not go according

to plan and there will be difficulties”, but the main point of this paragraph is in fact related to ensuring that some budget is set aside for contingencies. There are no other references to contingency planning in the document. Despite this absence of guidance in either the regional or global recommendations, many countries do have strategies to deal with the most common or probable risks during census operations, and most also maintain documentation on associated mitigation actions and contingencies.

29. Since the impacts of the current pandemic are being felt very late in the preparatory stages, the experience has highlighted for many countries the need for more focused contingency planning. Attention needs to be given to this during planning stages if mitigation measures are to be efficient when they are required. What would be the course of action if parts of a country are inaccessible during census collection because of a natural disaster, or in the case of the 2020 round, because of a Covid-19 lockdown? What would be the course of action if the online questionnaire application goes down for a prolonged period during the collection period?

3.1.1 Risk registries

30. One key aspect of contingency planning is the creation of a central register of possible risks, and of related mitigation actions as required. A solid risk register needs to be more than a simple list of the risks which may affect census activities. Often, to be implementable, contingency actions will have to rely on alternative processes and systems, on the assumption that the main processes and systems are disrupted. An effective risk register must plan for and such alternatives and ensure they are implementable.

31. The creation of a risk register is a best practice that makes it possible to document the objectives of risk management; to develop an approach for evaluating potential risks; to clarify and document the decision-making process; and to set roles and responsibilities related to the implementation of contingency actions. The risks in the register can also be qualified in relation to the overall objectives of the census programme, which will help to determine the extent of actions to be taken if a particular risk materializes. In some cases, the organization may simply decide to assume some of the risks, as potential contingency actions would be too onerous or impossible to implement. The risks can also be classified in terms of their potential impact in attaining the census objectives.

32. The creation and maintenance of a risk register are not covered in the current Recommendations. Many countries indicated that they would value such guidance in the future.

3.1.2 Census Management Information Systems

33. The efficient management of census operations, especially those using traditional, combined and rolling approaches, depends upon timely and accurate information about all aspects relevant to operational management: that is, a Management Information System (MIS). The MIS should be able to inform census managers about whether the census activities are unfolding as planned, and whether the implementation of contingency plans is required. This is particularly important for census approaches that use a combination of collection methods. For example, a lower-than-expected online response level may require additional efforts in follow-up in the field to secure the targeted census response objective. This additional effort would likely in turn affect the number of enumerators required for follow-up, the availability of questionnaires if a paper format is used, and so on. These

requirements may also differ greatly by region within a country, requiring the MIS to be geographically detailed.

34. Both because of the pandemic and due to (unrelated) security concerns, the 2021 census in Canada will have a physical and virtual office space dubbed a “Census Control Centre”, designed to allow staff to effectively review management information, security information and contextual data (Covid-related information, weather, flooding, fire incidents etc.) and to respond quickly from the centre if there is an incident.

35. The current CES Recommendations have very limited references to Management Information Systems or related requirements. Some indirect references are included in Annex III of the Recommendations. This topic should be covered in more detail in the 2030 Recommendations.

3.1.3 Governance approaches

36. The successful implementation of an exercise as complex as a census requires strong and agile governance structures, both within the statistical agency and with key external service providers and partners. This becomes even more critical in situations where contingencies need to be implemented. How and when do such decisions get made? Who has the responsibility to make decisions which could have important implications for the successful outcome of the census? Who is responsible for the implementation of contingencies? Problems during census operations may occur rapidly, with little or no prior notice. The success of outcomes when putting contingency plans into action may be closely linked to the efficiency of the decision-making processes built into a census organization.

37. The current Recommendations do not cover governance to any great extent. This is an area which could be expanded, and/or reference made to existing UNECE and global guidance on governance in official statistics more broadly.

3.2 Quality management in a multi-mode approach

3.2.1 Pandemic impacts that may affect census data quality

38. Recent years have seen the uptake of a variety of new and innovative approaches in censuses. The potential impacts of the current pandemic may accelerate this trend, potentially raising various new challenges for ensuring data quality and comparability of census outputs over time or with other data sources.

39. Overall response to censuses in this round may be affected by the effects of the pandemic. The increase in non-response could be concentrated in certain regions within a country, partly because of lockdowns to protect local or vulnerable populations.

40. Some planned census topics will be impacted by measures taken by countries to control the pandemic. These include questions on population mobility, place of work and place of study. Some of these may even affect local population counts, as many students and workers are currently studying or working from different locations than usual.

41. Relatedly, the pandemic may have altered some people’s perceptions of second or alternative residences. In countries where owning a rural ‘vacation home’ is commonplace for urban-dwellers, such second homes may have become longer-term places of residence during lockdowns. What was initially intended as a temporary move may have become longer than intended. For those now working from home full time, such moves may even have become permanent.

42. Several countries indicated at the 2020 Online Expert Meeting or in the survey of experts that they are accelerating (or considering) the introduction of alternative methods to mitigate against some of the challenges caused by the pandemic. Some of these relate specifically to increased use of administrative data sources; in some cases due to activation of contingency plans.

43. To aid such moves in the future, **the 2030 Recommendations would benefit from extensively referencing and/or directly integrating key recommendations from the 2018 [Guidelines on the use of registers and administrative data for population and housing censuses](#) and the forthcoming [Guidelines on Assessing the quality of administrative sources for use in censuses](#) (to be published in late 2020).**

3.2.2 Mode effects and comparability over time

44. One of the key benefits of a census for many data users is the ability to compare results—whether over time, from one census to the next, or with other data sources. Census information is a primary source used to measure changes in society, and to assess the efficiency of social and economic policies and programmes over time. Many countries have indicated that the pandemic may affect some of the census measures in the current round, as migration patterns, labour force activity and schooling are greatly impacted by restrictions. The quality of some measures may also be affected by a reduction in response to the census. Such impacts could reduce the degree of comparability of results over time.

45. Many countries are accelerating the implementation of self-response approaches, such as online questionnaires, to counter a potential reduction in overall response,. Many are also contemplating or implementing statistical alternatives to create or supplement census outputs, with an increase in the use of administrative data or statistical modelling. Some concerns may be raised by data users about potential mode effects and biases being introduced in some census measures by the implementation of these approaches, impacting comparability of census results over time.

46. The current Recommendations do not address directly the possible issues related to data comparability with the use of new or multiple data sources, and the possible approaches to minimizing such impacts. The section on Quality Management contains indirect references to this aspect. Paragraph 50 in Annex III contains a summary reference to this issue.

47. As the use of multiple collection approaches and new data sources will no doubt continue to expand in the future, accelerated by the impetus of the pandemic, **an increased emphasis on how to ensure data relevance and comparability of census outputs could be added in the 2030 Recommendations.**

3.3 Other areas for possible change in the Recommendations

48. Experts identified in the survey various other areas they wish to see added or modified in the next version of the Recommendations. These include **a review of the essential features of a census, such as simultaneity, especially in the context of the use of multiple data sources as part of the census.** There are also multiple unspecific references to the need for other changes, such as for household and family characteristics. Many of these are discussed in the paper by the Steering Group published in 2020, [New Frontiers for Censuses Beyond 2020](#), which will serve as a basis to guide the revision of the Recommendations for the 2030 round.

4 Conclusion

49. For many countries, conducting a census is the most complex and high-risk activity conducted by the national statistical office. The CES Recommendations serve as a guide to those responsible for conducting this activity. The Covid-19 pandemic adds new dimensions and a higher level of complexity in conducting a census in ways that could not easily have been predicted. This situation has highlighted areas to consider adding or expanding in the Recommendations, such as contingency planning, and what to consider in the implementation of multi-mode collection approaches.

50. Many of the adaptations being introduced in the 2020 round because of the pandemic present a learning opportunity, even though in some cases their implementation at short notice this time will be imperfect. These lessons will offer further opportunities to identify areas of the Recommendations to be updated and expanded for the next round.

51. The current situation seems likely to translate into an accelerated set of learning experiences, as the pandemic is inducing many countries to implement new approaches much sooner than they originally planned or anticipated. This was demonstrated at the 2020 Online Expert Meeting with a presentation from the United States of America, a country whose entire census collection took place during the first wave of the pandemic.

52. One of the key benefits of the UNECE Expert Group meetings is the possibility to exchange information about key innovations introduced in national census programmes, and to learn from the experiences of others. **Although the meeting usually does not take place during the year when the most countries are conducting their census (2021), there would likely be great benefits derived from some international exchanges in 2021, as a means of sharing ongoing successes and challenges.** The virtual format of the 2020 expert meeting proved very successful, offering a potential medium for short notice meetings of experts in future.

Keeping Count Conducting the 2020 round of population and housing censuses during the COovid pandemic

When the Covid-19 pandemic broke out in March 2020, preparations for the 2020 round of population and housing censuses were well underway in countries across the UNECE region: some were already in the field, while the majority were in the advanced stages of planning for a 2021 census.

The impacts of the pandemic on census-taking have been wide ranging; from the need for social distancing in countries using in-person census enumeration, to conceptual challenges such as correctly measuring place of work and commute to work when many people are temporarily obliged to work from home. Even those countries where a census is conducted using population registers rather than questionnaires have faced delays and possible inaccuracies in their source data.

Census offices across the UNECE region have had to deal with these and many other challenges over the course of 2020, and several have opted to delay their census as a result. This publication looks at the impacts on all aspects of censuses, from data collection to dissemination, based on reports from member States. Some lessons learned are offered to guide countries toward more resilient census operations in the future, including proposed adaptations to the next edition of the Conference of European Statisticians Recommendations on Population and Housing Censuses which will guide countries in the 2030 census round.

Information Service
United Nations Economic Commission for Europe

Palais des Nations
CH - 1211 Geneva 10, Switzerland
Telephone: +41(0)22 917 12 34
E-mail: unece_info@un.org
Website: <http://www.unece.org>