

## Local & regional data

*First investigations in Romania,  
Bulgaria, Czech Republic and  
Slovakia*

### MAIN RESULTS

- Exploring and collecting indicators at LAU 2 level is a task that must overcome three problems : the administrative changes, the chronological homogeneity of the datasets and the semantic interpretation of the indicators.
- The cumulated experience when working at LAU 1/2 level shows that populating a database becomes a learning by doing process, blocking the construction of a general algorithm.

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## Introduction

The experience accumulated during the previous ESPON contracts proves the necessity of integrating local statistical data (LAU1/LAU2 scale) in order to support more in depth analyses. Such analyses could focus on transnational thematic studies, intra-urban and urban-rural differentiations or trans-scalar approaches. Collecting and the harmonization of this data represent the mission of the TIGRIS team. After an exploring period (identifying the possible data sources, finding the appropriate structure of the database, getting familiar with the geometries or experimenting the exercise of data collection) we started to effectively collect the indicators and build the sample database for two neighboring countries.

In accordance with the proposals set out in the First Interim Report of ESPON 2013 Database Project, Tigris team had to develop a database for two neighboring countries included in the ESPON space. Dealing with this objective involved overcoming a number of problems, most of them being associated with: the harmonization of the spatial geometries, the chronological harmonization and the linguistic barriers. Also, the gap between our initial goal (to exhaustively fill in a database for two neighboring countries) and the outcome (a sample database populated with indicators available online for the Czech Republic and Slovakia at LAU1/2 scale) is mainly due to the large amount of statistical information available on the NSI web sites, that requires additional time for the processing and the integration in a coherent database. To be more explicit, the spatial information and the attribute data needed at LAU 1/2 scales is available not only on the NSI sites [e.g. the population of Slovak municipalities (LAU2) at 31.12.2008], but also from many other sources of information. Thus, building a coherent, comprehensive, comparable and functional database requires additional time and sometimes different collection methods. As a consequence, the completeness of the database was probably the first item that the TIGRIS team quit when starting the effective work.

# 1 The data sources - specifications

**The main source** of spatial information (geometries) owned for the moment by the Tigris team is the GISCO geodatabase. Two files were particularly useful: COMM\_CENS\_RG 2001 and COMM\_CENS\_2006. The two shape-files provide a base-map at LAU2 scale (polygons and center-points). As there wasn't any comparable base-map for the LAU 1 level in the mentioned database, we were determined to build up a LAU 1 map by merging the LAU2 units, according to the 2001 geometry and integrate some of the collected indicators. Using these maps was essential to our work in order to properly match the information extracted (the statistical indicators) with the available geographic coding system. However, this LAU 1 working map does not guarantee the accuracy of the resulting spatial objects, or its proper correlation with the recent extracted indicators because of the modifications in the administrative organization occurred after 2001.

**A second source** of information used in our work consists in the official lists with spatial units (LAU1/2) in each country of the European Union. The list being available on the EUROSTAT website<sup>1</sup>, it's only a matter of proper downloading in order to get an image of the administrative organization of a large part of the ESPON space. Theoretically, these lists are valid for the LAU 1/2 geometry corresponding to 2007. The quasi-chaotic evolution of this geometry at this minimal spatial scale, especially for certain countries (e.g. Romania) makes the official list proposed by EUROSTAT to be regarded with a certain dose of skepticism. Despite limitations associated with chronological inappropriateness, EUROSTAT nomenclature has been extremely useful in building the database at least for two reasons:

First, this set of lists is one of the few references which allows the appropriate integration of the LAU2 spatial frame in an hierarchically superior administrative levels (LAU2 => LAU1 => NUTS 3 => etc.). For the moment, from the perspective of indentifying the hierarchical spatial units of an LAU, a single file in the database COMM\_CENS\_2001 in GISCO equals the utility of the EUROSTAT references.

Second, the EUROSTAT classification system includes a useful coding system (national encoding, LAU labels, useful notes and remarks), which somehow permits us to connect the collected information and the indicators with the EUROSTAT references. Some countries, such as Bulgaria, are irrelevant in this respect, the coding system being very sophisticated (the LAU2 national code has its own logic; its construction does not coincide with the coding system used in the GISCO database<sup>2</sup>, although there are some "filiations" between the two systems).

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<sup>1</sup> Finding the *bug* in the page permits also the download of information even for Bulgaria; If not, downloading Bulgaria offers Belgian information.

<sup>2</sup> According to the National Code Description included in the EUROSTAT file the "BG [Bulgarian] codes at this level consists of 5 digits. This is not a composite code. The code doesn't contain any information about the belonging of this territorial unit to any upper level of the classification. They are an inheritance from the previous Bulgarian Territorial Classification, created in the '70ies."

BULGARIAN List of LAU 1, 2 and NUTS 3, as of 01.01.2007												
NUTS level 3 - oblasti				LAU level 1 - Obshtini				LAU level 2 - Naseleni mesta				
Code	Name	ISO_3	BG Code	Name	ISO_3	BG Code	Name	ISO_3	BG Code	Name	ISO_3	
NUTS	BG	English	ISO_3	BG	English	ISO_3	BG	English	ISO_3	BG	English	ISO_3
5	BG311	Видин	VIDIN	VID01	Белоградец	BELOGRADCIK	03616	Белоградец	BELOGRADCIK	03616	Белоградец	BELOGRADCIK
6	BG311	Видин	VIDIN	VID01	Белоградец	BELOGRADCIK	03616	Белоградец	BELOGRADCIK	03616	Белоградец	BELOGRADCIK
7	BG311	Видин	VIDIN	VID01	Белоградец	BELOGRADCIK	03616	Белоградец	BELOGRADCIK	03616	Белоградец	BELOGRADCIK
8	BG311	Видин	VIDIN	VID01	Белоградец	BELOGRADCIK	03616	Белоградец	BELOGRADCIK	03616	Белоградец	BELOGRADCIK
9	BG311	Видин	VIDIN	VID01	Белоградец	BELOGRADCIK	03616	Белоградец	BELOGRADCIK	03616	Белоградец	BELOGRADCIK
10	BG311	Видин	VIDIN	VID01	Белоградец	BELOGRADCIK	03616	Белоградец	BELOGRADCIK	03616	Белоградец	BELOGRADCIK
11	BG311	Видин	VIDIN	VID01	Белоградец	BELOGRADCIK	03616	Белоградец	BELOGRADCIK	03616	Белоградец	BELOGRADCIK
12	BG311	Видин	VIDIN	VID01	Белоградец	BELOGRADCIK	03616	Белоградец	BELOGRADCIK	03616	Белоградец	BELOGRADCIK
13	BG311	Видин	VIDIN	VID01	Белоградец	BELOGRADCIK	03616	Белоградец	BELOGRADCIK	03616	Белоградец	BELOGRADCIK
14	BG311	Видин	VIDIN	VID01	Белоградец	BELOGRADCIK	03616	Белоградец	BELOGRADCIK	03616	Белоградец	BELOGRADCIK
15	BG311	Видин	VIDIN	VID01	Белоградец	BELOGRADCIK	03616	Белоградец	BELOGRADCIK	03616	Белоградец	BELOGRADCIK
16	BG311	Видин	VIDIN	VID01	Белоградец	BELOGRADCIK	03616	Белоградец	BELOGRADCIK	03616	Белоградец	BELOGRADCIK
17	BG311	Видин	VIDIN	VID01	Белоградец	BELOGRADCIK	03616	Белоградец	BELOGRADCIK	03616	Белоградец	BELOGRADCIK
18	BG311	Видин	VIDIN	VID01	Белоградец	BELOGRADCIK	03616	Белоградец	BELOGRADCIK	03616	Белоградец	BELOGRADCIK
19	BG311	Видин	VIDIN	VID01	Белоградец	BELOGRADCIK	03616	Белоградец	BELOGRADCIK	03616	Белоградец	BELOGRADCIK
20	BG311	Видин	VIDIN	VID01	Белоградец	BELOGRADCIK	03616	Белоградец	BELOGRADCIK	03616	Белоградец	BELOGRADCIK
21	BG311	Видин	VIDIN	VID01	Белоградец	BELOGRADCIK	03616	Белоградец	BELOGRADCIK	03616	Белоградец	BELOGRADCIK
22	BG311	Видин	VIDIN	VID01	Белоградец	BELOGRADCIK	03616	Белоградец	BELOGRADCIK	03616	Белоградец	BELOGRADCIK
23	BG311	Видин	VIDIN	VID01	Белоградец	BELOGRADCIK	03616	Белоградец	BELOGRADCIK	03616	Белоградец	BELOGRADCIK
24	BG311	Видин	VIDIN	VID01	Белоградец	BELOGRADCIK	03616	Белоградец	BELOGRADCIK	03616	Белоградец	BELOGRADCIK
25	BG311	Видин	VIDIN	VID01	Белоградец	BELOGRADCIK	03616	Белоградец	BELOGRADCIK	03616	Белоградец	BELOGRADCIK
26	BG311	Видин	VIDIN	VID01	Белоградец	BELOGRADCIK	03616	Белоградец	BELOGRADCIK	03616	Белоградец	BELOGRADCIK
27	BG311	Видин	VIDIN	VID01	Белоградец	BELOGRADCIK	03616	Белоградец	BELOGRADCIK	03616	Белоградец	BELOGRADCIK
28	BG311	Видин	VIDIN	VID01	Белоградец	BELOGRADCIK	03616	Белоградец	BELOGRADCIK	03616	Белоградец	BELOGRADCIK
29	BG311	Видин	VIDIN	VID01	Белоградец	BELOGRADCIK	03616	Белоградец	BELOGRADCIK	03616	Белоградец	BELOGRADCIK
30	BG311	Видин	VIDIN	VID01	Белоградец	BELOGRADCIK	03616	Белоградец	BELOGRADCIK	03616	Белоградец	BELOGRADCIK
31	BG311	Видин	VIDIN	VID01	Белоградец	BELOGRADCIK	03616	Белоградец	BELOGRADCIK	03616	Белоградец	BELOGRADCIK
32	BG311	Видин	VIDIN	VID01	Белоградец	BELOGRADCIK	03616	Белоградец	BELOGRADCIK	03616	Белоградец	BELOGRADCIK
33	BG311	Видин	VIDIN	VID01	Белоградец	BELOGRADCIK	03616	Белоградец	BELOGRADCIK	03616	Белоградец	BELOGRADCIK
34	BG311	Видин	VIDIN	VID01	Белоградец	BELOGRADCIK	03616	Белоградец	BELOGRADCIK	03616	Белоградец	BELOGRADCIK
35	BG311	Видин	VIDIN	VID01	Белоградец	BELOGRADCIK	03616	Белоградец	BELOGRADCIK	03616	Белоградец	BELOGRADCIK
36	BG311	Видин	VIDIN	VID01	Белоградец	BELOGRADCIK	03616	Белоградец	BELOGRADCIK	03616	Белоградец	BELOGRADCIK

**Figure 1:** Bulgarian list of LAU 1/2 spatial units with labels in Bulgarian and English (source : EUROSTAT)

A **third source** of information used for the database construction is represented by the NSI websites. Obviously, the information collected from these references is not homogenous/ unequal as presentation system<sup>3</sup> (structuring, organization manner), as time-series included, as semantic relative to the indicators or as spatial dimension.

As a **PRELIMINARY CONCLUSION**: the chronological heterogeneity of our information sources constantly forced our approach to situate itself on some uncertain coordinates, dictated not only by *the lack of accuracy linked with the geometries*, but also by *our direct interference with the inner structures of the files collected*, due to some technical impossibilities related to the spatial variety of the extracted indicators.

<sup>3</sup> The file format used by the NIS sites represents one major drawback during the collection period of indicators. Some NIS (like the Slovakian one) offers free information for LAU 1 spatial units via downloadable software (AXIS), a kind of spreadsheet format which doubles the working time. The Slovak LAU 2 indicators are even more difficult to harvest because they are presented unit by unit, in **html** format (probably). The Czech Republic NIS site offers the information in **.xls** format, facilitating the collection at LAU2 scale. However, The Czech Republic NIS offers no information at LAU 1 scale.

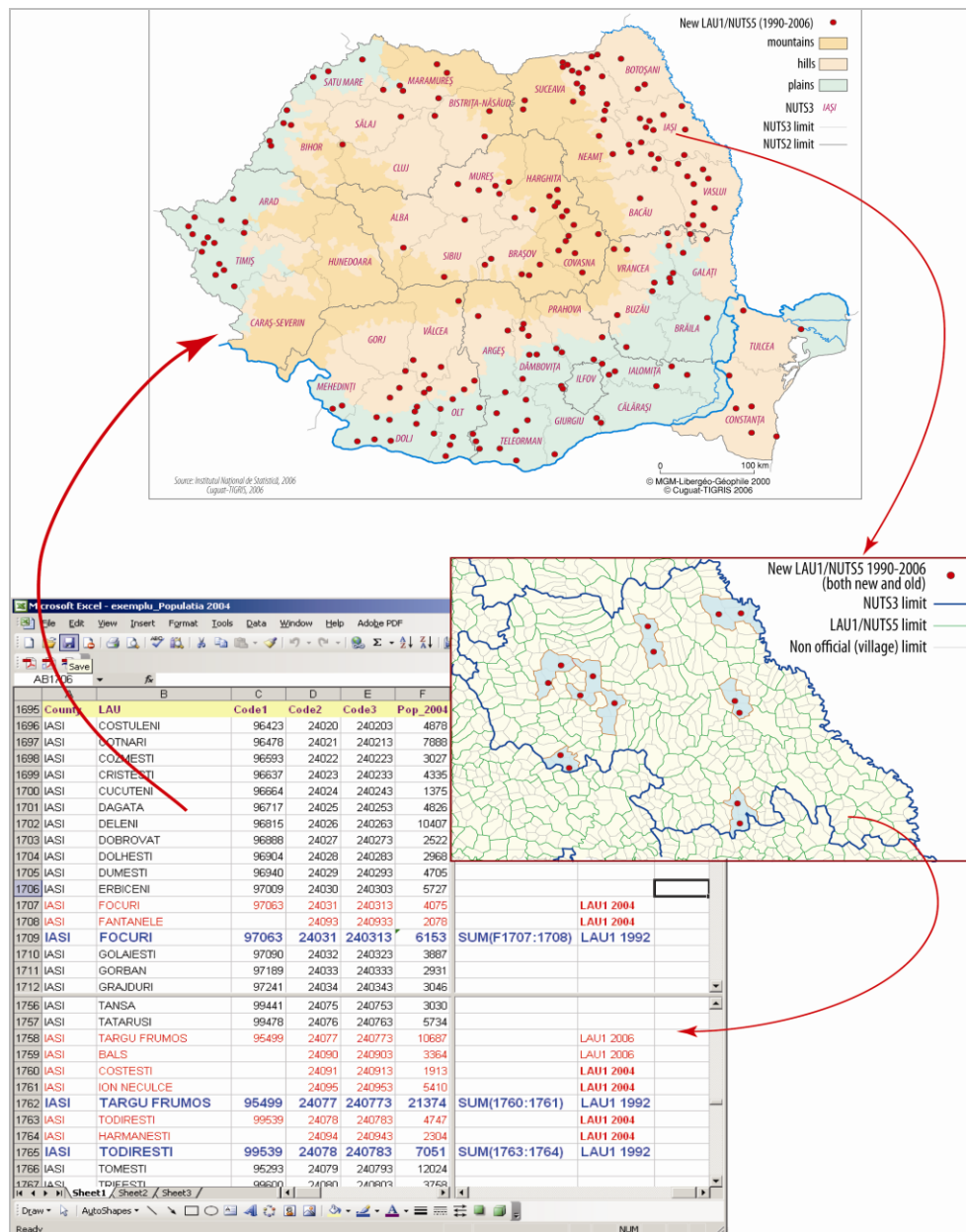
## 2 Choosing between 27+4 countries

The selection of the countries included in our analysis was based on several criteria. First, we preferred from the start that the two countries to be located in the eastern part of the ESPON space, starting from the premise that the data collection, due the unequal experience<sup>4</sup> and the numerous readjustments imposed by the transition period could be somewhat more difficult here than in some Western states, which already managed to perfect their statistical systems, thus making it an useful experience and an easy to extrapolate one. In the meanwhile, we had to keep in mind the fact that the main difficulty in the process of extracting statistical indicators (especially in terms of chronological dimension), is linked with the search for an equilibrium between the length of the time series and the number of spatial units involved. That's why we have privileged two medium-size countries, honestly much more suitable for the statistical data collection. In the beginning of our work we have focused on Romania and Bulgaria and the rationale seemed quite logic to us.

First, the Tigris team has some experience in dealing with LAU2 databases for the two countries (e.g. Espace géographique, etc). Moreover, we have already completed a sample database for Romania and Bulgaria using LAU1 and LAU2 indicators, collected in 2007 and 2008 and some of these indicators were already chronologically harmonized. This experience is reinforced by the know-how accumulated during the elaboration of the several versions of the Atlas of Romania (the version available online is basically a LAU2 cartographic tool). All this work already undertaken for the two countries helped us in building a large and quite comprehensive database (several hundreds of indicators only for Romania) for the 2948 or 3175 LAU2 officially designated in this moment. However, this database is relatively old because of the successive administrative "micro-reforms" who multiplied the number of spatial units from 2948 in 2002 to almost 3175 in 2008. Most often, these readjustments in the elementary geometry were produced by the division of LAU2, by administrative redefinition (some rural LAU change status in urban ones) or by the modification of the existing nomenclature.

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<sup>4</sup> We had the nice surprise to observe that the Eastern NIS sites are generally comparable with the western ones and sometime extremely innovating in their data layout or in the process of indicator selection.



**Figure 2:** New LAU2 <sup>5</sup>units in Romania (1990-2006)

<sup>5</sup> In the titles of the two maps one should read New Lau2/NUTS5



### 3 Populating the database for Romania and Bulgaria...step by step and inch by inch

At a normal screen resolution, the 4618 Bulgarian LAU 2 spatial units extracted from the GISCO database (COMM\_CENS\_RG\_2001) represent the equivalent of approximately 23 meters of information for only one field in the working file. The 2940 Romanian LAU2 should occupy another approximately 15 meters of information. It might seem somehow anecdotic and irrelevant information but, basically, populating a database means introducing meters of information for every indicator. One could imagine that this process is an automatic one, an easy job for post-modern geographers. Is not quite like that. Populating the database also signifies an endless verification process in order to properly match fields of information extracted from the online sources with the working files to be filled in. This matching issue represented the most time consuming aspect in the working process. However, it was also the simplest intellectual challenge in our approach.

After collecting the data from the GISCO tables and directories we have observed several inadequacies between the list of LAU 1/2 registered in this database and the lists provided by other sources (National Institutes of Statistics, TIGRIS database, EUROSTAT), both for Romania and Bulgaria. Bulgaria is probably the most interesting challenge in terms of rebuilding the administrative history at minimal spatial scale.

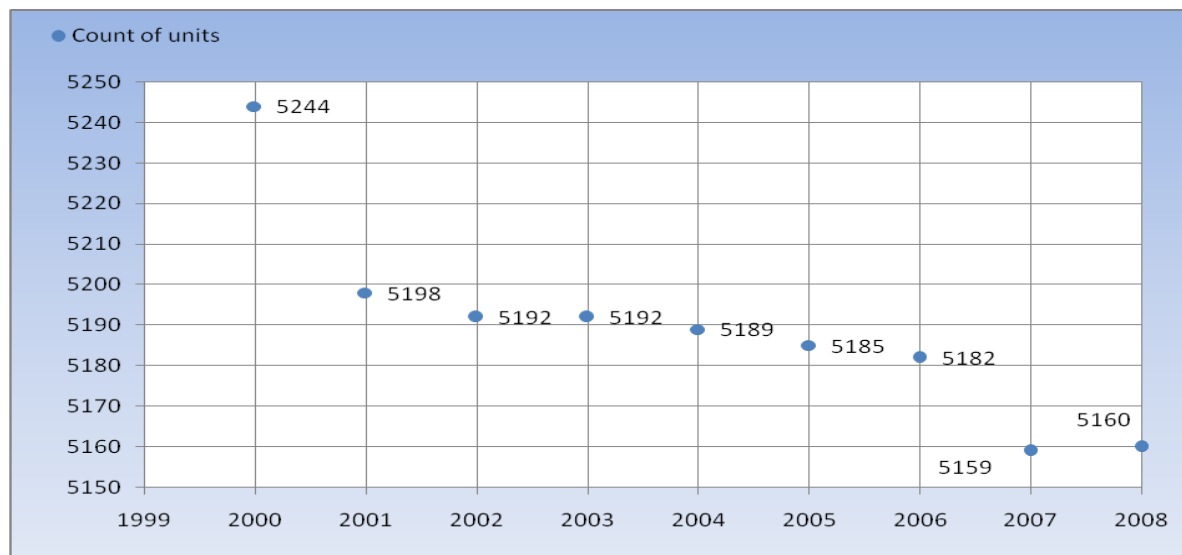
TYPES OF MODIFICATIONS	
observed for the first time	change in the list of composite units
creation	closure
creation by separation (from another populated place)	closure by new administrative-territorial structure
creation by merging	closure by merging
creation by division	closure by division
creation by new administrative-territorial structure	closure by addition
annexation to the country territory	erosion
change by new administrative-territorial structure	closure by loss of territory
change of name	restoration
change of characteristic	restoration by merging
change of administrative centre	restoration by merging
change of administrative territorial belonging	restoration by separation
separation	restoration by division
addition	change of boundaries/structure

**Table 1:** Classification of LAU 2 modifications in the administrative geometry (events recorded since 1878)

Source: NSI Bulgaria, NATIONAL REGISTER OF POPULATED PLACES

Although the Bulgarian Register of Populated Places is extremely generous in terms of information regarding the changes in the administrative geometry of the LAU2, all these references require a systematic approach which is an extremely time-consuming task. For example, 30 units of type 2 LAU were closed by addition after 2001 (and the addition term deserves a definition which was not yet found), another 3 were closed

by merging, 4 villages (LAU2 units) changed their name, one town was restored by separation, one village was restored by merging, 6 villages were created by addition, 6 new units were created by separation and unfortunately this list of modifications is not exhausted. All these territorial metamorphosis have a direct impact on the database that we are supposed to provide.



**Figure 3:** The evolution of LAU2 in Bulgaria (x axis = time)

According to this official source, the number of LAU 2 in Bulgaria constantly dropped from more than 5200 spatial units in 2000 to 5160 in 2008. However, a big number of units listed in the National Register of Populated Places was not found either in the GISCO/EUROGEOGRAPHICS reference files (599 LAU2 missing for 2001) or in the official LAU2 list presented by EUROSTAT<sup>6</sup>.

Consequently, linking geometry and database tables is impossible for the moment.

In this case, even if we have succeeded to extract one indicator for Bulgaria at this scale of analysis (population for the LAU 2 polygons between 2000 and 2008) in the absence of a proper base-map, the table is unlikely to be useful.

Similar problems have been encountered for Romania. GISCO/EuroGeographics database lists 2940 LAU2 in 2001. Comparing this source with the TIGRIS database or with some official sources (National Institute of Statistics) we found 8 LAU2 missing. If in Bulgaria<sup>7</sup> the trend shows a constant decrease in the number of LAU 2 units, in Romania the situation represents exactly the opposite. TIGRIS had several attempts to rebuild the elementary base-map of Romania but without success due to the fact that new changes in the administrative geometry are occurring almost every month. As a matter of fact, the problem is much more complicated. The decision to create a new Romanian LAU2 (generally by division) is not immediately doubled by a map with the new limits of the new born polygons. Even if we succeed to provide an updated base-map for Romania, we are not quite sure about the accuracy of these polygons.

<sup>6</sup> The two sources offer a different number of spatial units for 2007 (EUROSTAT – 5299 and NSI BULGARIA 5159). Almost 150 spatial units are to be found in list of modifications only for this chronological reference.

<sup>7</sup> According to the Bulgarian National Register of Populated Places.

The following tables synthesize the main steps and problems encountered in the development of the database for the two countries. Despite several attempts, for the moment not every problem is also accompanied by a solution.

STEP	Operation	Source	Done
1	Extracting basemap for Bulgaria (LAU2)	GISCO COMM_CENS_2001_AT	OK
2	Extracting basemap for Romania (LAU2)	GISCO COMM_CENS_2001_AT	OK
3	Merging LAU2 polygons in LAU 1 (only for Bulgaria)	GISCO COMM_CENS_2001_AT	OK
4	Creating basemap with the two countries	GISCO COMM_CENS_2001_AT	OK
5	Extracting indicators from the GISCO database	GISCO COMM_CENS_2001_AT	OK
6	Comparing LAU2 GISCO codes with other coding systems (SIRUTA for Romania and the Bulgarian NSI codes)	GISCO COMM_CENS_2001_AT, TIGRIS database, NSI databases	OK
7	Dealing with the encountered problems		OK
8	Populating the database with indicators for both countries	GISCO COMM_CENS_2001_AT, TIGRIS database, NSI databases	OK

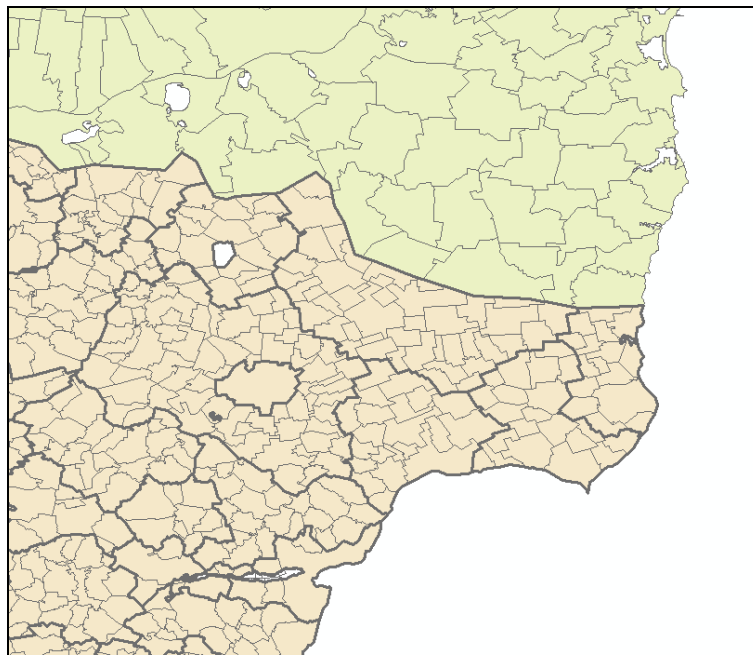
**Table 2:** Operational steps undertaken during the database development process and data sources

PROBLEMS	Solution
No match between the LAU2 GISCO coding system and the NSI coding system.	Inventing a new coding system.
No LAU1 label in the GISCO database (for Bulgaria) and no match between the LAU1 GISCO coding system and the NSI coding system.	Matching under Excel the labels and the codes
No match between the LAU2 geometry (GISCO) and the indicators extracted from the other sources. (599 LAU2 missing in 2001) No match between the LAU 1 geometry (GISCO) and the indicators extracted from the other sources.	Operation aborted for the moment

**Table 2:** Problems encountered in the database development process and solutions developed

Even if the issues concerning the proper linkage between the base-map and the database should be overcome, it will still be difficult to imagine a solution in order to eliminate the size differences between the LAU2 of the two countries.

The Bulgarian LAU1 has no correspondent in Romania while the Romanian LAU 2 is much bigger than the same units in Bulgaria (Fig. 4). When mapping whatever indicator, this "mass effect" should be considered. We are sure that we will encounter the same problem (linked with the surface difference) at the French-Belgian border.



**Figure no 4 – LAU2 in Romania and Bulgaria (LAU1)**

For all these reasons we have stopped working for the moment at a database for Romania and Bulgaria (technically speaking we are in standby with the history of LAU2 evolution for the both countries), even if we have somehow advanced in this problematic, and as a backup for the technical rapport and for Challenge 4, we have focused on building a database for other two countries (Czech Republic and Slovak Republic).

## 4 Building a database for the Czech Republic and Slovakia

The choice of the two countries was based on some facilities that have smoothed the collection of information and the matching exercise with the base-map extracted from the GISCO database. First, unlike Romania and Bulgaria, quite a few administrative reforms have altered the administrative geometry of LAU2 and LAU1 during the 2001-2008 period. Such mutations, but not so intense like in the Bulgarian case, are visible in Slovakia. For now, only 8 Slovak LAU2 don't find their correspondent in the GISCO tables which we use to verify the correspondence between the base-map and the database. The collection of the indicators started from the National Institutes of Statistics, in particular the 2001 Census results for the Czech Republic and the Regional database for Slovak Republic.

Despite our intention, we are not able to provide an exhaustive database for the two countries yet. In the case of the Slovak Republic, the information available at LAU 1 exceeds our possibility to collect them just in time. Anyway, a prioritization of the indicators should be considered for a proper extraction, otherwise we might populate the database with interesting but not very useful<sup>8</sup> indicators.



**Figure 5:** The availability of statistical indicators in the case of the Slovak Republic - Sample view

(Source: RegDat, The Regional Statistics Database hosted on the Statistical Office of The Slovak Republic website)

<sup>8</sup> As an example, we can download indicators such as the "pension's expenditures in Euro or Slovak currency between 1999 and 2008", for the Slovakian LAU1, but we cannot find the same information (the same indicator) for the Czech Republic. At a smaller scale, for the Slovak LAU2 we may download the earliest recorded mention by historical sources (e.g. Borinka (LAU2) in the District of Malacky (LAU1) was first mentioned in 1273 A.D. An exhaustive collection of the Slovakian indicators should provide even the administrative or economic central places attributes for the Slovak LAU2.

In order to integrate all this information in our data tables we were forced, (especially when collecting the indicators at LAU1 scale for Slovakia) to work with another software (Pc-Axis) allowing the visualization of the chosen variables (Fig. 6 and 7). Just to emphasize the immense data series and the sometimes overwhelming work involved: eight indicators for nine years time-series and 79 spatial units could be regarded as quite a simple case...but not as simple as downloading the agriculture indicators (Fig. 7). On the other hand, the collection of indicators for Czech Republic at LAU1 scale is not simple at all. The site of the Czech Institute of Statistics still uses the term NUTS4 instead of LAU1. Our first researches ignored this aspect. Consequently, we are not able to provide indicators for this type of administrative geometry for this country. Recently, after a routine check of the data sources, we have managed to obtain some LAU1 indicators (some demographic time-series from 1949 to 2007) and these tables will soon be ordered and integrated in the database.

**Figure 6:** Foreign direct investments in Slovakia (LAU1 – 1998-2006, Pc-Axis software view)

**Figure 7:** Stav hospodárskych zvierat by územie, výrobky and rok

(Pure Slovakian... It seems to be a file which presents indicators about the livestock according to the Google translate tool – "Status of livestock by the products and the year")

The data collection at LAU2 scale for Slovakia is also uncompleted. We have managed to include in our database 52 indicators, LAU2 by LAU2, after a long copy-paste/import data exercise LAU2 by LAU2 files (2928 multiplied by 2 files copied for each spatial unit). The 52 indicators include different information which we considered relevant at the extraction moment (economic and demographic indicators for 2007 and 2001). Generally, the other variables available for download on the site (Health Services, The Basic Characteristics of the LAU2 or the Environment Indicators) are mainly presented in text format (Boolean opposition of presence/absence). Working on Slovakia LAU2 and LAU1 indicators is a useful exercise, a training routine for the collection of information for Poland and Austria.

Population by nationality:																
A	B	C	D	E	F	G	H	I	J	T	U	V	W	X	Y	
NATIONAL CODE LAU2	LABEL LAU2	Total population (as of Dec 31)	Population - males (as of Dec 31)	Population - females (as of Dec 31)	Population in pre-productive age - total (0 - 14)	Population in productive age - females (15 - 54)	Population in productive age - males (15 - 59)	Population in post-productive age - total (55+F, 60+M)	Number of marriages	Total increase (decrease) of population - females	Population in total	Population - males	Population - females	Population by nationality	Slovak %	
2	520595	Bratislava - mestská časť Staré Mesto	41255	19204	22051	4542	11423	12803	12487	29	-303	44 798	20 552	24 246		90,01
3	520311	Bratislava - mestská časť Podunajské Biskupice	20717	9838	10879	2808	6294	6911	4704	14	200	19 749	9 403	10 346		82,09
4	520320	Bratislava - mestská časť Ružinov	70692	31769	38923	8681	20428	20629	20954	29	205	70 004	31 439	38 565		91,65
5	520338	Bratislava - mestská časť Vrakuňa	19320	9171	10149	2368	6619	6896	3439	79	70	18 366	8 786	9 600		88,24
6	520346	Bratislava - mestská časť Nové Mesto	37048	18901	20147	4443	10752	11265	10588	18	24	37 418	16 931	20 487		92,17
7	520354	Bratislava - mestská časť Rača	20438	9623	10815	2352	5956	6673	5457	14	-24	20 172	9 841	10 331		93,16
8	520362	Bratislava - mestská časť Vajnory	4659	2331	2328	606	1392	1654	1007	22	86	3 826	1 899	1 929		95,69
9	520401	Bratislava - mestská časť Devín	1040	527	513	150	286	355	249	85	4	884	441	443		91,97
10	520371	Bratislava - mestská časť Devínska Nová Ves	15948	7791	8157	2077	5875	6084	1912	86	65	15 502	7 509	7 993		93,45
11	520389	Bratislava - mestská časť Dúbravka	34405	16127	18278	4247	9697	10562	9899	23	-137	35 199	16 498	18 701		92,72
12	520397	Bratislava - mestská časť Karlova Ves	33876	15893	17983	5109	11146	10979	6642	20	73	32 843	15 507	17 336		92,39
13	520419	Bratislava - mestská časť Lamač	6580	2974	3606	690	1728	1938	2224	56	17	6 544	2 921	3 623		93,87
14	520427	Bratislava - mestská časť Záhorská Bystrica	2852	1384	1468	411	854	941	646	21	95	2 086	1 003	1 083		96,93
15	520435	Bratislava - mestská časť Čunovo	936	501	435	126	252	354	204	26	-1	911	462	449		88,83
16	520443	Bratislava - mestská časť Jarovce	1296	628	668	164	412	452	268	46	20	1 199	575	624		63,8
17	520460	Bratislava - mestská časť Petržalka	113443	54198	59245	11526	41514	43542	16861	60	-364	117 227	56 116	61 111		92,64
18	520494	Bratislava - mestská časť Rusovce	2422	1189	1233	361	776	837	448	26	71	1 922	958	964		76,27
19	507831	Borinka	557	275	282	78	148	177	154	4	6	519	252	267		95,57
20	507890	Gajary	2894	1400	1494	464	878	1001	551	15	19	2 690	1 311	1 379		96,91
21	507954	Jablonové	1112	539	573	170	334	369	239	7	16	1 056	510	546		97,63
22	507962	Jakubov	1466	734	732	242	440	518	266	4	21	1 312	656	656		95,2
23	508012	Kostolište	1132	568	564	178	340	402	212	6	30	942	476	466		98,2
24	508021	Kuchyňa	1691	841	850	255	489	609	338	6	18	1 597	791	806		98,18
25	520050	Ľubica	4404	604	707	406	202	406	230	7	2	4 446	600	726		96,02
2920	543951	Vojčice	2099	1015	1084	404	615	683	397	9	-2	2 021	994	1 027		96,68
2921	543969	Vojka	513	258	255	125	139	170	79	5	2	434	216	218		11,98
2922	543977	Zatín	789	385	404	125	213	249	202	3	9	788	382	406		13,83
2923	543985	Zbehnov	292	149	143	47	79	106	60	0	-3	292	141	151		71,23
2924	543993	Zemplin	390	193	197	71	110	138	71	1	-6	399	197	202		28,32
2925	544001	Zemplinská Nová Ves	960	464	496	194	265	304	197	4	-5	938	438	500		98,19
2926	544019	Zemplinská Teplica	1500	733	767	349	452	475	224	11	4	1 384	676	708		92,7
2927	544027	Zemplinské Hradište	1124	524	600	140	324	346	314	8	-4	1 201	564	637		93,01
2928	544035	Zemplinské Jastrabie	640	327	313	109	152	226	153	4	2	643	319	324		98,44
2929	544043	Zemplínsky Branc	479	231	248	93	137	156	93	2	-1	443	217	226		90,29
2930																
2931		Indicators for 2007														
2932		Indicators collected from the Slovak Census 2001														
2933																

Figure 8: A "working file" for the Slovak LAU 2 database

The matching process between the NSI tables and the coding system used in the GISCO files for the Slovak LAU2 geometry shows that 8 new LAU2 are to be integrated in the map. These 8 LAU2 present no information recorded from the Slovak Census but they do present some indicators for 2007.

On the other hand, for the Czech Republic we have extracted 149 indicators covering a larger field of domains (from demographics to dwelling stocks and economics, table 4). As the tables and the base-maps extracted from GISCO/EuroGeographics database are chronologically correlated with the Czech Census and because no Czech LAU2 is missing for the moment, populating the database was not as complicated as was the case for Bulgaria.



Types of indicators	
1. Population by age and marital status	8. Commuters to work and schools
2. Population by age	9. Households by type
3. Population by highest educational attainment	10. Housing stock
4. Population by nationality	11. Houses by the floor number and by basic amenities
5. Population by denomination	12. Dwelling stock
6. Population by economic activity	13. Permanently occupied dwellings by legal reason of use and size of dwelling
7. Economically active population by branch of economic activity	

**Table 4:** Categories of statistical indicators for the Czech Republic

A major advantage observed during the population of the database consists in the fact that a most of the data for the Czech Republic and Slovakia comes from the Census conducted in 2001. Thus the main indicators are at least chronologically harmonized. Unfortunately, these indicators are not also semantically linked, except for the ethnic and confessional structure of the population, for the number of dwellings and for some economic variables.

Thus, as a **PRELIMINARY CONCLUSION:** the Tigris team has succeeded in creating two sample databases for 4 countries (Romania, Bulgaria, Czech Republic and Slovakia). The issue we are working to overcome now is that the indicators are not complete or harmonized yet. Several types of problems were identified, some of them having simple and/or no time consuming solutions, while some others might need a supplementary time for a more advanced analysis in order to provide effective solutions and implement them.

Although the focus remained on the construction of a sample database for the two countries, a part of the team has managed to gather indicators at LAU2 scale for three Scandinavian countries (Norway, Sweden and Finland) and for 2 Baltic states (Latvia and Lithuania). These 5 sets of new indicators (generally demographic and social ones) will be processed in the incoming period, in order for them to properly match with a base-map or with other data tables.

As a conclusive summary of our work, the statistical indicators collected and integrated in the database for the Czech Republic and Slovakia are presented in the table in annex. Some of the indicators are constantly repeated<sup>9</sup> (e.g. the LAU2 coding system and their names) in order to facilitate the preliminary extraction, when needed.

<sup>9</sup> This is the case only for the indicators collected for the Czech Republic.



## 5 Using SIRE database

Another element that TIGRIS team has to deal it is the recovery and transformation of indicators from SIRE database. Having a particular structure (an obsolete coding system and a spatial hierarchical structure starting from NUTS 0 to ex-NUTS 5, in the same field) the integration of information implies acquiring a specific method. The main chronological marks in SIRE are 1981 and 1991. Obviously, not all the countries in the ESPON space are present in the database and one could think that an interesting and complete exploitation of SIRE should be doubled by an investigation of datasets for recently integrated in the EU.

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"AT11200003",01-JAN-95,10301, "BREITENBRUNN",,0,0,0,0,0,1
"AT11200004",01-JAN-95,10302, "DONNERSKIRCHEN",,0,0,0,0,0,1
"AT11200005",01-JAN-95,10303, "GROSSHOEFLEIN",,0,0,0,0,0,1
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**Figure 9: SIRE database before (on the left – labels and codes) and after (on the right – population in 1991) data basic integration.**

	A	B	C	D	E
1	CODCOM	BEGVAL	DATOB5	POPTOT	
2	AT	1-Jan-81	12-May-81	755338	
3	R9	1-Jan-71	1-Jan-81	5123989	
4	R9	1-Jan-71	1-Jan-89	5129778	
5	R9011	1-Jan-71	1-Jan-81	581938	
6	R9011	1-Jan-71	1-Jan-89	553177	
7	R9011000	1-Jan-71	1-Jan-81	493771	
8	R9011000	1-Jan-71	1-Jan-89	467850	
9	R9011000	1-Jan-71	1-Jan-81	88167	
10	R9011000	1-Jan-71	1-Jan-89	85327	
11	R9012	1-Jan-71	1-Jan-81	624684	
12	R9012	1-Jan-71	1-Jan-89	602046	
13	R9012000	1-Jan-71	1-Jan-81	48697	
14	R9012000	1-Jan-71	1-Jan-89	45197	
15	R9012000	1-Jan-71	1-Jan-81	37615	
16	R9012000	1-Jan-71	1-Jan-89	34359	
17	R9012000	1-Jan-71	1-Jan-81	12695	
18	R9012000	1-Jan-71	1-Jan-89	12376	
19	R9012000	1-Jan-71	1-Jan-81	66782	
20	R9012000	1-Jan-71	1-Jan-89	65032	
21	R9012000	1-Jan-71	1-Jan-81	64213	
22	R9012000	1-Jan-71	1-Jan-89	61198	
23	R9012000	1-Jan-71	1-Jan-81	19645	
24	R9012000	1-Jan-71	1-Jan-89	19749	
25	R9012000	1-Jan-71	1-Jan-81	28190	
26	R9012000	1-Jan-71	1-Jan-89	26904	
27	R9012000	1-Jan-71	1-Jan-81	30331	
28	R9012000	1-Jan-71	1-Jan-89	29093	

**Figure 9: SIRE database before (on the left – labels and codes) and after (on the right – population in 1991) data basic integration.**

The output of working with SIRE indicators is multiple. It serves for comparison between the coding systems and labels, in order to survey administrative modifications at LAU scale and it's also useful for building some chronologically based indicators between 1991 and 2001, when used in linkage with other databases.

## 6 Integrating Priority 2 projects

The integration of data obtained in Priority 2 projects represents a priority in TIGRIS work. That's why one of the deliverables was conceived as a container for this kind of information. However, a prioritization of the indicators, based on an analysis of the added value of these new indicators should also be considered as a task. If the information obtained by Priority 2 projects is too recent (2007 or 2008) it may complicate the integration when SOME not spotted administrative changes in geometry occur. A secondary problem could be linked with the eventual cartographic expression of this new information. If two finisterre are to be mapped, a proper projection will highly smooth the visual transmission.

In the next stage, the efforts of the TIGRIS team will be canalized on perfecting the database for the two countries (integrating some recent demographic indicators for Slovakia at LAU2 scale, (re)structuring/refining some data tables at LAU1 scale for the Czech Republic), on sketching a minimum administrative history for Romania and Bulgaria, finalizing the data collection for some other countries in the ESPON space.

One of the issues we are dealing with at the moment is the data validation and the elimination of the possible errors inherently occurring during the data collection and structuring process. Only after we are going to develop a system for data validation, we are going to be able to attach the metadata to our files.

For the moment, our priority still remains that of creating a proper connection between the indicators and the geometry, which could sometimes be problematic (as our experience when working for the Romania and Bulgaria database proved it).

Organizing a working plan in this context seems to depend on variables that are partially controllable by TIGRIS. In the short term our effort will focus on the elaboration of a database with indicators for at least two neighboring countries. For the midterm (December 2009) finalizing a database with indicators at LAU level would be the main priority. In the same time we shall derive a minimal history of LAU1/2 modifications. For February 2010 we had reserved the most time consuming task – recovering SIRE while populating a country by country database with a basic indicator at least.

## Conclusion

Gemeinden, Inn, Municipios, Obcine, Comune, Communes, Freguesias, Telepulesek, Ward, is the label for mostly the same geographic reality, the local level of administrative units in some countries of the ESPON space. Exploring them and collecting their basic information is a feasible and necessary task. Dealing with this task means to properly estimate the right balance between the errors in the spatial geometries, the chronological availability, the administrative changes and the sens of words behind the indicators.

The exploration of the available sources of information at LAU 2 scale (NSI, GISCO, SIRE, etc.) shows that building a database for this territorial level should overcome 3 different issues, in order to become a coherent tool. The first issue refers to the chronological heterogeneity of the indicators. Analyzing these indicators country by country, it's quite a luck to find a proper chronological match between them. This problem is underpinned with the second one, the issue of the administrative changes at local level, this last aspect heavily complicating any database populating process. The administrative changes block the construction of a general algorithm (for more than 119 000 LAU2 in ESPON space), especially when intermediate levels of territorial clip are present – the LAU 1 level. Thirdly, the semantic issue of the indicators could also become important. According to country's definition, dwelling or *others* (religion minorities, e.g.) might not have the same sens from Greece to Iceland.

However, despite TIGRIS experience, working at this scale it's learning by doing process, even if doing is pretty fuzzy in this context. The example of the database built for countries such as Slovak Republic, Czech Republic, Bulgaria or Romania shows that another aspect should be taken into account – the relevance of the indicators. The added value of different variables present in the datasets and available for extraction should be prioritize, having in mind the fact that they may largely vary because of the 3 issues already exposed.

When we try to integrate databases such as SIRE in a LAU 2 actual frame we should double the working process by an investigation of the statistical sources available for the '80 and '90 period for some countries recently integrated in the ESPON space. If not, we might obtain a proper image of the past without any link to its future. A comparable problem emerges when we integrate data from the Priority 2 projects. This time, it's not the chronological frame that worries, but the spatial one.

# Annex

## *List of LAU2 indicators for the Czech Republic and Slovakia*

INDICATORS	DESCRIPTION	SOURCE AND OBSERVATIONS
Iden	Basemap code	GISCO database
OBJECTID	Inner code used in ARCVIEW	GISCO database
COMM_ID	Basemap code	GISCO database
X	Dummy longitude coordinate	Automatically extracted
Y	Dummy latitude coordinate	Automatically extracted
COMM_NAME	LAU2 label	GISCO database
NAME_ASCII	LAU2 label in ASCII format	GISCO database
NAME_HTML	LAU2 label in HTML format	GISCO database
NAME_SIRE	LAU2 label in SIRE database	GISCO database
TRUE_COMM_	Dummy variable	GISCO database
CNTR_CODE	Country code	GISCO database
AREA_TOTL	Area	GISCO database
AREA_LAND	Area (only null values)	GISCO database
POPL 2001?	Population in 2001 (LAU2)	GISCO database
NSI_CODE	Code used by the National Statistical Institute	GISCO database
LAU2_CODE	LAU2 code (different from the IDEN and COMM_ID)	GISCO database
ADRG_LAU1_	LAU1 hierarchical code	GISCO database
NUTS_CODE	NUTS hierarchical code	GISCO database
DGUR_CODE	Dummy indicator ?	GISCO database
DGUR_AREA_	Area (text values)	GISCO database
DGUR_AREA	Area	GISCO database
POPL_DENS	Population's density in 2001	GISCO database
NATIONAL_CODE_LAU2	Indicator used in the matching process	Automatically extracted (no values only for Czech Republic)
LABEL_LAU2	Indicator used in the matching process	Automatically extracted (no values only for Czech Republic)
Total population (as of Dec. 31)	Total population (as of Dec. 31)	Regional Database (NSI Slovakia) Indicator valid for 2007
Population - males (as of Dec. 31)	Population - males (as of Dec. 31)	Regional Database (NSI Slovakia) Indicator valid for 2007
Population - females (as of Dec. 31)	Population - females (as of Dec. 31)	Regional Database (NSI Slovakia) Indicator valid for 2007
Population in pre-productive age - total (0 - 14)	Population in pre-productive age - total (0 - 14)	Regional Database (NSI Slovakia) Indicator valid for 2007
Population in productive age - females (15 - 54)	Population in productive age - females (15 - 54)	Regional Database (NSI Slovakia) Indicator valid for 2007
Population in productive age - males (15 - 59)	Population in productive age - males (15 - 59)	Regional Database (NSI Slovakia) Indicator valid for 2007
Population in post-productive age-total (55+F, 60+M)	Population in post-productive age-total (55+F, 60+M)	Regional Database (NSI Slovakia) Indicator valid for 2007
Number of marriages	Number of marriages	Regional Database (NSI Slovakia) Indicator valid for 2007
Number of divorces	Number of divorces	Regional Database (NSI Slovakia) Indicator valid for 2007
Number of live births total	Number of live births total	Regional Database (NSI Slovakia) Indicator valid for 2007
Number of live births males	Number of live births males	Regional Database (NSI Slovakia) Indicator valid for 2007
Number of live births females	Number of live births females	Regional Database (NSI Slovakia) Indicator valid for 2007

Number of deaths total	Number of deaths total	Regional Database (NSI Slovakia) Indicator valid for 2007
Number of deaths males	Number of deaths males	Regional Database (NSI Slovakia) Indicator valid for 2007
Number of deaths females	Number of deaths females	Regional Database (NSI Slovakia) Indicator valid for 2007
Total increase (decrease) of population - total	Total increase (decrease) of population - total	Regional Database (NSI Slovakia) Indicator valid for 2007
Total increase (decrease) of population -males	Total increase (decrease) of population -males	Regional Database (NSI Slovakia) Indicator valid for 2007
Total increase (decrease) of population - females	Total increase (decrease) of population - females	Regional Database (NSI Slovakia) Indicator valid for 2007
Population in total	Population in total	Regional Database (NSI Slovakia) Indicator valid for 2001 (CENSUS)
Population - males	Population - males	Regional Database (NSI Slovakia) Indicator valid for 2001 (CENSUS)
Population - females	Population - females	Regional Database (NSI Slovakia) Indicator valid for 2001 (CENSUS)
Population by nationality: Slovak %	Population by nationality: Slovak %	Regional Database (NSI Slovakia) Indicator valid for 2001 (CENSUS)
Hungar. %	Hungar. %	Regional Database (NSI Slovakia) Indicator valid for 2001 (CENSUS)
Gipsy %	Gipsy %	Regional Database (NSI Slovakia) Indicator valid for 2001 (CENSUS)
Ruthen. %	Ruthen. %	Regional Database (NSI Slovakia) Indicator valid for 2001 (CENSUS)
Ukrain. %	Ukrain. %	Regional Database (NSI Slovakia) Indicator valid for 2001 (CENSUS)
Czech %	Czech %	Regional Database (NSI Slovakia) Indicator valid for 2001 (CENSUS)
Morav. %	Morav. %	Regional Database (NSI Slovakia) Indicator valid for 2001 (CENSUS)
Siles. %	Siles. %	Regional Database (NSI Slovakia) Indicator valid for 2001 (CENSUS)
German %	German %	Regional Database (NSI Slovakia) Indicator valid for 2001 (CENSUS)
Polish %	Polish %	Regional Database (NSI Slovakia) Indicator valid for 2001 (CENSUS)
Population by religions: Roman-Cathol. %	Population by religions: Roman-Cathol. %	Regional Database (NSI Slovakia) Indicator valid for 2001 (CENSUS)
Evangelic %	Evangelic %	Regional Database (NSI Slovakia) Indicator valid for 2001 (CENSUS)
Greek-Cathol. %	Greek-Cathol. %	Regional Database (NSI Slovakia) Indicator valid for 2001 (CENSUS)
Orthodox %	Orthodox %	Regional Database (NSI Slovakia) Indicator valid for 2001 (CENSUS)
Cz.sl. Hussit. %	Cz.sl. Hussit. %	Regional Database (NSI Slovakia) Indicator valid for 2001 (CENSUS)
without denom. %	without denom. %	Regional Database (NSI Slovakia) Indicator valid for 2001 (CENSUS)
other %	other %	Regional Database (NSI Slovakia) Indicator valid for 2001 (CENSUS)
not specified %	not specified %	Regional Database (NSI Slovakia) Indicator valid for 2001 (CENSUS)
Economically active persons - total	Economically active persons - total	Regional Database (NSI Slovakia) Indicator valid for 2001 (CENSUS)
Economically active persons - males	Economically active persons - males	Regional Database (NSI Slovakia) Indicator valid for 2001 (CENSUS)
Economically active persons - females	Economically active persons - females	Regional Database (NSI Slovakia) Indicator valid for 2001 (CENSUS)
Employed - total	Employed - total	Regional Database (NSI Slovakia) Indicator valid for 2001 (CENSUS)

Employed - males	Employed - males	Regional Database (NSI Slovakia) Indicator valid for 2001 (CENSUS)
Employed - females	Employed - females	Regional Database (NSI Slovakia) Indicator valid for 2001 (CENSUS)
Unemployed - total	Unemployed - total	Regional Database (NSI Slovakia) Indicator valid for 2001 (CENSUS)
Unemployed - males	Unemployed - males	Regional Database (NSI Slovakia) Indicator valid for 2001 (CENSUS)
Unemployed - females	Unemployed - females	Regional Database (NSI Slovakia) Indicator valid for 2001 (CENSUS)
Houses total	Houses total	Regional Database (NSI Slovakia) Indicator valid for 2001 (CENSUS)
Permanent habitation houses total	Permanent habitation houses total	Regional Database (NSI Slovakia) Indicator valid for 2001 (CENSUS)
Iden	Basemap code	GISCO database
OBJECTID	Inner code used in ARCVIEW	GISCO database
COMM_ID	Basemap code	GISCO database
LAU2 code	LAU2 code (identical to the IDEN and COMM_ID)	GISCO database
NUTS4	LAU1 hierarchical code in ancient format (NUTS)	Automatically extracted (NSI Czech Republic - CENSUS 2001)
LAU2	LAU2 code (different from the IDEN and COMM_ID)	Automatically extracted (NSI Czech Republic - CENSUS 2001)
NAME	Label used by the NSI Czech Republic	NSI Czech Republic - CENSUS 2001
Population, total	Population, total	NSI Czech Republic - CENSUS 2002
Economically active, total	Economically active, total	NSI Czech Republic - CENSUS 2003
Agriculture, Forestry, Water economy	Agriculture, Forestry, Water economy	NSI Czech Republic - CENSUS 2004
Industry	Industry	NSI Czech Republic - CENSUS 2005
Construction	Construction	NSI Czech Republic - CENSUS 2006
Wholesale and retail trade, Repair of motor vehicles	Wholesale and retail trade, Repair of motor vehicles	NSI Czech Republic - CENSUS 2007
Transport and Communications	Transport and Communications	NSI Czech Republic - CENSUS 2008
Public administration and Defence; Compulsory social security	Public administration and Defence; Compulsory social security	NSI Czech Republic - CENSUS 2009
Education, Health and social work, Veterinary activities	Education, Health and social work, Veterinary activities	NSI Czech Republic - CENSUS 2010
LAU2code	LAU2 code (identical to the IDEN and COMM_ID)	GISCO database
LAU1	LAU1 code	GISCO database
LAU2	LAU2 code (different from the IDEN and COMM_ID)	Automatically extracted (NSI Czech Republic - CENSUS 2001)
name	Label used by the NSI Czech Republic	NSI Czech Republic - CENSUS 2001
Population, total	Population, total	NSI Czech Republic - CENSUS 2001
Females	Females	NSI Czech Republic - CENSUS 2001
MALESSingle	MALESSingle	NSI Czech Republic - CENSUS 2001
MALESMarried	MALESMarried	NSI Czech Republic - CENSUS 2001
MALESDivorced	MALESDivorced	NSI Czech Republic - CENSUS 2001
MALESWidowed	MALESWidowed	NSI Czech Republic - CENSUS 2001
MALESUnknown	MALESUnknown	NSI Czech Republic - CENSUS 2001
FEMALESSingle	FEMALESSingle	NSI Czech Republic - CENSUS 2001
FEMALESMarried	FEMALESMarried	NSI Czech Republic - CENSUS 2001
FEMALESDivorced	FEMALESDivorced	NSI Czech Republic - CENSUS 2001
FEMALESWidowed	FEMALESWidowed	NSI Czech Republic - CENSUS 2001
FEMALESUnknown	FEMALESUnknown	NSI Czech Republic - CENSUS 2001
LAU2codeOk	LAU2 code (identical to the IDEN and COMM_ID)	Automatically extracted (NSI Czech Republic - CENSUS 2001)
NUTS 4	LAU1 hierarchical code in ancient format (NUTS)	Automatically extracted (NSI Czech Republic - CENSUS 2001)



Municipality code	LAU2 code (different from the IDEN and COMM_ID)	Automatically extracted (NSI Czech Republic - CENSUS 2001)
Municipality name	Label used by the NSI Czech Republic	NSI Czech Republic - CENSUS 2001
Population, total	Population, total	NSI Czech Republic - CENSUS 2001
A.G. 0-4	A.G. 0-4	NSI Czech Republic - CENSUS 2001
A.G. 5-14	A.G. 5-14	NSI Czech Republic - CENSUS 2001
A.G. 15-19	A.G. 15-19	NSI Czech Republic - CENSUS 2001
A.G. 20-29	A.G. 20-29	NSI Czech Republic - CENSUS 2001
A.G. 30-39	A.G. 30-39	NSI Czech Republic - CENSUS 2001
A.G. 40-49	A.G. 40-49	NSI Czech Republic - CENSUS 2001
A.G. 50-59	A.G. 50-59	NSI Czech Republic - CENSUS 2001
A.G. 60-64	A.G. 60-64	NSI Czech Republic - CENSUS 2001
A.G. 5-74	A.G. 5-74	NSI Czech Republic - CENSUS 2001
A.G. 75+unknown	A.G. 75+unknown	NSI Czech Republic - CENSUS 2001
LAU2 code	LAU2 code (identical to the IDEN and COMM_ID)	Automatically extracted (NSI Czech Republic - CENSUS 2001)
NUTS4	LAU1 hierarchical code in ancient format (NUTS)	Automatically extracted (NSI Czech Republic - CENSUS 2001)
Municipality code	LAU2 code (different from the IDEN and COMM_ID)	Automatically extracted (NSI Czech Republic - CENSUS 2001)
Municipality name	Label used by the NSI Czech Republic	NSI Czech Republic - CENSUS 2001
Population aged 15+	Population aged 15+	NSI Czech Republic - CENSUS 2001
Without education	Without education	NSI Czech Republic - CENSUS 2001
Basic incl. not finished	Basic incl. not finished	NSI Czech Republic - CENSUS 2001
Secondary vocational and technical without GCSE	Secondary vocational and technical without GCSE	NSI Czech Republic - CENSUS 2001
Full secondary general with GCSE	Full secondary general with GCSE	NSI Czech Republic - CENSUS 2001
Higher professional and Extension study	Higher professional and Extension study	NSI Czech Republic - CENSUS 2001
University	University	NSI Czech Republic - CENSUS 2001
Not identified	Not identified	NSI Czech Republic - CENSUS 2001
LAU2 code	LAU2 code (identical to the IDEN and COMM_ID)	Automatically extracted (NSI Czech Republic - CENSUS 2001)
NUTS 4	LAU1 hierarchical code in ancient format (NUTS)	Automatically extracted (NSI Czech Republic - CENSUS 2001)
Municipality code	LAU2 code (different from the IDEN and COMM_ID)	Automatically extracted (NSI Czech Republic - CENSUS 2001)
Municipality name	Label used by the NSI Czech Republic	NSI Czech Republic - CENSUS 2001
Population, total	Population, total	NSI Czech Republic - CENSUS 2001
Czech	Czech	NSI Czech Republic - CENSUS 2001
Moravian	Moravian	NSI Czech Republic - CENSUS 2001
Silesian	Silesian	NSI Czech Republic - CENSUS 2001
Slovak	Slovak	NSI Czech Republic - CENSUS 2001
Romany	Romany	NSI Czech Republic - CENSUS 2001
Polish	Polish	NSI Czech Republic - CENSUS 2001
German	German	NSI Czech Republic - CENSUS 2001
Ukrainian	Ukrainian	NSI Czech Republic - CENSUS 2001
Vietnamese	Vietnamese	NSI Czech Republic - CENSUS 2001
LAU2 code	LAU2 code (identical to the IDEN and COMM_ID)	Automatically extracted (NSI Czech Republic - CENSUS 2001)
NUTS4	LAU1 hierarchical code in ancient format (NUTS)	Automatically extracted (NSI Czech Republic - CENSUS 2001)
Municipality code	LAU2 code (different from the IDEN and COMM_ID)	Automatically extracted (NSI Czech Republic - CENSUS 2001)
Municipality name	Label used by the NSI Czech Republic	NSI Czech Republic - CENSUS 2001
Population, total	Population, total	NSI Czech Republic - CENSUS 2001
Believers	Believers	NSI Czech Republic - CENSUS 2001
Roman Catholic Church	Roman Catholic Church	NSI Czech Republic - CENSUS 2001
Czechoslovak Hussite Church	Czechoslovak Hussite Church	NSI Czech Republic - CENSUS 2001

Evangelical Church of Czech Brethren	Evangelical Church of Czech Brethren	NSI Czech Republic - CENSUS 2001
Orthodox Church	Orthodox Church	NSI Czech Republic - CENSUS 2001
Jehovah's Witnesses	Jehovah's Witnesses	NSI Czech Republic - CENSUS 2001
Undenominational	Undenominational	NSI Czech Republic - CENSUS 2001
Unknown Denomination	Unknown Denomination	NSI Czech Republic - CENSUS 2001
LAU2 code	LAU2 code (identical to the IDEN and COMM_ID)	Automatically extracted (NSI Czech Republic - CENSUS 2001)
NUTS4	LAU1 hierarchical code in ancient format (NUTS)	Automatically extracted (NSI Czech Republic - CENSUS 2001)
Municipality code	LAU2 code (different from the IDEN and COMM_ID)	Automatically extracted (NSI Czech Republic - CENSUS 2001)
Municipality name	Label used by the NSI Czech Republic	NSI Czech Republic - CENSUS 2001
Population, total	Population, total	NSI Czech Republic - CENSUS 2001
Economically active (EA), total	Economically active (EA), total	NSI Czech Republic - CENSUS 2001
employed persons	employed persons	NSI Czech Republic - CENSUS 2001
EA pensioners	EA pensioners	NSI Czech Republic - CENSUS 2001
women on maternity leave	women on maternity leave	NSI Czech Republic - CENSUS 2001
unemployed persons	unemployed persons	NSI Czech Republic - CENSUS 2001
Economically inactive (EI), total	Economically inactive (EI), total	NSI Czech Republic - CENSUS 2001
EI pensioners	EI pensioners	NSI Czech Republic - CENSUS 2001
Pupils,students, apprentices	Pupils,students, apprentices	NSI Czech Republic - CENSUS 2001
Economic activity not identified	Economic activity not identified	NSI Czech Republic - CENSUS 2001
LAU2 code	LAU2 code (identical to the IDEN and COMM_ID)	Automatically extracted (NSI Czech Republic - CENSUS 2001)
NUTS 4	LAU1 hierarchical code in ancient format (NUTS)	Automatically extracted (NSI Czech Republic - CENSUS 2001)
Municipality code	LAU2 code (different from the IDEN and COMM_ID)	Automatically extracted (NSI Czech Republic - CENSUS 2001)
Municipality name	Label used by the NSI Czech Republic	NSI Czech Republic - CENSUS 2001
Commuters to work	Commuters to work	NSI Czech Republic - CENSUS 2001
within municipality	within municipality	NSI Czech Republic - CENSUS 2001
within district	within district	NSI Czech Republic - CENSUS 2001
within region	within region	NSI Czech Republic - CENSUS 2001
into other region	into other region	NSI Czech Republic - CENSUS 2001
Commuters to work daily out of municipality	Commuters to work daily out of municipality	NSI Czech Republic - CENSUS 2001
Pupils commuting to schools daily out of municipality	Pupils commuting to schools daily out of municipality	NSI Czech Republic - CENSUS 2001
LAU2 code	LAU2 code (identical to the IDEN and COMM_ID)	Automatically extracted (NSI Czech Republic - CENSUS 2001)
NUTS4	LAU1 hierarchical code in ancient format (NUTS)	Automatically extracted (NSI Czech Republic - CENSUS 2001)
Municipality code	LAU2 code (different from the IDEN and COMM_ID)	Automatically extracted (NSI Czech Republic - CENSUS 2001)
Municipality name	Label used by the NSI Czech Republic	NSI Czech Republic - CENSUS 2001
Dwelling households, total	Dwelling households, total	NSI Czech Republic - CENSUS 2001
with 1 PV*	with 1 PV*	NSI Czech Republic - CENSUS 2001
with 2+PV*	with 2+PV*	NSI Czech Republic - CENSUS 2001
Private households	Private households	NSI Czech Republic - CENSUS 2001
with 1 census household	with 1 census household	NSI Czech Republic - CENSUS 2001
with 2 and over census household	with 2 and over census household	NSI Czech Republic - CENSUS 2001
Census households (C-H), total	Census households (C-H), total	NSI Czech Republic - CENSUS 2001
Two-parent families	Two-parent families	NSI Czech Republic - CENSUS 2001
with dependent children	with dependent children	NSI Czech Republic - CENSUS 2001
Lone-parent families	Lone-parent families	NSI Czech Republic - CENSUS 2001
with dependent children	with dependent children	NSI Czech Republic - CENSUS 2001
Non-family households	Non-family households	NSI Czech Republic - CENSUS 2001
Households of individuals	Households of individuals	NSI Czech Republic - CENSUS 2001



LAU2 code	LAU2 code (identical to the IDEN and COMM_ID)	Automatically extracted (NSI Czech Republic - CENSUS 2001)
NUTS4	LAU1 hierarchical code in ancient format (NUTS)	Automatically extracted (NSI Czech Republic - CENSUS 2001)
Municipality code	LAU2 code (different from the IDEN and COMM_ID)	Automatically extracted (NSI Czech Republic - CENSUS 2001)
Municipality name	Label used by the NSI Czech Republic	NSI Czech Republic - CENSUS 2001
Houses, total	Houses, total	NSI Czech Republic - CENSUS 2001
Permanently occupied houses	Permanently occupied houses	NSI Czech Republic - CENSUS 2001
Family houses	Family houses	NSI Czech Republic - CENSUS 2001
Multi-dwelling houses	Multi-dwelling houses	NSI Czech Republic - CENSUS 2001
Houses by ownershipprivate persons	Houses by ownershipprivate persons	NSI Czech Republic - CENSUS 2001
Houses by ownershipcommunity,state	Houses by ownershipcommunity,state	NSI Czech Republic - CENSUS 2001
Houses by ownershiphousing association	Houses by ownershiphousing association	NSI Czech Republic - CENSUS 2001
Houses builtup to 1919	Houses builtup to 1919	NSI Czech Republic - CENSUS 2001
Houses built1920-1945	Houses built1920-1945	NSI Czech Republic - CENSUS 2001
Houses built1945-1980	Houses built1945-1980	NSI Czech Republic - CENSUS 2001
Houses built1981-2001	Houses built1981-2001	NSI Czech Republic - CENSUS 2001
LAU2 code	LAU2 code (identical to the IDEN and COMM_ID)	Automatically extracted (NSI Czech Republic - CENSUS 2001)
NUTS4	LAU1 hierarchical code in ancient format (NUTS)	Automatically extracted (NSI Czech Republic - CENSUS 2001)
Municipality code	LAU2 code (different from the IDEN and COMM_ID)	Automatically extracted (NSI Czech Republic - CENSUS 2001)
Municipality code	Label used by the NSI Czech Republic	NSI Czech Republic - CENSUS 2001
Houses, total	Houses, total	NSI Czech Republic - CENSUS 2001
by floor (above ground)1-2	by floor (above ground)1-2	NSI Czech Republic - CENSUS 2001
by floor (above ground)3-4	by floor (above ground)3-4	NSI Czech Republic - CENSUS 2001
by floor (above ground)5+	by floor (above ground)5+	NSI Czech Republic - CENSUS 2001
Sewage: connection to the public system	Sewage: connection to the public system	NSI Czech Republic - CENSUS 2001
Water supply system	Water supply system	NSI Czech Republic - CENSUS 2001
Gas supply	Gas supply	NSI Czech Republic - CENSUS 2001
Central heating	Central heating	NSI Czech Republic - CENSUS 2001
LAU2 code	LAU2 code (identical to the IDEN and COMM_ID)	Automatically extracted (NSI Czech Republic - CENSUS 2001)
NUTS4	LAU1 hierarchical code in ancient format (NUTS)	Automatically extracted (NSI Czech Republic - CENSUS 2001)
Municipality code	LAU2 code (different from the IDEN and COMM_ID)	Automatically extracted (NSI Czech Republic - CENSUS 2001)
Municipality name	Label used by the NSI Czech Republic	NSI Czech Republic - CENSUS 2001
Dwellings, total	Dwellings, total	NSI Czech Republic - CENSUS 2001
Permanently occupied dwellings	Permanently occupied dwellings	NSI Czech Republic - CENSUS 2001
Family houses	Family houses	NSI Czech Republic - CENSUS 2001
Multi-dwelling houses	Multi-dwelling houses	NSI Czech Republic - CENSUS 2001
Unoccupied dwellings in permanently occupied houses	Unoccupied dwellings in permanently occupied houses	NSI Czech Republic - CENSUS 2001
Unoccupied dwellings in unoccupied houses	Unoccupied dwellings in unoccupied houses	NSI Czech Republic - CENSUS 2001
occupied temporarily	occupied temporarily	NSI Czech Republic - CENSUS 2001
used for recreation	used for recreation	NSI Czech Republic - CENSUS 2001
LAU2 code	LAU2 code (identical to the IDEN and COMM_ID)	Automatically extracted (NSI Czech Republic - CENSUS 2001)
NUTS4	LAU1 hierarchical code in ancient format (NUTS)	Automatically extracted (NSI Czech Republic - CENSUS 2001)
Municipality code	LAU2 code (different from the IDEN and COMM_ID)	Automatically extracted (NSI Czech Republic - CENSUS 2001)
Municipality name	Label used by the NSI Czech	NSI Czech Republic - CENSUS 2001

	Republic	
Permanently occupied dwellings, total	Permanently occupied dwellings, total	NSI Czech Republic - CENSUS 2001
by legal reason of use : in own house	by legal reason of use : in own house	NSI Czech Republic - CENSUS 2001
by legal reason of use : in own dwelling	by legal reason of use : in own dwelling	NSI Czech Republic - CENSUS 2001
by legal reason of use : rented	by legal reason of use : rented	NSI Czech Republic - CENSUS 2001
by legal reason of use : in dwelling of housing association	by legal reason of use : in dwelling of housing association	NSI Czech Republic - CENSUS 2001
1 living room	1 living room	NSI Czech Republic - CENSUS 2001
2 living rooms	2 living rooms	NSI Czech Republic - CENSUS 2001
3 living rooms	3 living rooms	NSI Czech Republic - CENSUS 2001
4 living rooms	4 living rooms	NSI Czech Republic - CENSUS 2001
5+ living rooms	5+ living rooms	NSI Czech Republic - CENSUS 2001
Iden	LAU2 code (identical to the IDEN and COMM_ID)	Automatically extracted (NSI Czech Republic - CENSUS 2001)
OBJECTID	Inner code used in ARCVIEW	GISCO database
COMM_ID	Basemap code	GISCO database
LAU2code	LAU2 code (identical to the IDEN and COMM_ID)	GISCO database
NUTS4	LAU1 hierarchical code in ancient format (NUTS)	Automatically extracted (NSI Czech Republic - CENSUS 2001)
Municipality code	LAU2 code (different from the IDEN and COMM_ID)	Automatically extracted (NSI Czech Republic - CENSUS 2001)
Municipality name	Label used by the NSI Czech Republic	NSI Czech Republic - CENSUS 2001
Permanently occupied dwellings, total	Permanently occupied dwellings, total	NSI Czech Republic - CENSUS 2001
dwellings by basic amenities : Gas supply in dwelling	dwellings by basic amenities : Gas supply in dwelling	NSI Czech Republic - CENSUS 2001
dwellings by basic amenities : Water supply in dwelling	dwellings by basic amenities : Water supply in dwelling	NSI Czech Republic - CENSUS 2001
dwellings by basic amenities : Private flush toilet	dwellings by basic amenities : Private flush toilet	NSI Czech Republic - CENSUS 2001
dwellings by basic amenities : Bathroom, shower inside dwelling	dwellings by basic amenities : Bathroom, shower inside dwelling	NSI Czech Republic - CENSUS 2001
dwellings by basic amenities : Central heating	dwellings by basic amenities : Central heating	NSI Czech Republic - CENSUS 2001
dwellings by basic amenities : Single-storey heating	dwellings by basic amenities : Single-storey heating	NSI Czech Republic - CENSUS 2001
Average number of : dwelling persons	Average number of : dwelling persons	NSI Czech Republic - CENSUS 2001
Average number of : persons per living room up to 8 m2	Average number of : persons per living room up to 8 m2	NSI Czech Republic - CENSUS 2001
Average number of: occupied living area per dwelling	Average number of: occupied living area per dwelling	NSI Czech Republic - CENSUS 2001
Average number of : occupied living area per 1 person	Average number of : occupied living area per 1 person	NSI Czech Republic - CENSUS 2001
Average number of : living rooms per dwelling	Average number of : living rooms per dwelling	NSI Czech Republic - CENSUS 2001

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