

2 Overview

2.1 Name

INSPIRE data specification for the theme *Population Distribution*.

2.2 Informal description

Definition:

Geographical distribution of people, including population characteristics and activity levels, aggregated by grid, region, administrative unit or other analytical unit [Directive 2007/2/EC].

Description:

Population = human population

A population is any entire collection of people, animals, plants or things about which we may collect data. It is the entire group we are interested in, which we wish to describe or draw conclusions about. In this data specification population is referring to human beings, i.e. (1) people such as individuals or (2) people living together in households for instance. Information on people where and how they live or stay are crucial for nearly all other themes of the INSPIRE Directive, in particular to Human Health and Safety, Buildings and Natural Risk Zones.

The theme may thematically be divided into several components. The directive text points at broad groups of sub-themes:

- Human population by individual characteristics (sex, age, marital status, nationality).
- Human population activity levels (education, profession)
- Human beings living together in groups for different reasons (households, institutions such as retirement homes)

Wide ranges of statistics on population are available

Concerning population information, this may include total population, age, gender, nationality or place of birth in terms of stocks, or mortality, life expectancy and migration in terms of flows. Of interest could be the population with reference to a time period and activities. Use cases point to the need for a distinction between night time and daytime population for a given regional unit such as a city or a sub-city. It might be difficult to determine how many people are in a specific place (settlement, apartment or house) and to which groups they belong. According to people's activities, they can be at work or enjoy leisure time activities (such as watching a movie in the cinema) or they can spend their time in transport facilities. For people at work, it can be shown to which economic sector in terms of NACE they belong in a specific place, region or part of it or where people of a given socio demographic group live for instance in towns or at the border. All such information could be useful in the context of other thematic themes such as agriculture or the usage of natural resources.

To minimize the overlap with additional powerful harmonized European sources like Eurostat's Regional database, only a few population distribution data are mandatory. It is recommended that Eurostat provide additional statistical data by INSPIRE services.

No spatial features

The theme Population distribution/demography contains attributes related to statistical units. This means that this theme has no direct spatial features such as many other INSPIRE Annex III themes like buildings, health care institutions etc., it needs to be linked to these features by the use of statistical units for example NUTS-codes or grid identifier.

Aggregated data and confidentiality issues

The definition in the Directive 2007/2/EC specifies all kinds of features relevant to demography. It includes the term "aggregated" which means that non-aggregated data about population is excluded because of confidentiality. The data provision on different regional levels depends on the national situation regarding availability and privacy. There is a correlation between size of statistical units and

differentiation of the attribute values. The smaller the size of the statistical units, the more undifferentiated the attributes can be to meet the data privacy rules. The data model covers all the possibilities but legal restrictions may prohibit the provision.

Population distribution/Demography in the INSPIRE context

Population distribution/Demography is a very wide phenomenon that may be described by quantitative data from different sources - both on national and European level. This data specification provides a generic data model which covers various statistical domains. Use-cases show that statistics on total population on grids or other small areas could be widely used together with other INSPIRES themes. Due to the complexity and large amount of statistics describing population, the requirement 3 stated in 5.2 is to provide total population and population by age groups on municipalities and 1km2 grid level.

The benefits from this theme in the context of INSPIRE should primarily be the access to existing statistics which are **not** already published in regional databases provided by Eurostat or the member states. The statistics provided according to this INSPIRE theme should rather be a complement to statistics already being published based on legislation and gentlemen's agreements. Statistics in national or European regional databases are often multidimensional in a way that the INSPIRE services could never match, and existing databases should therefore be considered as the best source of information on demography.

The genericity of the model is expressed in using different code lists for classification of each statistical value provided. This approach includes the flexibility to react to further requirements coming from new legislations or other reasons.

Definition:

Geographical distribution of people, including population characteristics and activity levels, aggregated by grid, region, administrative unit or other analytical unit [Directive 2007/2/EC].

Description:

Population Distribution deals with datasets of statistical information describing how some phenomenon regarding human population is spread within some part of the 2D space. The theme has no direct spatial features, only contains attributes allowing to describe population phenomenon related to statistical units. Population data is linked to spatial object (statistical units) through their common identifier, e.g. NUTS codes.

Entry in the INSPIRE registry: <http://inspire.ec.europa.eu/theme/pd/>

2.3 Normative References

[Directive 2007/2/EC] Directive 2007/2/EC of the European Parliament and of the Council of 14 March 2007 establishing an Infrastructure for Spatial Information in the European Community (INSPIRE)

REGULATION (EC) No 177/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 20 February 2008 establishing a common framework for business registers for statistical purposes and repealing Council Regulation (EEC) No 2186/93

REGULATION (EC) No 1893/2006 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 20 December 2006 establishing the statistical classification of economic activities NACE Revision 2 and amending Council Regulation (EEC) No 3037/90 as well as certain EC Regulations on specific statistical domains

REGULATION (EC) No 763/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 9 July 2008 on population and housing censuses

COMMISSION REGULATION (EC) No 1201/2009 of 30 November 2009 implementing Regulation (EC) No 763/2008 as regards the technical specifications of the topics and of their breakdowns

COMMISSION REGULATION (EU) No 519/2010 of 16 June 2010 adopting the programme of the statistical data and of the metadata for population and housing censuses provided for by Regulation (EC) No 763/2008

REGULATION (EU) No 1151/2010 of 08 December 2010 implementing Regulation (EC) No 763/2008, as regards the modalities and structure of the quality reports and the technical format for data transmission

REGULATION (EC) No 1177/2003 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 June 2003 concerning Community statistics on income and living conditions (EU-SILC)

REGULATION (EC) No 295/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 11 March 2008 concerning structural business statistics

COUNCIL REGULATION (EC) No 577/98 of 9 March 1998 COUNCIL REGULATION (EC) No 577/98 of 9 March 1998 on the organisation of a labour force sample survey in the Community

REGULATION (EC) No. 1059/2003 on the establishment of a common classification of territorial units for statistics (NUTS2003)

REGULATION (EC) No. 105/2007 Amending the Annexes to Regulation 1059/2007 (NUTS2006)

REGULATION (EC) No. 31/2011 Amending the Annexes to Regulation 1059/2007 (NUTS2010)

REGULATION (EC) No 862/2007 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 11 July 2007 on Community statistics on migration and international protection and repealing Council Regulation (EEC) No 311/76 on the compilation of statistics on foreign workers

[ISO 19107] EN ISO 19107:2005, Geographic Information – Spatial Schema

[ISO 19108-c] ISO 19108:2002/Cor 1:2006, Geographic Information – Temporal Schema, Technical Corrigendum 1

[ISO 19113] EN ISO 19113:2005, Geographic Information – Quality principles

[ISO 19115] EN ISO 19115:2005, Geographic information – Metadata (ISO 19115:2003)

[ISO 19138] ISO/TS 19138:2006, Geographic Information – Data quality measures

[Regulation 1205/2008/EC] Regulation 1205/2008/EC implementing Directive 2007/2/EC of the European Parliament and of the Council as regards metadata

[Regulation 976/2009/EC] Commission Regulation (EC) No 976/2009 of 19 October 2009 implementing Directive 2007/2/EC of the European Parliament and of the Council as regards the Network Services

[Regulation 1089/2010/EC] Commission Regulation (EU) No 1089/2010 of 23 November 2010 implementing Directive 2007/2/EC of the European Parliament and of the Council as regards interoperability of spatial data sets and services

2.4 Terms and definitions

General terms and definitions helpful for understanding the INSPIRE data specification documents are defined in the INSPIRE Glossary¹³.

2.5 Symbols and abbreviations

ATS	Abstract Test Suite
EC	European Commission
EEA	European Environmental Agency
ETRS89	European Terrestrial Reference System 1989
ETRS89-LAEA	Lambert Azimuthal Equal Area
Eurostat	Statistical Office of the European Communities
EVRS	European Vertical Reference System
GCM	General Conceptual Model
GML	Geography Markup Language
IR	Implementing Rule
ISDSS	Interoperability of Spatial Data Sets and Services
ISO	International Organization for Standardization
ITRS	International Terrestrial Reference System
LAT	Lowest Astronomical Tide
LMO	Legally Mandated Organisation
NACE	Statistical classification of economic activities in the European Community
NUTS	Nomenclature of Territorial Units for Statistics
SDIC	Spatial Data Interest Community
TG	Technical Guidance
UML	Unified Modeling Language
UTC	Coordinated Universal Time
XML	EXtensible Markup Language

2.6 How the Technical Guidelines map to the Implementing Rules

The schematic diagram in Figure 1 gives an overview of the relationships between the INSPIRE legal acts (the INSPIRE Directive and Implementing Rules) and the INSPIRE Technical Guidelines. The INSPIRE Directive and Implementing Rules include legally binding requirements that describe, usually on an abstract level, *what* Member States must implement.

In contrast, the Technical Guidelines define *how* Member States might implement the requirements included in the INSPIRE Implementing Rules. As such, they may include non-binding technical requirements that must be satisfied if a Member State data provider chooses to conform to the Technical Guidelines. Implementing these Technical Guidelines will maximise the interoperability of INSPIRE spatial data sets.

¹³ The INSPIRE Glossary is available from <http://inspire-registry.jrc.ec.europa.eu/registers/GLOSSARY>

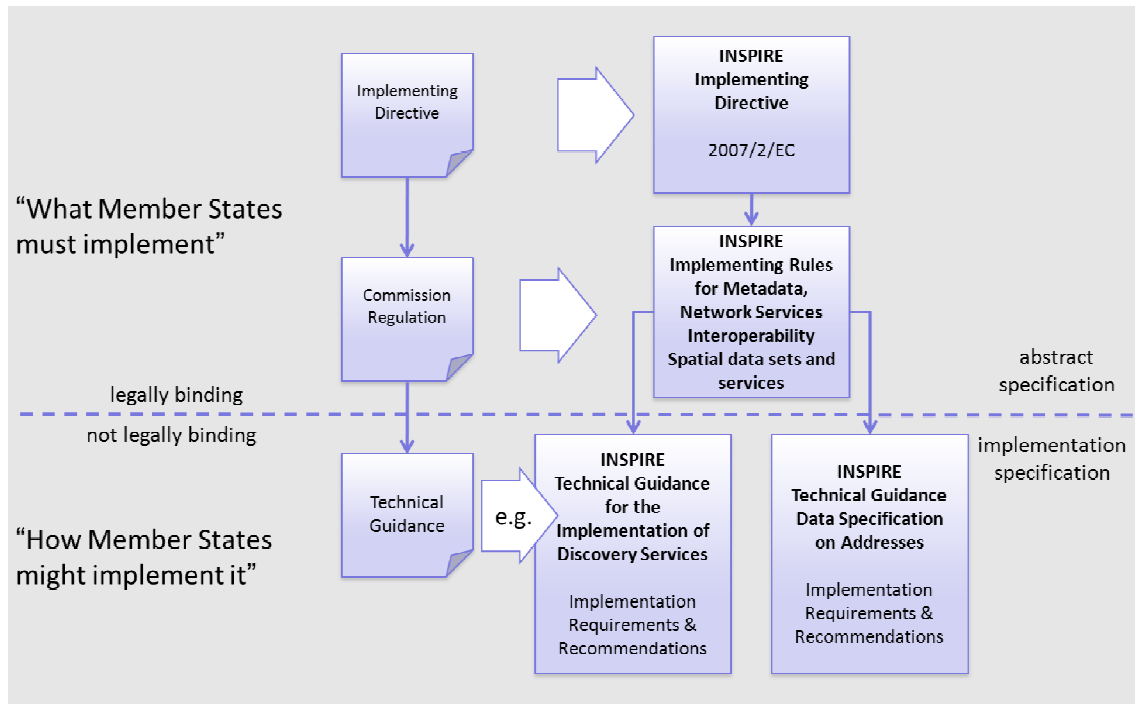


Figure 1 - Relationship between INSPIRE Implementing Rules and Technical Guidelines

2.6.1 Requirements

The purpose of these Technical Guidelines (Data specifications on *Population Distribution*) is to provide practical guidance for implementation that is guided by, and satisfies, the (legally binding) requirements included for the spatial data theme *Population Distribution* in the Regulation (Implementing Rules) on interoperability of spatial data sets and services. These requirements are highlighted in this document as follows:

IR Requirement
Article / Annex / Section no.
Title / Heading

This style is used for requirements contained in the Implementing Rules on interoperability of spatial data sets and services (Commission Regulation (EU) No 1089/2010).

For each of these IR requirements, these Technical Guidelines contain additional explanations and examples.

NOTE The Abstract Test Suite (ATS) in Annex A contains conformance tests that directly check conformance with these IR requirements.

Furthermore, these Technical Guidelines may propose a specific technical implementation for satisfying an IR requirement. In such cases, these Technical Guidelines may contain additional technical requirements that need to be met in order to be conformant with the corresponding IR requirement *when using this proposed implementation*. These technical requirements are highlighted as follows:

TG Requirement X This style is used for requirements for a specific technical solution proposed in these Technical Guidelines for an IR requirement.

NOTE 1 Conformance of a data set with the TG requirement(s) included in the ATS implies conformance with the corresponding IR requirement(s).

NOTE 2 In addition to the requirements included in the Implementing Rules on interoperability of spatial data sets and services, the INSPIRE Directive includes further legally binding obligations that put additional requirements on data providers. For example, Art. 10(2) requires that Member States shall, where appropriate, decide by mutual consent on the depiction and position of geographical features whose location spans the frontier between two or more Member States. General guidance for how to meet these obligations is provided in the INSPIRE framework documents.

2.6.2 Recommendations

In addition to IR and TG requirements, these Technical Guidelines may also include a number of recommendations for facilitating implementation or for further and coherent development of an interoperable infrastructure.

Recommendation X Recommendations are shown using this style.

NOTE The implementation of recommendations is not mandatory. Compliance with these Technical Guidelines or the legal obligation does not depend on the fulfilment of the recommendations.

2.6.3 Conformance

Annex A includes the abstract test suite for checking conformance with the requirements included in these Technical Guidelines and the corresponding parts of the Implementing Rules (Commission Regulation (EU) No 1089/2010).