Collection and Dissemination of Data Geo-referenced to a 1 km² Grid from the 2021 Census

Annex I – Draft Regulation and Annexes

Item 6 of the agenda
COMMISSION IMPLEMENTING REGULATION (EU) …/...

of XXX

deciding on a temporary direct statistical action in accordance with Regulation (EC) No 223/2009 to disseminate selected topics of the 2021 population and housing census geocoded to a 1km2 grid

(Text with EEA relevance)

This draft has not been adopted or endorsed by the European Commission. Any views expressed are the preliminary views of the Commission services and may not in any circumstances be regarded as stating an official position of the Commission. The information transmitted is intended only for the Member State or entity to which it is addressed for discussions and may contain confidential and/or privileged material.
COMMISSION IMPLEMENTING REGULATION (EU) …/…

of XXX

deciding on a temporary direct statistical action in accordance with Regulation (EC) No 223/2009 to disseminate selected topics of the 2021 population and housing census geocoded to a 1km² grid

(Text with EEA relevance)

THE EUROPEAN COMMISSION,

Having regard to the Treaty on the Functioning of the European Union,

Having regard to Regulation (EC) No 223/2009 of the European Parliament and of the Council on European statistics(1), and in particular Article 14(2) thereof,

Whereas:

(1) The dissemination of Union-wide harmonized census topics on a constant area grid, in particular on a 1km² grid, is a key European statistics output for future policy making and census strategies by the Member States.

(2) Pursuant to Article 14(1)(b) of Regulation (EC) No 223/2009, the Commission may decide in specific and duly justified cases, in particular to meet unexpected needs, on a temporary direct statistical action.

(3) In line with Article 14(2) of Regulation (EC) No 223/2009, this temporary direct statistical action provides for data collection covering one reference year; all Member States will be able to produce univariate census data geocoded to a 1km² grid at the reference date of the 2021 population and housing census; and the Commission will make financial contributions to National Statistical Institutes and other national authorities to cover the incremental costs incurred by them. This action is supported by a cost-effectiveness analysis and an estimate of overall incremental production costs provided by the Commission.

(4) This action is justified by a common need across the Union of reliable, accurate and comparable information on population distribution with sufficient spatial resolution, founded on harmonized output requirements and in particular intended for pan-European regional policy making.

(5) Harmonized, spatially resolved demographic information across the whole Union is available and the objective is to disseminate a set of one dataset per each Member State, containing selected topics of the 2021 population and housing census geocoded to a 1km² grid. There is no additional burden on respondents as all necessary information will be obtained from the 2021 census data.

In particular, in order to achieve comparable harmonized outputs across the Union, a Union-wide constant area grid consisting of 1km$^2$ cells needs to be determined. Furthermore, the specific topics and their breakdowns, as well as the detailed programme to be disseminated on this 1km$^2$ grid need to be established. Finally, it is necessary to specify the required spatial and statistical metadata for such a dataset.

Directive 2007/2/EC of the European Parliament and of the Council$^2$ (INSPIRE Directive) and related Commission Implementing Regulations lay down the required metadata$^3$, data format$^4$, and network services$^5$ for the dissemination of spatial data. In particular, point (1) of Annex III covers possible statistical grid systems for spatial data dissemination and, according to Annex III point (10) it is applicable to spatial data sets under the theme "Population distribution – demography".


The Commission (Eurostat) hosted a project on 'Harmonized protection of census data in the ESS' which delivered good practices and implementation guidelines for the harmonized disclosure protection of 1km$^2$ grid data.

The measures provided for in this Regulation are in accordance with the opinion of the European Statistical System Committee,

HAS ADOPTED THIS REGULATION:

---


Article 1
Subject matter

This Regulation establishes a temporary direct statistical action in order to develop, produce and disseminate selected topics of the 2021 population and housing census geocoded to a 1km² grid (henceforth '1km² grid data').

To that end, this Regulation determines a unique European harmonized and constant geospatial reference grid consisting of cells with an area of 1km². This Regulation further establishes the specific topics and their breakdowns, as well as the detailed programme and metadata for the dissemination of 2021 population and housing census data geocoded to the 1km² reference grid.

Article 2
Definitions

The definitions laid down in Article 2 of Regulation (EC) No 763/2008 shall apply. The following definitions shall also apply for the purpose of this Regulation:

(1) 'grid', 'grid cell' and 'grid point' are defined in Annex II(2.1) of Regulation (EU) No 1089/2010;
(2) '1km² reference grid' or 'reference grid' means the particular grid that is specified in Article 3(1);
(3) 'total population' of a grid cell means all persons whose usual residence, as defined in Article 2(d) of Regulation (EC) No 763/2008, is located in that grid cell;
(4) 'data item' means a single measurement contained in the table defined in Annex II;
(5) 'data value' means the information provided by a data item. A data value can be either a 'numerical value' or a 'special value';
(6) 'numerical value' means an integer number equal or greater than '0' that provides the statistical information on the observation of that data item;
(7) 'observed value' means a numerical value that represents an observed or imputed information to the best of knowledge based on all available 2021 census information, in particular before the application of any statistical disclosure control measures;
(8) 'confidential value' means a numerical value which in order to protect the statistical confidentiality of the data must not be divulged, according to the Member States' protective measures against disclosure of statistical data;
(9) 'non-confidential value' means a numerical value which is not a confidential value;
(10) 'special value' means a symbol that is transmitted in a data item instead of a numerical value;
(11) 'flag' means a code that can accompany a particular data item to describe a specific characteristic of its data value.
Article 3
Technical specifications of the 1km² reference grid

1. As specified in Section 1.5 of Annex IV of Regulation (EU) No 1089/2010, the statistical 1km² reference grid for pan-European usage shall be the Equal Area Grid 'Grid_ETRS89-LAEA1000'. The spatial extent of the reference grid, in the coordinate system specified for this grid in Section 2.2.1 of Annex II of the same Regulation, shall be limited to easting values between 900.000 and 7.400.000 metres and northing values between 900.000 and 5.500.000 metres for the purpose of this Regulation.

2. As specified in Section 1.4.1.1 of Annex IV of the same Regulation, each individual grid cell of the 1km² reference grid shall be identified by a unique grid cell code, which is composed of the characters 'CRS3035RES1000mN', followed by the northing value in metres of the grid point in the lower left corner of the grid cell, followed by the character 'E', followed by the easting value in metres of the grid point in the lower left corner of the grid cell.

3. The country code of the transmitting Member State as defined in the Interinstitutional style guide published by the Publications Office of the European Union, followed by the character '_', shall be prepended to the cell code of each grid cell transmitted by that Member State.

Article 4
Technical specifications of the 1km² grid data topics and their breakdowns

The technical specifications of the topics set out in the Annex to Regulation (EU) No 2017/543 for the 2021 census data shall apply. The breakdowns of the topics for the purpose of this Regulation are specified in Annex I.

Article 5
Programme of the 1km² grid data

1. The programme of the 1km² grid data to be transmitted by each Member State to the Commission (Eurostat) for the reference year 2021 is specified in Annex II.

2. Member States shall replace any confidential value by the special value 'not available'.

Article 6
Output harmonization

1. In order to facilitate the Union-wide comparability, the output data values to be disseminated shall be harmonized. To that end, preference shall be given to numerical values over special values as far as possible.

2. In order to ensure sufficiently accurate and reliable information on the spatial distribution of the 'total population' observation as defined in Article 2(3), the 'total
population' data items transmitted by each Member State shall respect the following requirements:

(a) 'Total population' data items shall not be reported as confidential.
(b) 'Total population' data items with an observed value other than '0' shall be flagged as 'populated'.
(c) 'Total population' data items with an observed value '0' shall not be flagged as 'populated'.

Article 7
Metadata

The metadata for the 1km2 grid data to be transmitted by each Member State to the Commission (Eurostat) for the reference year 2021 is specified in Annex III.

Article 8
Reference date

The reference date of the 1km2 grid data transmitted by each Member State shall be identical to the reference date reported by that Member State under Article 3 of Regulation (EU) No 2017/712.

Article 9
Data and metadata transmission date

1. Member States shall provide the Commission (Eurostat) with validated and aggregated data and with metadata on 'total population' before 31 December 2022.
2. Notwithstanding paragraph 1, Member States shall provide the Commission (Eurostat) with final, validated and aggregated data and with metadata before 31 March 2024.

Article 10
Technical format for data and metadata transmission

The technical format to be used for data and metadata transmission shall be the Statistical Data and Metadata eXchange (SDMX) format as implemented through the Census Hub. Member States shall transmit the required data and metadata in line with the data structure definitions and related technical specifications provided by the Commission (Eurostat). Member States shall store the required data and metadata until 1 January 2035, for any later transmission requested by the Commission (Eurostat).
Article 11

Quality requirements

1. Member States shall ensure the quality of the data transmitted.
2. For the purposes of this Regulation, the quality criteria referred to in Article 12(1) of Regulation (EC) No 223/2009 shall apply to the data to be transmitted.
3. At the request of the Commission (Eurostat), Member States shall provide it with all the information necessary to evaluate the quality of the statistical information.

Article 12

Dissemination

1. The Commission (Eurostat) shall disseminate the 1km² grid datasets referred to in Article 5 as well as the associated metadata referred to in Article 7.
2. For the purposes of this Regulation, the programme of the 1km² grid data and metadata to be transmitted by Member States and disseminated by Eurostat corresponds to the data that Member States disseminate at national level according to Directive 2007/2/EC and its implementing Regulations (EU) No 1205/2008, (EU) No 976/2009 and (EU) No 1089/2010.

Article 13

Entry into force

This Regulation shall enter into force on the twentieth day following that of its publication in the Official Journal of the European Union.

This Regulation shall be binding in its entirety and directly applicable in all Member States.

Done at Brussels,

For the Commission
The President

[...]
ANNEXES

to the

Commission implementing Regulation (EU) No .../...

deciding on a temporary direct statistical action in accordance with Regulation (EC) No 223/2009 to disseminate selected topics of the 2021 population and housing census geocoded to a 1km2 grid

This draft has not been adopted or endorsed by the European Commission. Any views expressed are the preliminary views of the Commission services and may not in any circumstances be regarded as stating an official position of the Commission. The information transmitted is intended only for the Member State or entity to which it is addressed for discussions and may contain confidential and/or privileged material.
ANNEX I

Technical specifications of the census topic breakdowns referred to in Article 4

The technical specifications of the breakdowns for the purpose of this Regulation of the census topics specified in the Annex of Regulation (EU) No 2017/543 shall be presented as follows:

Each topic selected for dissemination on the 1km² reference grid is quoted with its heading from the Annex of Regulation (EU) No 2017/543.

The technical specifications laid down in the Annex of Regulation (EU) No 2017/543 referring to that topic in general shall apply.

Thereafter, the breakdown for that topic is specified.

All breakdowns are designed to break down any total or subtotal referring to persons.

Topic: Place of usual residence

The breakdown categories of this topic on which a Member State shall report are all cells of the 1km² reference grid specified in Article 3(1) whose area includes a part of the territory of that Member State, complemented by a single virtual grid cell per Member State to account for persons that are not allocated.

Geographical area based on the 1km² reference grid\(^{(10)}\) | GEO.G.
---|---
x. | All grid cells belonging partly or entirely to the territory of the Member State x.
y. | One virtual grid cell per Member State y.

If the place of usual residence of a person is unknown within the territory of the reporting Member State that is covered by the reference grid, additional scientifically-based, well-documented, and publicly available statistical estimation methods may be used to allocate this person to a specific grid cell. Persons who are not allocated to any cell of the reference grid shall be allocated to the virtual grid cell GEO.G.y. of that Member State.

Topic: Sex

The breakdown SEX. specified in the Annex of Regulation (EU) No 2017/543 for this topic shall apply for the purpose of this Regulation.

Topic: Age

The following breakdown categories shall be reported:

\(^{(10)}\) The codes 'x.' are grid cell identification codes as specified in Article 3. The code 'y.' shall consist of the character string 'unallocated' prepended by the country code of the reporting Member State as specified in paragraph 3 of Article 3.
As specified in the Annex of Regulation (EU) No 2017/543, the age reached in completed years of age at the reference date shall be reported.

**Topic: Current activity status (number of employed persons)**

The following breakdown category included in the breakdown **CAS.L.** specified in Regulation (EU) No 2017/543 shall be reported:

<table>
<thead>
<tr>
<th>Current activity status</th>
<th>CAS.L.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Employed persons</td>
<td>1.1.</td>
</tr>
</tbody>
</table>

The specification of 'employed' persons in the Annex of Regulation (EU) No 2017/543 shall apply for this category.

**Topic: Country/place of birth**

The following breakdown categories included in the breakdown **POB.L.** specified in Regulation (EU) No 2017/543 shall be reported:

<table>
<thead>
<tr>
<th>Country/place of birth</th>
<th>POB.L.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Place of birth in reporting country</td>
<td>1.</td>
</tr>
<tr>
<td>2. Place of birth in other EU Member State</td>
<td>2.1.</td>
</tr>
<tr>
<td>3. Place of birth elsewhere</td>
<td>2.2.</td>
</tr>
</tbody>
</table>

**Topic: Place of usual residence one year prior to the census**

The following breakdown categories included in the breakdown **ROY.** specified in Regulation (EU) No 2017/543 shall be reported:

<table>
<thead>
<tr>
<th>Place of usual residence one year prior to the census</th>
<th>ROY.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Usual residence unchanged</td>
<td>1.</td>
</tr>
<tr>
<td>2. Move within the reporting country</td>
<td>2.1.</td>
</tr>
<tr>
<td>3. Move from outside the reporting country</td>
<td>2.2.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age</th>
<th>AGE.G.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Under 15 years</td>
<td>1.</td>
</tr>
<tr>
<td>2. 15 to 64 years</td>
<td>2.</td>
</tr>
<tr>
<td>3. 65 years and over</td>
<td>3.</td>
</tr>
</tbody>
</table>
A move within the same grid cell shall be reported either as a 'Move within the reporting country' (ROY.2.1.) or as a 'Move from outside the reporting country' (ROY.2.2.).
ANNEX II

Programme of the statistical census data geocoded to the 1km\(^2\) reference grid referred to in Article 5

The programme of the 1km\(^2\) grid data to be transmitted for the reference year 2021 shall consist of one two-dimensional table that cross-tabulates the set of grid cells GEO.G. defined in Annex I against the following selection of categories from the census topic breakdowns specified in Annex I:

<table>
<thead>
<tr>
<th>Census topic categories to be broken down on the 1km(^2) reference grid</th>
<th>STAT.G.</th>
</tr>
</thead>
<tbody>
<tr>
<td>0. SEX.0.: Total population</td>
<td>0.</td>
</tr>
<tr>
<td>1. SEX.1.: Male</td>
<td>1.</td>
</tr>
<tr>
<td>2. SEX.2.: Female</td>
<td>2.</td>
</tr>
<tr>
<td>3. AGE.G.1.: Under 15 years</td>
<td>3.</td>
</tr>
<tr>
<td>4. AGE.G.2.: 15 to 64 years</td>
<td>4.</td>
</tr>
<tr>
<td>5. AGE.G.3.: 65 years and over</td>
<td>5.</td>
</tr>
<tr>
<td>6. CAS.L.1.: Employed persons(^{(11)})</td>
<td>6.</td>
</tr>
<tr>
<td>7. POB.L.1.: Place of birth in reporting country</td>
<td>7.</td>
</tr>
<tr>
<td>8. POB.L.2.1.: Place of birth in other EU Member State</td>
<td>8.</td>
</tr>
<tr>
<td>10. ROY.1.: Place of usual residence one year prior to the census unchanged</td>
<td>10.</td>
</tr>
<tr>
<td>11. ROY.2.1.: Place of usual residence one year prior to the census: move within reporting country</td>
<td>11.</td>
</tr>
<tr>
<td>12. ROY.2.2.: Place of usual residence one year prior to the census: move from outside of the reporting country</td>
<td>12.</td>
</tr>
</tbody>
</table>

\(^{(11)}\) Data on the category 'employed persons' shall be transmitted as far as possible, subject to availability in the transmitting Member State.
ANNEX III

Required metadata for the 1km$^2$ grid data referred to in Article 7

Metadata on data items

Where applicable, Member States shall add the following flags to a data item:

- 'provisional';
- 'populated';
- 'revised';
- 'see information attached';
- 'confidential'\(^{(12)}\).

Only data values on 'total population' which are reported under paragraph 1 of Article 9 and which are not considered final data by the Member State at the time of reporting shall be accompanied by the flag 'provisional'.

The flag 'populated' shall be applicable only to 'total population' data items under the provisions specified in paragraph 2 of Article 6.

For each data value accompanied by at least one of the flags 'revised' or 'see information attached' an explanatory text shall be provided.

Each data item whose confidential value has been replaced by the special value 'not available' shall be marked with the flag 'confidential'.

Metadata on the topics

In addition to the metadata on the topics transmitted to the Commission (Eurostat) under Article 6 of Regulation (EU) No 2017/712, Member States shall provide metadata on each topic included in Annex I informing about the data sources and methodology used to obtain the data values for that topic on the 1km$^2$ reference grid. In particular, the metadata shall contain:

- information on the reliability and accuracy of the reported data values;
- a description of any methodology used to estimate the data values on the 1km$^2$ reference grid, including reliability and accuracy of the resulting data values;
- a description of any methodology used to allocate persons to specific grid cells under the topic 'place of usual residence', including information on the characteristics of persons under the category GEO.G.y.

Reference metadata

The metadata information and structure laid down in the Annex of Regulation (EU) No 2017/881 shall be supplemented for the purpose of this Regulation by the following items specifically referring to the 1km$^2$ grid data:

\(^{(12)}\) This flag is not applicable to 'total population' data items, as laid down in Article 6(2)(a).
Item 3.3. 'Processing and evaluation' shall be supplemented by the additional sub-item 3.3.3. 'Additional information on generic (not topic-related) methodology applied in order to produce the 1km² grid dataset'.

Item 3.4. 'Dissemination' shall be supplemented by specific information about statistical disclosure control measures related to the 1km² grid dataset. Member States shall provide the Commission (Eurostat) with information about the measures related to the harmonized protection of 1km² grid data, in particular if they used the ESS good practices and implementation guidelines for the harmonized protection of 1km² grid data.

Item 4.2. 'Timeliness and punctuality' shall be supplemented by specific calendar date(s) of the transmission and possible revisions of the 1km² grid data and metadata.

Item 4. 'Assessment of data quality' shall be supplemented by the additional sub-item 4.7 'Geographic information – data quality' covering geographic quality principles, in particular territorial coverage and comparability, positional accuracy, as well as temporal coherence and completeness of the geographic data used for geocoding.