



## **PORTUGUESE POPULATION GRID FOR THE YEAR 2011.**

*August, 2013*

## FRAMEWORK

For the execution of the 2011 Census, Statistics Portugal created for the Portuguese territory a:

- complete coverage of small statistics areas (statistical section and subsections), named the Geographical Information Referencing Base (BGRI)
- complete coverage with the location of all the residential buildings. For each building the number of dwellings and their population characteristics was captured.

The Geographical Information Referencing Base (BGRI) is used for the dissemination of the Census Results of the 2011 Census, and is not used for the creation of the 2011 population GRID.

Statistics Portugal doesn't have experience working with grids. However, due to the spatial data infrastructure and the characteristics of the 2011 census data, it was possible to produce population grid data for 2011.

For more information about the 2011 Population and Housing Censuses consult the main webpage <http://censos.ine.pt>.

## INPUT DATA

The main input data for the production of the population GRID are the 2011 census results for each residential building. The residential buildings are geographically represented as points by its centroid. The process of georeferencing the buildings has been executed by the circa 17000 Census fieldworkers using a website with detailed aerial imagery.

The data exists for the following 4 geographical distinct areas; each area has its own geographical reference system.

<b>Geographical region</b>	<b>Geographic Reference</b>
Portugal mainland	PT-TM06/ ETRS89
Madeira Islands	PTRA08-UTM/ITRF93
Eastern Azores Island groups	PTRA08-UTM/ITRF93
Western Azores Island groups	PTRA08-UTM/ITRF93

The Reference GRID used is the INSPIRE 1km<sup>2</sup> GRID in another geographical reference system, the LAEA projection with ETRS89 datum.

For each residential building are known the population characteristics from the 2011 Census.

## METHODOLOGY

The values for the different variables of the 2011 population GRID were created using the following methodology, representing a 100% bottom-up methodology.

Projection of the European Reference GRID to one of the 4 national reference systems

- The projection is executed “on the fly” in ArcGIS



Determine GRID Cell ID for each residential building

- This is achieved through the execution of a Spatial Join in ArcGIS between the circa 3.5 million building and 95000 GRID Cells



Determine the totals for each GRID Cell and each variable

- The input for this process is a table with all the building identifiers which are related with the census micro data on dwelling level using SQL statements in an ORACLE environment

## VARIABLES ASSOCIATED TO EACH GRID CELL

The variables produced for the reference GRID are based on the specification made by EFGS, the standard for official grid statistics, population variables v.1.0. The 2011 census didn't produce data for all the variables suggested and some of the variables had to be adapted according to the data available.

Total values for the following variables for each 1 Km<sup>2</sup> GRID Cell have been produced:

Variable name	Description	Metainformation (URL)
TOT_P	Population, total	<a href="http://www.ine.pt/bddXplorer/htdocs/minfo.jsp?var_cd=0006348">http://www.ine.pt/bddXplorer/htdocs/minfo.jsp?var_cd=0006348</a>
TOT_F	Population, female, total	<a href="http://www.ine.pt/bddXplorer/htdocs/minfo.jsp?var_cd=0006348">http://www.ine.pt/bddXplorer/htdocs/minfo.jsp?var_cd=0006348</a>
TOT_M	Population, male, total	<a href="http://www.ine.pt/bddXplorer/htdocs/minfo.jsp?var_cd=0006348">http://www.ine.pt/bddXplorer/htdocs/minfo.jsp?var_cd=0006348</a>
F_00_14	Population, female, age 00-14	<a href="http://www.ine.pt/bddXplorer/htdocs/minfo.jsp?var_cd=0006347">http://www.ine.pt/bddXplorer/htdocs/minfo.jsp?var_cd=0006347</a>
F_15_64	Population, female, age	<a href="http://www.ine.pt/bddXplorer/htdocs/minfo.jsp?var_cd=0006348">http://www.ine.pt/bddXplorer/htdocs/minfo.jsp?var_cd=0006348</a>

Variable name	Description	Metainformation (URL)
	15-64	
F_65_	Population, female, age 65+	<a href="http://www.ine.pt/bddXplorer/htdocs/minfo.jsp?var_cd=0006349">http://www.ine.pt/bddXplorer/htdocs/minfo.jsp?var_cd=0006349</a>
M_00_14	Population, male, age 00-14	<a href="http://www.ine.pt/bddXplorer/htdocs/minfo.jsp?var_cd=0006350">http://www.ine.pt/bddXplorer/htdocs/minfo.jsp?var_cd=0006350</a>
M_15_64	Population, male, age 15-64	<a href="http://www.ine.pt/bddXplorer/htdocs/minfo.jsp?var_cd=0006351">http://www.ine.pt/bddXplorer/htdocs/minfo.jsp?var_cd=0006351</a>
M_65_	Population, male, age 65+	<a href="http://www.ine.pt/bddXplorer/htdocs/minfo.jsp?var_cd=0006352">http://www.ine.pt/bddXplorer/htdocs/minfo.jsp?var_cd=0006352</a>
TOT_B	Number of buildings, total	<a href="http://www.ine.pt/bddXplorer/htdocs/minfo.jsp?var_cd=0005970">http://www.ine.pt/bddXplorer/htdocs/minfo.jsp?var_cd=0005970</a>
TOT_R	Number of buildings, residential	<a href="http://www.ine.pt/bddXplorer/htdocs/minfo.jsp?var_cd=0005969">http://www.ine.pt/bddXplorer/htdocs/minfo.jsp?var_cd=0005969</a>
TOT_NR	Number of buildings, non-residential buildings	<a href="http://www.ine.pt/bddXplorer/htdocs/minfo.jsp?var_cd=0005969">http://www.ine.pt/bddXplorer/htdocs/minfo.jsp?var_cd=0005969</a>
TOT_D	Number of Dwellings, total	<a href="http://www.ine.pt/bddXplorer/htdocs/minfo.jsp?var_cd=0006272">http://www.ine.pt/bddXplorer/htdocs/minfo.jsp?var_cd=0006272</a>
TOT_OCD	Number of Occupied conventional dwellings	<a href="http://www.ine.pt/bddXplorer/htdocs/minfo.jsp?var_cd=0006273">http://www.ine.pt/bddXplorer/htdocs/minfo.jsp?var_cd=0006273</a>
TOT_UCD	Number of Unoccupied conventional dwellings	<a href="http://www.ine.pt/bddXplorer/htdocs/minfo.jsp?var_cd=0006274">http://www.ine.pt/bddXplorer/htdocs/minfo.jsp?var_cd=0006274</a>
AVE_AD_50	Nº of dwelling with a Average useful floor space less than 50 m <sup>2</sup>	<a href="http://www.ine.pt/bddXplorer/htdocs/minfo.jsp?var_cd=0006311">http://www.ine.pt/bddXplorer/htdocs/minfo.jsp?var_cd=0006311</a>
AVE_AD_51	Nº of dwellings with a Average useful floor space between 50 m <sup>2</sup> and 100 m <sup>2</sup>	<a href="http://www.ine.pt/bddXplorer/htdocs/minfo.jsp?var_cd=0006311">http://www.ine.pt/bddXplorer/htdocs/minfo.jsp?var_cd=0006311</a>
AVE_AD_52	Nº of dwellings with a Average useful floor space between 100 m <sup>2</sup> and 200 m <sup>2</sup>	<a href="http://www.ine.pt/bddXplorer/htdocs/minfo.jsp?var_cd=0006311">http://www.ine.pt/bddXplorer/htdocs/minfo.jsp?var_cd=0006311</a>
AVE_AD_53	Nº of dwelling with a Average useful floor space superior to 200 m <sup>2</sup>	<a href="http://www.ine.pt/bddXplorer/htdocs/minfo.jsp?var_cd=0006311">http://www.ine.pt/bddXplorer/htdocs/minfo.jsp?var_cd=0006311</a>
TOT_PH	Number of private households	<a href="http://www.ine.pt/bddXplorer/htdocs/minfo.jsp?var_cd=0006453">http://www.ine.pt/bddXplorer/htdocs/minfo.jsp?var_cd=0006453</a>
TOT_IH	Number of institutional households	<a href="http://www.ine.pt/bddXplorer/htdocs/minfo.jsp?var_cd=0006483">http://www.ine.pt/bddXplorer/htdocs/minfo.jsp?var_cd=0006483</a>