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**Operational aspects of censuses****Field operations, legislation, lessons learned: Key results of the UNECE Survey on National Census Practices, and first proposals about the CES Recommendations for the 2020 census round****Note by the UNECE Steering Group on Population and Housing Censuses***Summary*

In early 2013, UNECE conducted an online survey among its member countries on national practices in the 2010 round of population and housing censuses. This document presents an overview of the main results of the survey with regard to field operations (part I), legislation (part II) and lessons learned (part IV). Some first proposals about the preparation of new Conference of European Statisticians (CES) Recommendations for the 2020 Round of Population and Housing Censuses on legislation are also presented in part III.

## I. Field operations — main results of the survey

1. Out of 50 responding countries<sup>1</sup>, 41 countries (82 per cent) conducted field operations. They include 33 countries with traditional or rolling census<sup>2</sup>, and 8 countries with a combined census. Clearly, countries with register-based census did not conduct any field operations. The following analysis of the questions refers only to the 41 countries with field operations.

2. The first question was on whether a number of features/aspects of field operations applied to the census (table 1). An address register was used in support of field operation by 17 countries (41 per cent). This practice was relatively more common among countries with a combined census (6 out of 8 countries, or 75 per cent) than among countries with a traditional census (11 out of 33 countries, or 33 per cent)

3. Almost all countries with field operations (36 out of 41, or 88 per cent) employed more than one level of field staff. In 17 countries there were three levels of field staff, and in 16 countries there were four or more levels, while in 3 countries there were only two levels. In Lichtenstein and Switzerland there was no field staff, and questionnaires were mailed.

Table 1

### Which of the following features or aspects of field operations applied to your census?

	<i>Of which, by census method:</i>					
	<i>All methods (41 countries)</i>		<i>Traditional (33 countries)</i>		<i>Combined (8 countries)</i>	
	<i>Count</i>	<i>%</i>	<i>Count</i>	<i>%</i>	<i>Count</i>	<i>%</i>
Use of an address register	17	41	11	33	6	75
Employment of more than one level of field staff (enumerators, supervisors, etc.) — levels:	36	88	31	94	5	63
2 levels of field staff	3	7	2	6	1	13
3 levels of field staff	17	41	15	45	2	25
4 or more levels of field staff	16	39	14	42	2	25
Overall field operation managed by central statistical office	30	73	23	70	7	88
Field operations managed by regional or local offices	29	71	24	73	5	63
Involvement of regional or local government agencies (such as municipalities, communes, local authorities)	27	66	23	70	4	50

<sup>1</sup> The former Yugoslav Republic of Macedonia, where the 2011 census was cancelled, is not included as no information on field operations was provided in the survey. Countries where it is planned that a census be carried out by 2014, and that in the survey provided information on field operations, are included.

<sup>2</sup> For the results presented in this paper, the group of countries with traditional census includes also France that conducted a rolling census.

4. The overall field operation was managed by the central statistical office in 30 countries. Regional or local offices managed field operations in 29 countries. In 22 countries field operations were managed both at the national level by the central office and at the local level by regional or local office. Regional or local government agencies (such as municipalities, communes, local authorities) were involved in 27 countries. In the Czech Republic the field operations were managed by the central statistical office and the Czech Post Office, which provided enumerators, buildings, transport and a specific part of information technology (IT) (see also the results of the survey questions on outsourcing).

5. Concerning questionnaires (table 2), paper questionnaires were used in 35 countries. In 32 countries a single form was used. Three countries (Canada, Italy and the United States) used a long form and a short form. Switzerland used only a short form, but much of the census data was collected using register-based sources as part of a combined census.

6. Concerning long/single forms, enumerators were used as primary delivery method in 25 countries, and primary collection method in 24 countries. In 21 countries enumerators were used for both delivery and collection of questionnaires. In 15 of these countries (located in East and South-East Europe, Caucasus and Central Asia) enumerators actually conducted an interview and filled in the forms. In the remaining six countries, the forms were compiled by the household members. The mail was used as primary delivery method by five countries (Italy, Lichtenstein, Spain, the United Kingdom and the United States), while in Canada and Malta both enumerators and the mail were used as main delivery methods.

Table 2

**What types of questionnaires were used, and how were they delivered and collected?**

	<i>All methods (41 countries)</i>		<i>Of which, by census method:</i>			
			<i>Traditional (33 countries)</i>		<i>Combined (8 countries)</i>	
	<i>Count</i>	<i>%</i>	<i>Count</i>	<i>%</i>	<i>Count</i>	<i>%</i>
Paper questionnaire — Long-form (or single form) — main delivery and collection methods:	35	85	31	97	4	50
delivered primarily by enumerator	25	61	24	73	1	13
delivered primarily by mail	5	12	3	9	2	25
delivered by enumerator or mail	2	5	2	6	0	0
collected primarily by enumerator	24	59	23	70	1	13
returned primarily by mail	4	10	3	9	1	13
collected by enumerator or returned by mail	4	10	2	6	2	25
other delivery or collection methods	1	2	1	3	0	0
Paper questionnaire — Short-form — main delivery and collection methods:	4	10	3	9	1	13
delivered primarily by enumerator	0	0	0	0	0	0
delivered primarily by mail	3	7	2	6	1	13
delivered by enumerator or mail	1	2	1	3	0	0
collected primarily by enumerator	0	0	0	0	0	0
returned primarily by mail	3	7	2	6	1	13
collected by enumerator or returned by mail	0	0	0	0	0	0
other delivery or collection methods	1	2	1	3	0	0
Electronic questionnaire - Long-form (or single form)	18	44	12	36	6	75
Electronic questionnaire - Short-form	6	15	3	9	3	38

7. The mail was the primary collection method in four countries (Canada, Spain, the United Kingdom and the United States), while in four countries (the Czech Republic, Germany, Malta and Spain) both enumerators and mail were used as main collection method. In Italy, questionnaires were delivered by mail and collected by a multi-mode data collection, i.e. they could be completed on the internet either returned by mail or to a Municipal Collection Centre.

8. Electronic questionnaires were used in 21 countries, including five countries where paper questionnaires were not used (Cyprus, Estonia, Iceland, Latvia and Poland). All countries with combined census, and 13 of the 33 countries with traditional census (39 per cent) used electronic questionnaires. Three countries used short and long electronic questionnaires (Canada, Italy and Poland), three countries used only a short electronic questionnaire (Israel, Lithuania and Switzerland), and 15 countries used a single electronic questionnaire.

9. With regard to material and documentation used by field staff (table 3), maps or photographs of enumeration areas were used in 34 countries (83 per cent), including practically all countries with a traditional census, but in only two of the eight countries with a combined census (Israel and Spain). Estonia and Poland provided enumerators with maps and documentation in digital form.

10. Field manuals or instruction books were used in 38 countries (93 per cent), including basically all countries except Liechtenstein and Switzerland (where there was no field staff) and Luxembourg.

11. The large majority of countries (in total 32 countries, or 78 per cent) used summary report forms, to record numbers of population (26 countries), households (25 countries), dwellings (25 countries) and buildings (18 countries).

Table 3

**What documentation and other material were used by field staff during the enumeration?**

	<i>All methods (41 countries)</i>		<i>Of which, by census method:</i>			
			<i>Traditional (33 countries)</i>		<i>Combined (8 countries)</i>	
	<i>Count</i>	<i>%</i>	<i>Count</i>	<i>%</i>	<i>Count</i>	<i>%</i>
Maps or photographs of enumeration areas	34	83	32	97	2	25
Field manual or instruction book	38	93	32	97	6	75
Summary report form to record numbers of (indicate all that apply):	32	78	27	82	5	63
Population	26	63	23	70	3	38
Households	25	61	22	67	2	25
Dwellings	25	61	22	67	3	38
Buildings	18	44	15	45	3	38

12. Field staff recruitment in 22 countries was carried out only regionally or locally, in 14 countries both centrally and regionally/locally, and in two countries only centrally (Greece and Latvia) (table 4).

13. Field staff training was carried out more often both centrally and regionally/locally (25 countries), normally with higher level staff trained centrally and lower level staff

trained regionally/locally. In 11 countries it was carried out only regionally or locally, and in 2 countries only centrally (Luxembourg and Malta).

14. With regard to the length of the training for enumerators/interviewers, in 23 countries it was less than a week, in 8 countries one week, in 5 countries two weeks, in 2 countries three weeks (Azerbaijan and Kazakhstan) and in one country more than three weeks (Armenia). It could be expected that longest training was done in countries with interviewers. However, other countries with interviewers did a short training, of one week or even less (Albania, Croatia, Kyrgyzstan, the Republic of Moldova, the Russian Federation, Serbia, Tajikistan, Ukraine).

Table 4

**Questions on field staff recruitment and training**

	All methods (41 countries)		Of which, by census method:			
			Traditional (33 countries)		Combined (8 countries)	
	Count	%	Count	%	Count	%
Was field staff recruitment carried out...						
Centrally?	2	5	2	6	0	0
Regionally or locally?	22	54	18	55	4	50
Both centrally and regionally/locally ?	14	34	12	36	2	25
Was field staff training carried out...						
Centrally?	2	5	2	6	0	0
Regionally or locally?	11	27	10	30	1	13
Both centrally and regionally/locally?	25	61	20	61	5	63
How much training, before the enumeration, did enumerators/interviewers receive?						
Less than a week	23	56	20	61	3	38
1 week	8	20	7	21	1	13
2 weeks	5	12	3	9	2	25
3 week	2	5	2	6	0	0
More than 3 weeks	1	2	1	3	0	0

15. Pre-enumeration census tests, pilot or rehearsals were carried out in almost all countries (38, or 93 per cent) (table 5). They were not carried out in Luxembourg, while Lichtenstein and Kyrgyzstan did not answer this question. Most countries (31) carried out only one test/pilot, two years before the census (13 countries), one year (9 countries), or less than one year before the census (7 countries). Only two countries conducted the only test/pilot more than two years before the census. Seven countries conducted more than one test/pilot at different times before the census.

16. Pre-enumeration checks of the Enumeration Areas were carried out by field staff in 35 countries out of 41 (85 per cent). In 14 countries they were carried out by enumerators, in 11 countries by field managers, in 7 countries jointly by enumerators and managers/instructors/supervisors. In Croatia these checks were done by the State Geodetic Administration, and in the United States by designated "listers". In the United Kingdom pre-census check of a sample (15 per cent) of addresses were carried out by specially trained field staff.

17. Countries used different strategies to store completed questions after collection by enumerators/interviewers and before despatch to the processing site. The most common strategy, adopted by 17 countries, was to store them locally in specially provided secure accommodation. Five countries recorded and stored electronically the data, and uploaded them to Census office. Most of the other countries (12 countries) used strategies in which data were stored in different ways and different locations (including those mentioned plus the enumerators or managers homes, or the immediate despatch to the regional/central office) at different stages of the data collection phase.

Table 5

**Questions on pre-enumeration activities and storage of completed questions**

	<i>All methods (41 countries)</i>		<i>Of which, by census method:</i>			
			<i>Traditional (33 countries)</i>		<i>Combined (8 countries)</i>	
	<i>Count</i>	<i>%</i>	<i>Count</i>	<i>%</i>	<i>Count</i>	<i>%</i>
<b>Were pre-enumeration census tests, pilot or rehearsals carried out?</b>						
Yes, indicate when:	38	93	31	94	7	88
Less than a year before the census	8	20	7	21	1	13
1 year before the census	14	34	10	30	4	50
2 years before the census	19	46	15	45	4	50
More than 2 years before the census	9	22	7	21	2	25
No	1	2	1	3	0	0
<b>Were pre-enumeration checks of the Enumeration Areas carried out by field staff?</b>						
Yes, by field managers	11	27	8	24	3	38
Yes, by enumerators	14	34	11	33	3	38
Yes, by others (specify below)	10	24	10	30	0	0
No	5	12	4	12	1	13
<b>If completed questions were collected by enumerators/interviewers, how were these stored before despatch to the processing site?</b>						
Stored by enumerators in their own homes	12	29	11	33	1	13
Stored by census managers in their own homes	6	15	5	15	1	13
Stored locally in specially provided secure accommodation	23	56	22	67	1	13
Immediately despatched to regional or central office	5	12	5	15	0	0
Data recorded and stored electronically and uploaded to Census office	8	20	3	9	5	63
Other (specify below)	2	5	2	6	0	0

18. A post-enumeration survey (PES) to check coverage was carried out in 25 countries out of 41 (61 per cent) (table 6). This technique, originally developed for the traditional census, was used in 23 of the 33 countries using this approach (70 per cent), but in only two of the eight countries with a combined census (25 per cent): Poland and Switzerland<sup>3</sup>. It is interesting to note that PES was not conducted in many countries in the European Union (EU) and North America with traditional census, including Bulgaria, Canada, Cyprus, Ireland, Latvia, Lithuania, Luxembourg, Malta and Slovakia. Most countries in Eastern and South-Eastern Europe, Caucasus and Central Asia (except for Azerbaijan) conducted PES. In the Russian Federation and Tajikistan (and possibly in other countries of the Commonwealth of Independent States (CIS) although this was not reported in the survey) PES covered 10 per cent of each enumeration area.

19. With regard to the timing of PES, the large majority of countries (17) conducted the survey less than a month after the census, three countries between one and two months before the census, and five countries more than two months after the census.

Table 6

**Questions on post-enumeration survey**

	<i>All methods (41 countries)</i>		<i>Of which, by census method:</i>			
			<i>Traditional (33 countries)</i>		<i>Combined (8 countries)</i>	
	<i>Count</i>	<i>%</i>	<i>Count</i>	<i>%</i>	<i>Count</i>	<i>%</i>
Was a post-enumeration survey carried out to check coverage?						
Yes, less than a month after the census	17	41	16	48	1	13
Yes, between 1 and 2 months after the census	3	7	3	9	0	0
Yes, more than 2 months after the census	5	12	4	12	1	13
No	14	34	8	24	6	75
Was a post-enumeration survey carried out to check quality of the responses?						
Yes, less than a month after the census	17	41	15	45	2	25
Yes, between 1 and 2 months after the census	4	10	3	9	1	13
Yes, more than 2 months after the census	2	5	2	6	0	0
No	16	39	11	33	5	63

20. Post-enumeration surveys to check quality of the responses were carried out in 23 countries out of 41 (56 per cent). In 21 of these countries, post enumeration surveys were carried out to check both coverage and quality. In four countries (Canada, Cyprus, Malta and Switzerland), PES was carried out to check coverage only. In two countries (Germany and Turkey) PES was carried out to check quality only. In Germany, PES focused on the

<sup>3</sup> In addition, in Estonia, a follow-up survey for census evaluation similar to PES was carried out. A specially designed sample was used for repeat enumeration (using an abridged questionnaire) to determine the share of persons that were included in both the census and the follow-up survey and the share of those who were not enumerated during the census — this information allowed a statistical estimation of census coverage. According to Statistics Estonia, the weakness of this method is that it helps to discover those who were accidentally excluded from the census, but not those who systematically avoid enumeration.

quality of the household sample survey. Turkey specified that PES was planned and organized independently from the main survey, with field staff for PES appointed by the central office, and that for the main survey from the regional offices. In Latvia, no PES was carried out, but approximately 3 per cent of addresses visited by enumerators were checked during the period of the field work.

21. Post-enumeration debriefing for field staff were organized in 20 out of 41 countries (49 per cent) (table 7). In 15 countries, field staff was required to attend as part of the job. In five countries they were invited but not required to attend.

22. An evaluation of the field operation was (or will be) carried out in almost all countries (35 out of 41, or 85 per cent), with no significant difference between countries with traditional and with combined censuses. In 20 countries a report was (or will be) published, while in the other 15 countries a report was not (or will not be) published.

Table 7

**Questions on post-enumeration debriefing and evaluation of field operation**

	All methods (41 countries)		Of which, by census method:			
			Traditional (33 countries)		Combined (8 countries)	
	Count	%	Count	%	Count	%
Were field staff required or invited to attend a post-enumeration debriefing?						
Yes, required as part of job	15	37	12	36	3	38
Yes, invited but not required to attend	5	12	4	12	1	13
No	19	46	15	45	4	50
Was an evaluation of the field operation carried and report published?						
Yes, carried out and a report was (or will be) published	20	49	16	48	4	50
Evaluation carried out but a report not published	15	37	12	36	3	38
No evaluation carried out	4	10	3	9	1	13

## II. Legislation — main results of the survey

23. In most countries, the preparation and conduct of a census and/or the collection and compilation of statistical data from administrative sources requires a legal basis, regulating issues such as allocation of funds for the census operations; obligation of citizens to provide census information; relationships between the agency responsible for the census and other public administrations involved in the census operations; the uses and linkage of registers to produce census data or to support field operations; and data confidentiality.

24. In many countries, a specific census act or appropriate regulations are approved before each census, both to authorise the topic content and to deal with the issues mentioned above. In some countries, however, a more general statistics act includes all the necessary provisions required for the conduct of a population census and/or the production and dissemination of statistical data thereby obviating the need for specific census legislation.

25. One of the main issues covered in census and statistics acts is data confidentiality. In an increasing number of countries, specific data-protection laws have been approved to regulate this field. In some cases, data-protection laws include all necessary provisions to cover the specific needs of censuses, including for instance the possible use of register data for censuses, or specific measures to be applied to census enumerators. In others cases, specific provisions on data confidentiality have to be included in the census acts, to take into account aspects, which are specific to the census.

26. Table 8 shows that regardless of the census methodology adopted, all 50 of the countries that responded to the UNECE survey question (the former Yugoslav Republic of Macedonia did not) either reported or were known to have appropriate legislation in force to allow the collection of information necessary for the production of census statistics in the 2010 round. (Although Cyprus and Denmark reported in the survey having no such legislation, subsequent investigation showed that the census/data collection in both countries is indeed authorised by national statutes.)

27. Legislation that was specific to the census was in force in 31 countries in total (62 per cent of the countries that responded) – with a similar corresponding proportion (60 per cent) among the 30 countries of the European Economic Area (EEA) region. This includes the United Kingdom where specific census legislation exists in Scotland and Northern Ireland, but where in England and Wales several elements of its long-standing Census Act of 1920 have now been amended by the provisions of newly introduced statistics legislation (The Statistics and Registration Service Act 2007). Some 18 countries (36 per cent) had in place other, more general, legislation providing for the collection of population and other statistics of which 13 were in EEA (43 per cent of the EEA countries). In Israel specific provisions relating to each census are added to its more general statistics legislation as and when they are required.

28. In comparing the type of current legislation in countries adopting different census methodologies it is perhaps not surprising to note that 24 out of 31 countries adopting a traditional approach (80 per cent) have legislation specific to the census (with 12 out of 14 among the traditional EEA countries), whereas among the nine register-based countries all (equally not surprisingly) carry out their censuses under more general statistics legislation. Where countries adopt a combined methodology, incorporating elements of both traditional field enumeration and the use of administrative data sources, the split is even.

29. It is reassuring to note, however, that in all responding countries, there is legislation of some form in place (be it specific to statistical confidentiality or to data protection more generally) that protects the confidentiality of personal information collected for census purposes.

30. Twenty-one of the 47 countries that responded to the question (45 per cent) reported that the legislation governing their census is a permanently enshrined enactment, while in 26 countries (55 per cent) the relevant legislation either has to be amended or revised afresh for each successive census or was unique to the census in the 2010 round. The respective numbers among the 29 responding EEA member states were evenly split at 15 and 14. Although the United Kingdom reported that its relevant primary (framework) legislation is permanent, it should be noted that secondary legislation, in the form of regulations, is required each time in order to implement particular elements of the census operation, covering such aspects as the duties of the field staff and the inclusion of some topics on the census questionnaire. A similar legislative framework exists in Ireland. Cyprus and Denmark did not report on the status of their respective legislation.

Table 8  
**Legislation in UN-ECE and European Economic Area (EEA) countries**

	<i>Type of legislation</i>		<i>Data protection legislation</i>	<i>Status of legislation</i>		
	<i>EEA</i>	<i>Census</i>		<i>Statistics</i>	<i>Permanent</i>	<i>Unique/ revised</i>
<i>Traditional census</i>						
Albania		X		X		X
Armenia		X		X	X	
Azerbaijan			X	X		X
Belarus		X		X		X
Bosnia and Herzegovina		X		X		X
Bulgaria	X	X		X		X
Canada			X	X	X	
Croatia		X		X		X
Cyprus	X		X	X	-	-
Czech Republic	X	X		X		X
France	X	X		X	X	
Georgia			X	X	X	
Greece	X	X		X		X
Hungary	X	X		X		X
Ireland	X		X	X	X	
Italy	X	X		X		X
Kazakhstan			X	X		X
Kyrgyzstan		X		X		X
Luxembourg	X	X		X		X
Malta	X	X		X	X	
Montenegro		X		X		X
Portugal	X	X		X		X
Republic of Moldova		X		X		X
Romania	X	X		X		X
Russian Federation		X		X		X
Serbia		X		X		X
Slovakia	X	X		X		X
Tajikistan		X		X		X
The former Yugoslav Republic of Macedonia		-	-	-	-	-
Ukraine		X		X	X	
United Kingdom	X	X		X	X	
United States			X	X	X	
<i>Register-based census</i>						
Austria	X	X		X	X	
Belgium	X		X	X	X	
Denmark	X		X	X	-	-

	<i>Type of legislation</i>			<i>Data protection legislation</i>	<i>Status of legislation</i>	
	<i>EEA</i>	<i>Census</i>	<i>Statistics</i>		<i>Permanent</i>	<i>Unique/ revised</i>
Finland	X		X	X	X	
Iceland	X		X	X	X	
Netherlands	X		X	X	X	
Norway	X		X	X	X	
Slovenia	X		X	X	X	
Sweden	X		X	X	X	
<i>Combined census</i>						
Estonia	X		X	X	X	
Germany	X		X	X		X
Israel		X		X		X
Latvia	X	X		X	X	
Liechtenstein	X	X		X		X
Lithuania	X	X		X		X
Poland	X	X		X		X
Spain	X	X		X		X
Switzerland		X		X	X	
Turkey			X	X	X	
<b>Total</b>	<b>50</b>	<b>31</b>	<b>18</b>	<b>50</b>	<b>21</b>	<b>26</b>
Total EEA	30	18	13	30	15	14
Total EU	27	17	10	27	12	13
Total traditional	31	24	7	32	9	21
Total register-based	9	1	8	9	9	0
Total combined	10	7	3	10	4	6

### III. Legislation — Proposals for the 2020 CES Recommendations

31. In most countries, the preparation and conduct of a census and/or the collection and compilation of statistical data from administrative sources requires a legal basis, regulating issues such as allocation of funds for the census operations; obligation of citizens to provide census information; relationships between the agency responsible for the census and other public administrations involved in the census operations; the uses and linkage of registers to produce census data or to support field operations; and data confidentiality.

32. In many countries, a specific census act or appropriate regulations are approved before each census, both to authorise the topic content and to deal with the issues mentioned above. In some countries, however, a more general statistics act includes all the necessary provisions required for the conduct of a population census and/or the production and dissemination of statistical data thereby obviating the need for specific census legislation.

33. One of the main issues covered in census and statistics acts is data confidentiality. In an increasing number of countries, specific data-protection laws have been approved to regulate this field. In some cases, data-protection laws include all necessary provisions to cover the specific needs of censuses, including for instance the possible use of register data

for censuses, or specific measures to be applied to census enumerators. In others cases, specific provisions on data confidentiality have to be included in the census acts, to take into account aspects, which are specific to the census.

34. The establishment of a secure legal framework for any census is an essential part of the planning and preparation of the whole operation. However, little attention is given to this aspect in the *United Nations Principles and Recommendations for Population and Housing Censuses, Revision 2*, and none at all in the *CES Recommendations for the 2010 Censuses of Population and Housing* — the assumption being that there is perhaps little need to prescribe or make recommendation on an aspect of the census that is already well understood by, and entrenched within each national statistical institute (NSI) and national government.

35. However, consideration should be given to including a short section in the 2020 Recommendations setting out the fundamental principles and basic scope of census legislation. The inclusion of such material may become more valuable as more UNECE countries move away from undertaking a traditional census with a field enumeration to using administrative data sources. Such a move invariably demands new and more exacting legislation. It is proposed that such a section be included in the introductory chapter to the CES Recommendations on Methodology.

36. The following text (adapted from the *United Nations Principles and Recommendations*) is proposed.

*Legal basis for a census*

37. Legal authority for the census is required for assigning primary administrative responsibility, for obtaining the necessary funds, for determining the general scope, content and timing of the census, for authorising the administrative and logistical arrangements and for placing a legal obligation both upon the public to cooperate and give truthful answers, and upon the enumerator to record the responses faithfully. In addition, the confidentiality of the individual information should be strongly and clearly established in the census legislation and guaranteed by adequate sanctions so as to provide a basis for the confident cooperation of the public.

38. In countries that lack permanent or primary legal authority for the taking of periodic censuses, or where secondary legislation is required to enable a particular census to take place, it is important to act early to establish the necessary legal authority. The legislative process, and the timeframe necessary to complete it, will of course, vary from country to country, but sufficient time should be allowed for the completion of such a process well before any administrative activity that is dependent on the legislation is scheduled to begin. In planning such a timetable, countries should always build in a contingency to allow for unscheduled delays in the legal or parliamentary process.

39. The principle of conceptual and organizational flexibility should be observed in drafting primary or framework census legislation. Thus, the inclusion of provisions that are too rigid or prescriptive regarding the type of data to be collected or the structure and relationships of the various parts of the census organisation should, if possible be avoided. Instead, the necessary detail should be contained in the census regulations promulgated by the census authorities. Moreover, provision should be made, in either the legislation or implementing regulations, for sanctioning the use of administrative procedures, including the appropriate delegations of authority for the procurement of equipment and supplies and the recruitment of personnel during the operational phase of the census.

40. Where census data is primarily collected or derived from administrative registers or other data sources, that will usually be owned, held, and the content of which controlled, by legal bodies or agencies other than the census authority, sufficient legal powers must be

available to NSI to allow it lawfully to access, hold, process and disseminate the necessary data, within the provisions of conventional national data protection and confidentiality legislation.

41. Countries moving from a census methodology based on a long-standing tradition of field enumeration to one based primarily on the use of such administrative data will, in particular, need to allow additional time for the necessary new legislation to be drafted.

## **IV. Problems, Successes, and Lessons Learned — Main results of the survey**

42. In order to move onto the 2020 round of censuses, we need to understand the problems and successes encountered in the 2010 round of censuses and their potential impact on the next round of census taking. Reviewing the problems, successes, and lessons learned enables us to take a critical look at the 2010 round of censuses and determine what worked well and what needs further refinement in conducting our censuses. The lessons learned must be taken into consideration as we begin preparations for the 2020 round of censuses. Documenting the problems, as well as, the successes, in the 2010 round of censuses, identified by the UNECE Survey on Country Practices, will assist us in proposing recommendations for the next census round.

43. The Problems, Successes, and Lessons Learned section of the UNECE Survey contained four questions.

### **A. Challenges**

44. The first question asked respondents to assess and rank 28 challenges or obstacles in conducting their 2010 census. For each challenge, respondents needed to indicate one of four levels of difficulty from most difficult challenge to not a challenge, or not applicable. No criteria were provided to define the scale. Out of the 51 countries, 49 answered this question and two skipped the question. Countries were also given the opportunity to provide comments. Annex 1 shows the results of the question.

45. When we look at the ranking levels of challenge, some observations can be made. For the most difficult challenge, the top responses are:

- Timeliness
- Financial resources
- Public perception
- Improving/maintaining participation rates
- Insufficient staff/expertise, and
- Process re-engineering/infrastructure.

46. For medium challenges, the top five responses are:

- Improving/maintaining data quality
- Timeliness
- Project management
- Keeping to budget, and
- Stakeholder acceptance.

47. For the least difficult challenge, the top five responses are:

- Implementing quality control/assurance checks
- Improving data processing/tabulation
- Public privacy concerns
- Data dissemination, and
- Balancing user needs against respondent burden.

48. Finally, for not a challenge, the top five responses are:

- Legal authority/government support
- Stakeholder privacy and confidentiality concerns
- Overcoming cultural barriers
- Public perception, and
- Stakeholder acceptance.

49. One might expect to see timeliness, financial resources, and keeping to budget as the most frequently reported challenges. Indeed timeliness (reported by 11 countries) and financial resources (reported by 10 countries) are the most difficult challenges. Timeliness (reported by 22 countries) is also reported as a medium challenges, as well as keeping to budget (reported by 20 countries).

50. Challenges marked not applicable are usually marked as such because the challenge does not apply for a country due to their census methodology. For example register-based censuses, do not have the same challenges as traditional censuses, since there are no field operations. Furthermore, things such as response rates, respondent burden, and geography are not components of a register-based census and cannot be considered challenges.

51. The other challenge levels were also reviewed for differences due to census methodologies; however, there was less clustering of responses (perhaps due to numbers of responses) and no conclusions could be drawn from the survey responses.

52. Only two countries provided comments to the question:

(a) Canada: Changes, natural phenomenon, and postal strike.

(b) Greece: Timeliness was the most difficult challenge. In 2010, the Hellenic Statistical Authority was established as an Independent Authority and the implementation of the new law was in the beginning. On the other hand, serious problems concerning the procurement procedures for the printing of the questionnaires and the communication programme caused a considerable delay.

## **B. Criteria for a Successful Census**

53. Each country sets their own success criteria based on past census history, challenges faced in their census, and the improvements they wish to make in their next census. We may interpret a successful census as a census meeting a predefined number of the success criteria. Success criteria set the standards to measure a census against and determine if a census has been successful or not. The second question in this section looked at the success criteria for a census. The survey asked respondents to mark as many of the criteria that applied to their census. A comment box at the end of the question allowed respondents to add criteria not on the list. Out of the 51 countries surveyed, 50 responded to this question.

54. For the countries who responded to the success criteria question (see Table 9 below), overall user and stakeholder support was the most frequent response, followed by public support and improved outputs. These criteria were followed by cost saving, improved response/participation rates, improved coverage rates, staff expertise, and software.

Table 9

**Total Country Responses by Census Methodology to the Question: What were your criteria for a successful census? Indicate all that apply**

<i>Success criteria</i>	<i>Number of countries selecting criteria</i>	<i>Combined methodology (out of 10)</i>	<i>Register-based (out of 9)</i>	<i>Traditional and rolling (out of 32)</i>
Cost savings	27	6	6	15
Time savings	24	3	4	17
Improved response/participation rates	27	8	0	19
Improved coverage rates	27	5	1	21
Improved outputs (i.e., formats, accessibility)	30	5	5	20
Financial resources	15	1	1	13
Staff expertise	27	4	5	18
Infrastructure	20	4	4	12
Hardware	18	2	3	13
Software	27	4	6	17
Governmental support	24	3	1	20
Public support	31	6	2	23
User and stakeholder support	32	6	2	24
Justified business case	4	2	0	2
Use/Increased use of Project Management Methods/Tools	14	3	1	10
Use/Increased use of Process Improvement Methods/Tools	13	2	3	8
User acceptability	22	3	3	16
Increased public trust	25	4	1	20
Other (specify below)	5			

*Note:* Number of Countries responding to the question: 50; Number of Countries who skipped the question: 1.

55. When we look for variations between census methodologies, the success criteria differ by methodology as expected.

56. For a combined census (based on ten countries), the success criteria are improved response/participation rates (reported by eight countries), user and stakeholder support, public support, cost savings (reported by six countries), and improved coverage rates (reported by five countries).

57. For a register-based census (based on nine countries), the success criteria are cost savings, government support (both reported by six countries), improved outputs, and staff expertise (both reported by five countries).

58. For a traditional census (including a rolling census), the success criteria (based on 32 countries) are user and stakeholder support (reported by 24 countries), public support (reported by 23 countries), improved coverage rates (reported by 21 countries), government support, and increased public trust (both reported by 20 countries).

59. As expected, for a register-based census, the key success criteria is cost savings, which for many countries is the one of considerations in moving from a traditional census to a register-based census. Cost savings and improved outputs were commonly held success criteria for combined and register-based censuses. Whereas, for traditional censuses, support from different stakeholder groups, as well as, public trust were key success criteria.

60. Six countries provided open-ended responses in the comments box, as follows:

- (a) Combined Method:
  - Germany: Minimum burden to people because of questionnaires.
- (b) Register-based Method:
  - Denmark: To fulfil the EU legislation
  - Sweden: For the first time conduct a fully register-based Census.
- (c) Traditional (included rolling) Method:
  - France: Timeliness of yearly field organization and yearly results production
  - Ireland: User satisfaction with results - timeliness, level of detail and quality.

### **C. 2010 Successes**

61. The third question inquired about the successes of censuses during the 2010 round of censuses. An open-ended box was included at the end of the question to record successes not accounted for on the list.

62. Of the 48 countries responding to this question, countries, regardless of census methodology, reported improved/maintained data quality, kept within budget, and met deadlines, as the main successes for the 2010 round of censuses (See Table 10).

63. The main successes for the combined method (ten countries) are improved census methodologies (reported by nine countries), improvements to information technologies (reported by eight countries), kept to budget, met deadlines, improved/maintained response/participation rates and improved/maintained data quality (all reported by seven countries).

64. The main successes for register-based censuses (nine countries) are improved census methodologies (reported by five countries), kept within budget, improved data quality, and improved data dissemination (all reported by four countries).

65. For traditional censuses and rolling censuses (32 countries), the main successes are met deadlines, kept within budget, improved/maintained data quality (all reported by 22 countries), improved information technologies (reported by 20 countries), and improved data dissemination (reported by 18 countries).

Table 10  
**Total Country Responses by Methodology to the Question: What were your successes in the 2010 round of censuses? Indicate all that apply**

<i>2010 Successes</i>	<i>Total countries all methods</i>	<i>Combined methodology (out of 10)</i>	<i>Register-based (out of 9)</i>	<i>Traditional and rolling (out of 32)</i>
Kept within budget	33	7	4	22
Met deadlines	32	7	3	22
Improved logistics and coordination	22	5	0	17
Overcoming public resistance	13	4	0	9
Implementation of project management methods/tools	11	3	1	7
Improved/maintained response/participation rates	23	7	0	16
Improved/maintained data quality	33	7	4	22
Improved data dissemination	26	4	4	18
Improved information technologies	30	8	2	20
Improved census methodologies	31	9	5	17
Other (specify below)	10			

*Note:* Number of Countries responding to the question: 48; Number of Countries who skipped the question: 3.

66. Ten countries provided open-ended responses in the comments box, as follows:

(a) Combined Method:

- Estonia: Information system for general service Sizable load tolerance tests Buying out laptops used by the enumerators Outsourcing information system maintenance Tachometer for indicating system load
- Turkey: Lowering the burden for the population.

(b) Register-Based Method:

- Denmark: It is not yet completed
- Iceland: Data processing not final, so the evaluation is incomplete
- Norway: Conduct a totally register-based census for the first time
- Sweden: Being able to conduct a fully register-based Census.

(c) Traditional (including Rolling) Method:

- Georgia: will be identified after conducting of census
- Republic of Moldova: The census is not yet conducted
- Russian Federation: changes are made to the law on census in order to improve the coverage and quality
- United Kingdom: Successful internet collection, showed the medium was viable for other data collection applications.

## D. Key Lessons Learned

67. The final question was an open-ended question, which asked respondents for their key lessons learned from their last census. Below is a brief summary of the key lessons learned from the 2010 round of censuses. Annex II contains the full set of responses to this question.

68. While there are a great number of differences between countries that are unique to their own particular census, there are also great similarities in the lessons learned across censuses. Common themes emerged from reviewing the responses to this question. The question itself was challenging, for countries, to write a response. It required countries to rethink their last census and succinctly describe what went well and what did not. Some countries provided early thoughts on how their next census will change based on the lessons learned.

69. Common themes that emerge are the changing census methodologies (a number of countries plan to move to a combined or register based census from a traditional there census) and the increased use of technologies. There are challenges of doing a new methodology or technology for the first time. Both require time, testing, and trained staff to implement successfully. The use of the Internet for data collection and dissemination is replacing the need for paper in a traditional census. Record linkage and the availability of administrative data sources are drawing many countries to consider a register-based census due to cost and time efficiencies. With each of the methodologies, there are trade-offs.

70. Keeping within budget, timeliness, data qualities, and increased demand for data, continue to be important considerations for census planning and implementation. These are key factors in determining which census methodology and/or technologies to utilize for a census.

71. This all must be balanced with the role of stakeholders, government, and the public. At a time of increasing public resistance, we must find ways to maintain response rates and continued support for census taking. Key to this is communications with stakeholder groups to ensure them about their privacy, data confidentiality, and data protection.

## Annex I

**Total Country Responses to the Question: What challenges or obstacles did you face in planning or conducting your census for the 2010 round of census? For each challenge, please indicate the appropriate level of difficulty**

<i>Challenge</i>	<i>Most difficult challenge</i>	<i>Medium challenge</i>	<i>Least difficult challenge</i>	<i>Not a challenge</i>	<i>Not applicable</i>
Keeping to budget	3	20	12	11	16
Financial resources	10	18	10	9	15
Timeliness	11	22	6	8	15
Improving/maintaining response rates	8	16	11	5	13
Improving/maintaining data quality	7	25	11	4	17
Improving/maintaining coverage rates	4	14	10	10	12
Improving/maintaining participation rates	9	15	10	6	12
Public perception	9	13	9	14	8
Public privacy concerns	6	13	19	10	10
Public confidentiality concerns	4	14	16	13	10
Balancing user needs against respondent burden	2	14	17	7	9
Stakeholder acceptance	0	19	12	14	11
Stakeholder privacy and confidentiality concerns	2	8	15	18	5
Recruitment of sufficient number of field staff	4	11	15	10	7
Insufficient staff resources/expertise	9	15	11	11	8
Mapping	7	14	9	6	11
Managing regional and local infrastructures	2	15	12	5	9
Identifying residential addresses	8	12	12	9	7
Improving data collection	5	17	13	9	13
Improving data processing/tabulation	6	16	21	6	9
Implementing quality control/assurance checks	6	16	22	4	8
Project management	2	22	9	13	14
Contract management	3	15	15	8	11
Legal authority/Governmental support	0	11	12	22	8
Process reengineering/Infrastructure	9	15	13	7	10

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<i>Challenge</i>	<i>Most difficult challenge</i>	<i>Medium challenge</i>	<i>Least difficult challenge</i>	<i>Not a challenge</i>	<i>Not applicable</i>
Data dissemination	4	15	17	12	8
Overcoming cultural barriers	0	9	9	15	6
Geography (terrain)	1	10	11	12	7
Other (specify below)	0	0	1	1	15

*Note:* Number of Countries responding to the question: 49; Number of Countries who skipped the question: 3.

## Annex II

### Open Ended Responses to the Question: What are the key lessons learned from your census?

#### *Combined Method:*

1. Israel: Dissemination practices to shorten the time of publishing census results and successful implementation of census methodologies
2. Poland: The use of modern technology and the use of data from administrative and non-administrative sources helped to abandon the paper at all, reduce costs, meet deadlines, improve data quality and reduce respondent burden.
3. Spain:
  - It is possible to obtain Census data linking information from a big survey and registers.
  - Difficulties to integrate and synchronize information among various channels.
  - Better management of human resources than previous Census.
  - Positive perception of using electronic devices, cartography and GPS.
  - Difficulties with the outsourced companies because sometimes they did not do the work on time.
4. Switzerland: It can be said that the changeover from the old system of a census every 10 years to a new, modern and sustainable system has been worthwhile for all involved. Although some information is no longer available at the finest level of regionalization, the benefits of a database available on an annual basis outweigh the disadvantages. The changeover process to a register-based census takes time. First of all, the legal bases have to be established and incentives have to be provided to the authorities maintaining the registers to obtain not only a statistical benefit but also a wide range of value-added benefits. The authorities maintaining the registers — in Switzerland, the cantons and communes — have to be persuaded of the advantages of such a system and supported in the operational implementation. This requires a high level of technical know-how, which must be developed before the project is implemented. In terms of deadlines, methodology and the technical aspects, the implementation was a major challenge for the Swiss Federal Statistical Office (FSO) and the participating authorities that maintain the registers. For the partners at all federal levels (communes, cantons and the Confederation), centralized project management and control, which took account of the different needs and implementation methods at the cantonal and communal level, was crucial to ensure the successful implementation of the project. New and current statistical results from the new census system have been continuously produced since April 2011. The possibility for the cantons to supplement the samples of all the surveys in the system in accordance with their own needs has proven to be correct and is being widely used. FSO is continuing to optimize how the results are disseminated. For example, on the FSO website the users of the statistics are increasingly able to evaluate the results themselves and obtain results on all topics of the census system. In order to measure the quality and comprehensiveness of the register survey, a census quality survey is also planned for 2013. There are many opportunities in integrated output systems to use the newly available databases in intelligent and multiple ways in various dissemination products.

#### *Register-based Method:*

5. The Netherlands: Start early with preparations; test on an earlier year.

6. Norway: Transforming administrative data into statistical data is challenging when done for the first time. Obtain consistency between data sources.

7. Slovenia: To produce census data with own human resources. Transfer of census methodology to regular statistical demographic surveys. Decision to conduct complete census two times between decennial censuses according to the EU regulation.

*Traditional Census (including Rolling):*

8. Armenia: need:

- the use of innovative technologies in all stages of the census preparation and conduct
- increase time for preparatory work of the next census.

9. Belarus: Wide information publicity campaign has provided a high level of participation. The centralized approach to data processing (Belstat) helped ensure the confidentiality of data, improve the quality of the information. Established system to access the census database has allowed to better promote the census results.

10. Canada: Build sufficient flexibility to face unexpected changes

11. Croatia: The interest of citizens in relation to data protection was significantly increased compared to the previous census, as well as their caution towards enumerators when they are letting them into their houses/apartments. Media interest has significantly increased. Interest of national minorities and religious groups is also increased.

12. Cyprus: The key lesson learned from our Census was that the use of technology has improved the quality, timeliness and dissemination of the Census data.

13. The Czech Republic: Management of such large project, overcoming public resistance, the use of Internet (e-questionnaires)

14. France: A rolling census is possible and successful, but it needs an important permanent central staff, for organization and methodology.

15. Ireland: Social media have a much bigger role to play in all interactions with the public than heretofore. Dissemination of the results in interesting and easy to use format creates great value.

16. Italy: The logistics of this process proved to be very complex, with some potential points of failure. Close monitoring of census performance is a critical task for the coordinating organization. The online census management system met the above requirements through the production of reports. These were designed to minimize any impact on the system's performance while offering census operators some information on how the census was progressing. Unfortunately, this proved insufficient, as proper monitoring of such a complex operation requires a fully-fledged dashboard with online analytical processing functions. Future releases of the online census management system will have to cater for real time mirroring of the database, on top of which a data warehouse should be produced and maintained to provide the needed dashboard and online analytical functions. Assisting citizens and municipalities is a fundamental aspect of the fieldwork. In dealing with such a large volume of work, a second level help desk should be considered as one of the most important tasks of the census process and be implemented through dedicated, adequately trained staff. This applies to all sectors and levels of the census process: from IT-specific issues of the online management system to logistics issues, from interpretation of the census process rules to legal questions about privacy and the rights of citizens.

17. Latvia: The Census 2011 in Latvia gave a possibility to introduce technological as well as organizational innovations that could be used in other statistical areas afterwards.

For example, Integrated Statistical Data Management System - Computer Assisted Survey Information System (ISDMS CASIS) will be used in data collection and processing for regular surveys of social statistics. Outsourcing of the Census fieldwork was a good practice and in future, such co-operation with social research companies could be continued. Complete enumeration showed a remarkable difference with the Population Register. Recalculations will be done on the base of the Census data in population statistics, in employment statistics and statistics on income and living conditions (SILC). Methods how to improve the population count are going to be developed. Criteria worked out to determine the resident population of Latvia for the Census purposes using information from administrative registers could be used in future for the improvement of migration statistics and for population statistics in general. In addition to the official Census Programme some information about persons, who had emigrated from Latvia, on a personal level was collected — the country, to which the person had emigrated and the year when the person had left Latvia. This information is very useful to specify the number of resident population. In addition, these data gave the necessary information to evaluate the number of undocumented emigrants that is urgent for Latvia. A vision for the Population and Housing Census 2021 in Latvia — Census taking, with all information derived from administrative records and other databases, moving away from population surveys on the Internet or at their homes. The Ministry of Economics of Latvia is organizing an interinstitutional working group to work out proposals for further improvement of administrative data systems to ensure the appropriate data coverage and quality to use these systems in the next Census round. Involvement of independent professionals in evaluation of proposals for advertising campaign is very important. Any change of the counting method and the time-limit during the Census should not be the case. Otherwise, that could cause lack of confidence to quality. Improvement of various administrative data sources should be done prior to the Census. Increased participation of Statistical Office in Census staff training process is necessary even if fieldwork is outsourced.

18. Lithuania: Future Censuses have to be carried out only by the use of administrative data sources.

19. Luxembourg: This is a good question but difficult to answer. We hope that the 2011 Census was the last traditional census and that the next 2021 Census will be partially register based

20. Romania: A more aggressive publicity and a better presence of the census's organizers in public meetings in order to explain the goals and the scope of the census, the specific legislation, characteristics, information required, methods used and the need of comprehensive participation of all population in the census.

21. The Russian Federation: Need of compulsory participation in the census, the introduction of new methods using IT in the collecting of information.

22. Slovakia: communication with the public concerning data protection; administrative data sources be used to a maximum possible extent

23. Tajikistan:

- Population and housing censuses was conducted simultaneously across the country, including the highlands. In the previous rounds of censuses, in the regions difficult to reach the censuses were conducted before the main census. The most selected optimal timing was chosen for the census of the 2010 round (considering labour migration, weather conditions, etc.)
- Scanning the census forms for their processing has improved input of information and data quality

- An active publicity campaign has improved public awareness on the importance and necessity of the event
- There is a need for use of Geographic Information Systems (GIS) in the census preparation and its conduct
- Use of modern information technology is increasing more and more. Potential use of tablets in a survey of the population in the next round of the census
- More careful selection of temporary staff and increase the duration of their training
- The need to create census stationary sites
- Increase the duration of the census, thus reduce the number of temporary census staff.

24. The United Kingdom: Successful internet collection showed the medium was viable for other data collection applications.

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