

# Urban Audit

## Methodological Handbook



EUROPEAN  
COMMISSION



THEME 1  
General  
statistics

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## 2 Spatial Observation Units in the Urban Audit

As already mentioned above, the Urban Audit aims to provide information at three spatial levels:

- the Core City (administrative definition), as the basic level (Label “A”),
- the Larger Urban Zone (Label “LUZ”), which is an approximation of the functional urban zone centred around the town/ city, and
- the Sub-City District (Label “SCD”), which is a subdivision of the city according to strict criteria (5 000 - 40 000 inhabitants in each sub-town / city district).

The selection of participating towns / cities and the definition of the composition of the LUZ and the SCD in terms of spatial units need to respect certain criteria set by DG REGIO and statistical quality in general:

- the participating towns / cities in each country should represent about 20% of the population in that country
- the participating towns / cities should reflect a good geographic distribution within the country (peripheral, central)
- coverage should reflect more medium-sized towns / cities than was the case in the UAPP (medium-sized towns / cities having a population of between 50 000 - 250 000 inhabitants, large towns / cities with >250 000)
- there should be comparability of data to enable comparative analysis between towns / cities
- data should be available

This “sampling” procedure for the Urban Audit project was closely and specifically designed by Eurostat, DG REGIO, the NSOs and the towns / cities in the countries. The final selection of participating towns / cities in the Urban Audit has been a compromise between all aspects.

**The concept and the definition of the town / city** are important and, in future, should also be worked out in close co-operation with the individual towns / cities. In striving for **comparable** urban indicators, there is a need for two geographical units: the administrative town / city and the functional urban region of the town / city (FUR).

Towns and cities have, as local councils or governments, most of the responsibility for managing urban change. Very often, towns and cities are service providers and they develop and maintain the infrastructure; the relevant local administration is empowered to run the town / city. In this way, it is clear that information is available at an **administrative** level. More than this, urban areas also have an impact on surrounding areas in terms of commuting, job concentration, traffic systems etc. In this way, there is also a need for a delimitation of functional urban regions and a request of information on these larger “urban” entities.

The definition of the Larger Urban Zone, which corresponds to an estimate of the Functional Urban Region (FUR), is a complex issue. The definition of FURs varies according to the national and local context, although the FUR is very often identified as being an employment zone or a commuting area.

There are variables for which the town / city is relevant (for example municipal expenditure and provision of services for the inhabitants of the town / city) and others for which only the FUR makes sense (for example GDP). There are also variables (such as crime, by way of example) which are difficult to render comparable from one country to another or from city to city.

Statistics at a **sub-city level** are more a matter for the cities themselves. The bigger the city, the more relevant such statistics, as there are likely to be significant intra-city disparities. This is also the level at which the public will identify as it corresponds to neighbourhoods with their own individual characteristics.

The approach of collecting data from existing sources makes it difficult and sometimes impossible to achieve comparability of variables over the entire “population”, i.e. the 189 Cities in the EU (plus 69 in Candidate Countries). The National Urban Audit Coordinators tried hard to achieve comparability of urban data, at least within their own country. Wherever it was not possible, attempts were made to estimate the data; where this has been achieved it is noted in the database with a flag or free-text in the metadata of the UA database.

In the following section, the concepts of the three spatial levels are described together with the results of the selection procedure.

## 2.1 Three Spatial Levels

### 2.1.1 The Town / City (A)

The **Town / City** has generally been defined as the **Administrative Town / City** (e.g. the central municipality), which is responsible for local government. In most countries, the town / city **corresponds** to the concept of **Local Administrative Unit (LAU) level 2** (formerly NUTS<sup>1</sup> level 5).

Due to varying structures of local government, this town / city concept is not always comparable between the countries. In the discussions with the NSOs in defining the appropriate spatial units for the town / city level, the **emphasis** has been on identifying a **town / city concept with political responsibility**. The following countries have defined the “town / city” in a **different way** to the LAU level 2 in the context of the Urban Audit:

- **Belgium**: Brussels consists of the “Région de Bruxelles”. This is a NUTS region at levels 1, 2 and 3 and it comprises 19 “communes / gemeenten”. Other UA towns / cities in Belgium correspond to LAU level 2 (one single “commune/gemeente”).
- **France**: Because the communes in France are relatively small in area, the larger towns and cities have long since expanded beyond the borders of the original “city”. In the Urban Audit, the concepts of “Communauté d’agglomération” and “Communauté urbaine” have been used to represent the city level. Many of these units have been established recently (in 2002 and 2003). They are kinds of inter-communal cooperation bodies taking care of tasks that individual communes in an agglomeration can do less well on their own. The “communautés” have a political function and their importance can be expected to grow in future.
- **Portugal**: LAU level 1 units called “concelhos” have been used as cities. The smaller towns have a rather large area, including surrounding rural areas.

- **United Kingdom**: LAU level 1 units that are termed “districts” have been used.
- **Ireland**: LAU level 1 units have been used - for the selected Urban Audit towns. This concept corresponds to “city” (formerly “County Borough”). In Dublin, the “City” does not cover the whole urban area.

#### Candidate Countries

- **Cyprus**: The capital, Lefkosia, has been delineated to encompass the urban area. This includes 9 Local Administrative Units.
- **Malta**: The capital, Valletta, has been delineated to encompass the districts Inner Harbour and Outer Harbour. The second UA town, Gozo, has been defined as the whole island of Gozo.

### Kernel (K)

Applying the concept of the “Administrative City” to London and Paris does not yield comparable spatial units. “Greater London” (as classified at the NUTS level 1 region UKI, has a population of 7.2 Mio inhabitants), whereas “Paris” (as classified at the NUTS level 3 region FR101, has a population of 2.1 Mio inhabitants).

To facilitate better comparison between the two largest cities in Europe and with other large cities, an additional spatial unit, the “Kernel” has been developed.

For London, the Kernel consists of “Inner London”, which is roughly comparable to the (administrative) city of Paris in terms of size. For Paris, the Kernel includes the first “small ring” of “departments” around the city. The table below explains the different spatial concepts in London and Paris. It is to be noted that the “Kernel” corresponds to a different spatial hierarchy in the two cities.

**Table 3: The “Kernels” in Paris and London**

	Smallest (comparable to the “Administrative City” of other large cities)	Medium (for comparison of these two cities)	Largest
<b>London</b>	K (Inner London, an amalgamation of 13 boroughs) (c. 2.8 million inhabitants) 1 x NUTS 2 region	A (Greater London) (c. 7.2 million inhabitants) 1 x NUTS 1 region (equals 2 x NUTS 2 regions)	LUZ (c. 11.6 million inhabitants) Greater London + a large number of surrounding LAU 2 districts
<b>Paris</b>	A (20 “arrondissements”) (c. 2.1 million inhabitants) 1 x NUTS 3 region	K (“petite couronne”) (c. 6.2 million inhabitants) 4 x NUTS 3 regions	LUZ (“grande couronne”) (c. 11.0 million inhabitants) 1 x NUTS 2 region

<sup>1</sup> NUTS: Nomenclature of Territorial Statistical Units

## 2.1.2 The Larger Urban Zones (LUZ)

The same reasoning - comparability and availability of data - applies to information on the larger urban agglomeration. After a thorough discussion with the NSOs it was decided that the concept of “**Functional Urban Regions**” (FUR) would be used as a **proxy** for the **Larger Urban Zones (LUZ)** in the Urban Audit.

This concept is not defined for all cities involved in the Urban Audit, and even where it is defined the criteria and principles are not the same. FURs are also most commonly defined by grouping together LAU level 2 (municipalities; former NUTS 5 regions), without further consideration of administrative delineations on higher levels. Thus, it is questionable to what extent the information requested by the Urban Audit is available for the FUR. Nevertheless, the FUR is the spatial unit that could provide the ‘truest’ and most comparable data on functional towns and cities.

For this reason, the **FURs are approximated** using **NUTS level 3** or, if available, **LAU level 1** data. Definitions of the LUZ by LAU level 2 regions (Local Administrative Unit) are also accepted, provided the availability of statistical data is sufficient at this detailed level.

An **advantage** of this approximation approach is the **wealth of statistical data** available for NUTS regions, in particular at **NUTS level 3**. These regions are already widely in use for regional statistics, and in most cases they correspond to unique administra-

tive areas/regions. Therefore, data availability is relatively high. Another advantage is that as the NUTS classification is relatively **stable over time**, statistical time series may be used for the “proxy agglomerations”. Provided that data for the different variables are available at **LAU level 2** (commune/ward/Gemeinde or similar units), a number of LAU level 2 units can be used to approximate the LUZ. It is important to bear in mind that the target unit is the *functional* urban region, not the *morphological* agglomeration (built-up area).

In several cases, Urban Audit cities are situated very near each other and form part of one conurbation. In such cases, a common LUZ has been defined for 2 or more cities of the Urban Audit. Examples are the “Ruhrgebiet” in Germany, West Yorkshire in the UK and Katowice-Zory in Poland.

A special situation in France must be mentioned. Since the city concept in France is the political “cooperation bodies” covering several “communes” and the LUZ concept corresponds to the true functional regions (“Aire Urbaine” defined with criteria of commuting intensity), there is a poor relationship between the city and the LUZ. In occasional cases the city stretches further away than the LUZ. This is the case in Marseille and Nice and in several medium-sized cities.

The table below shows what kind of units have been used to define the LUZ in the different countries.

**Table 4: Spatial Units used to compose the Larger Urban Zone**

Country	N° of cities with LUZ	Building blocks
BE	All 6	Communes NUTS 5 - delimitation of commuting zones based on 1991 Census
DK	All 4	Amter (NUTS 3). Copenhagen: several units
DE	28 of 35 (common LUZ for Ruhr)	Groups of NUTS 3 /Kreise
ES	All 18	Provincias / NUTS 3
EL	All 9	Nomos (NUTS 3) except outlying islands which belong to Attiki
FR	27 of 31	Aires Urbaines, statistically defined. Do not exist in the overseas departments (DOM).
IE	3 of 4	Two NUTS 3 units for Dublin. NUTS 5 used for Cork and Limerick.
IT	All 27	Province NUTS 3
LU	1 of 1	Communes NUTS 5
NL	All 10	COROP-regios (NUTS 3), in some cases 2 regions for one LUZ
AT	All 3	NUTS 3 units (Groups of political “Bezirke”). LUZ of Vienna has 3 units
PT	2 of 8 (the other 6 towns use one concelho each)	Concelhos NUTS 4
FI	All 4	NUTS 5 units which constitute metropolitan areas
SE	All 5	NUTS 3 for Stockholm; NUTS 5 units which constitute metropolitan areas for 2 cities; Local Labour Market areas for remaining 2 towns
UK	20 of 24 (some cities share a common LUZ)	Districts/Unitary Areas (NUTS 4), with one exception that will use NUTS 5 (Lincoln)

**Commercial (service) sector:** commercial and public sector premises, e.g. shops, offices, warehouses, etc, located within the designated area.

**Mtoe:** million tonnes of oil equivalent. One tonne of oil equivalent (toe) is defined as  $10^7$  kilocalories (41.868 gigajoules). This quantity of energy is, within a few per cent, equal to the net heat content of 1 tonne of crude oil.

1 barrel (=159 litres) of gasoline (petrol) corresponds to 0.12 tonnes of oil equivalent (see <http://www.iea.org/stats/files/units.htm>)

1 litre of gasoline (petrol) =  $0.12 / 159 = 0.00075471698$  toe

1 000 litre = 0.7547 toe

Regarding the national level data that is presented in conjunction with the urban level data for this variable, the data available from NewCronos includes the preparation of hot water as it is assumed that it was probably not possible for the NSIs to separate the fuel used for “room heating” from that used for “domestic hot water”. In the UK, kerosene is also included because it is the main source of fuel heating in the UK.

### 3.8 Travel and Transport (TT)

#### Travel Patterns (TT1)

##### Variables

Code	Variable	Spatial Unit
TT1064V	People commuting into the city (number)	A
TT1065V	People commuting out of the city (number)	A
TT1066V	Length of public transport network (km)	A,L
TT1068V	Total kilometres driven in public transport (per day)	A
TT1067V	Public transport supply: Number of places multiplied by the kilometres driven (places*km)	A
TT1057V	Number of private cars registered	A,L
TT1058V	Road accidents resulting in death or serious injury (number)	A,L

##### Variables (= Indicators)

Code	Variable	Spatial Unit
TT1002V	Percentage of journeys to work by rail/metro	A,L
TT1003V	Percentage of journeys to work by car	A,L
TT1004V	Percentage of journeys to work by bus	A,L
TT1005V	Percentage of journeys to work by tram	A,L
TT1006V	Percentage of journeys to work by motor cycle	A,L
TT1007V	Percentage of journeys to work by bicycle	A,L
TT1008V	Percentage of journeys to work by foot	A,L
TT1009V	Percentage of journeys to work by other modes	A,L
TT1059V	Average number of occupants of motor cars	A
TT1019V	Average time of journey to work (minutes)	A,L
TT1062V	Average speed of inner-city car traffic (km/hour) during the rush hour	A
TT1063V	Average waiting time for a bus (minutes) in the rush hour	A,L
TT1071V	Accessibility by air (index, EU27=100)	A,L
TT1072V	Accessibility by rail (index, EU27=100)	A,L
TT1073V	Accessibility by road (index, EU27=100)	A,L
TT1074V	Multimodal accessibility (index, EU27=100)	A,L

## Indicators

Code	Indicator	Numerator	Denominator	Spatial Unit
TT1057I	Number of registered cars per 1 000 population	TT1057V * 1000	DE1001V	A,L
TT1058I	Road accidents (death or serious injury) per 1 000 population	TT1058V * 1000	DE1001V	A,L
TT1064I	Proportion of those employed in the city who are in-commuters	TT1064V	EC2020V	A
TT1065I	Proportion of those living in the city who are out-commuters	TT1065V	EC1034V + EC1088V	A
TT1066I	Length of public transport network as a proportion of land area	TT1066V	EN5003V	A,L
TT1076I	Length of public transport network per capita	TT1066V	DE1001V	A,L
TT1101I	Ratio of day-time to night-time population	EC2020V	EC1034V + EC1088V	A
TT1068I	Total km driven in public transport per capita per day	TT1068V	DE1001V	A

## Remarks

**Transport:** in general intra-urban and commuter transport is reported, not long distance trains for example.

**Journey to work:** refers to shortest trip (from place of residency to the work place, including change of transport mode) by commuters travelling to work places located within the boundary and should include trips by commuters not resident within the boundary but working within.

**Average time:** average time in minutes taken to travel between place of residence and work place. The work place must be located within the specified boundary while the place of residency might be anywhere, including across borders.

**Average speed of inner city traffic:** the average speed during the morning rush hour (8-10 am) is to be reported. This is information enables key policy impacts to be monitored e.g. fostering public transport (increase of average speed ? decrease of energy consumption ? etc.).

**People commuting into the city area (TT1064V):** residents of areas outside the city, whose employment location or client premises are within the city area.

**People commuting out of the city area (TT1065V):** residents of the city area, whose employment location or client premises are outside the city area.

**Public transport:** a network of buses, trains, tram etc. that run according to a planned time schedule and that anyone can use. The provider of the above mentioned services may be either the municipal authority or privately owned enterprises.

**Average waiting time for a bus (TT1063V)** refers to the waiting time for a bus (not: tram or metro) during the rush hours (8-10 am) and reflects the frequency of scheduled bus trips within the specified boundary (City level: at main bus station; LUZ: at terminal station to city centre). A practical estimate for this variable is division by two of the average

time between two bus trips. This information enables the quality of service of public transport offered to the citizens to be monitored, using the example of buses.

**Length of public transport network (TT1066V):** sum of public transport lines taking care to avoid double counting, for example when several lines use the same road / track. If data with double counting is supplied, it is clearly marked in a footnote.

**Public transport supply (TT1067V):** Number of places multiplied by kilometres driven (=TT1068V)": "Places" includes seats and standing places. The variable aims at knowing about the total volume of public transport available.

**Total kilometres driven in public transport per day (TT1068V):** sum (km) of all lines of public transport (with double counting).

**Motor Car:** in the Urban Audit the definition of the "passenger car" should follow that of the Eurostat "Glossary for transport statistics" but exclude cars registered by enterprises (Eurostat (2003): *Glossary for transport statistics - Document prepared by the Intersecretariat Working Group on Transport Statistics, p34*)

**Passenger car:** Road motor vehicle, other than a motor cycle, intended for the carriage of passengers and designed to seat no more than nine persons - including the driver. The term "passenger car" therefore covers micro-cars (need no permit to be driven), taxis and hired passenger cars, provided that they have fewer than ten seats. This category may also include pick-ups.

**Car registrations:** total number of private passenger cars registered (by natural persons, not business, enterprises, so no taxis or hire cars registered by enterprises) to addresses within boundary on the 1<sup>st</sup> of January of the reference year. This is the total stock of cars, not just new registrations.

**Injury Accident:** the definition of Injury Accident follows that of the Eurostat "Glossary for transport statistics":

Any accident involving at least one road vehicle in motion on a public road or private road to which the public has right of access, resulting in at least one injured or killed person.

Included are: collisions between road vehicles ; between road vehicles and pedestrians; between road vehicles and animals or fixed obstacles and with one road vehicle alone. Included are collisions between road and rail vehicles. Multi-vehicle collisions are counted as only one accident provided that any successive collisions happen at very short intervals. Injury accident excludes accidents incurring only material damage.

**Serious injury:** an injury for which a person is detained in hospital as an “in-patient” or any of the following injuries whether or not the injured person is detained in hospital: fractures, concussion, internal injuries, crushing, severe cuts and lacerations, severe general shock requiring medical treatment and injuries causing death 30 or more days after the accident.

Regarding the national level data that is presented in conjunction with the urban level data for this variable, the data available from NewCronos refers to number of persons, not to the number of accidents. It has been decided to use this data with a footnote.

**Occupants:** simple count of number of occupants.

**Accessibility :** Data source for this variable is the European Spatial Planning Observation Network (ESPON). The data correspond to the Potential Accessibility Indicators proposed by the Study Programme on European Spatial Planning (ESKELINNEN, H., FÜRST, F., SCHÜRMAN, C., SPIEKERMANN, K., WEGENER, M. (2002): *Indicators of Geographical Position.- Final Report of the Working Group “Geographical Position” of the Study Programme on European Spatial Planning.- Dortmund, IRPUD.*

**Potential accessibility** is based on the assumption that the attraction of a destination increases with size, and declines with distance, travel time or cost. Destination size is usually represented by population or economic indicators such as GDP or income. Accessibility to population is seen as an indicator for the size of market areas for suppliers of goods and services; accessibility to GDP as an indicator of the size of market areas for suppliers of high-level business services. Potential accessibility is founded on sound behavioural principles but contains parameters that need to be calibrated and their values cannot be expressed in familiar units.” That is why the indicators are standardized to the average accessibility of the ESPON space (= EU15 + 12 Candidate Countries). The method is described in more detail in BAPTISTE, H et. al. (2003) p. 163ff.

### 3.9 Information Society (IT)

#### Users and Infrastructure (IT1)

##### Variables

Code	Variable	Spatial Unit
IT1001V	Number of households with a computer	A
IT1002V	Percent of population over 15 years who regularly use the Internet	A
IT1004V	Number of telephone main lines within the city [country for national data]	A
IT1010V	Households with broadband access	A

##### Variables (= Indicators)

Code	Variable	Spatial Unit
IT1005V	Percentage of households with Internet access at home	A
IT1006V	Computers per 100 pupils at primary education level	A
IT1007V	Computers per 100 pupils at secondary education level	A
IT1008V	Number of students of Information, Communications Technology (ICT) at university level or equivalent	A
IT1009V	Number of Public Internet Access Points (PIAPs)	A

##### Indicators

Code	Indicator	Numerator	Denominator	Spatial Unit
IT1001I	Proportion of households with a computer	IT1001V	DE3001V	A
IT1010I	Proportion of households with access to broadband	IT1010V	DE3001V	A