General and regional statistics

Authors: Atanas TRIFONOV, Torben WILLADSEN, Isabelle COLLET

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Maritime service areas

Highlighting the impact of coastal maritime activities on the hinterland

Maritime service (impact) areas[1] account for 79 % of the population of the EU coastal regions[2] (NUTS3) and cover 36 % of their surface area. However, as can be seen in Map 1, the share of the EU regional population living in maritime service areas was highly dispersed. The aim of this spatial analysis is to map the maritime service areas and to provide related sets of socio-economic data referring to surface area and population. This paper presents the method and data used during the study and the first outputs.

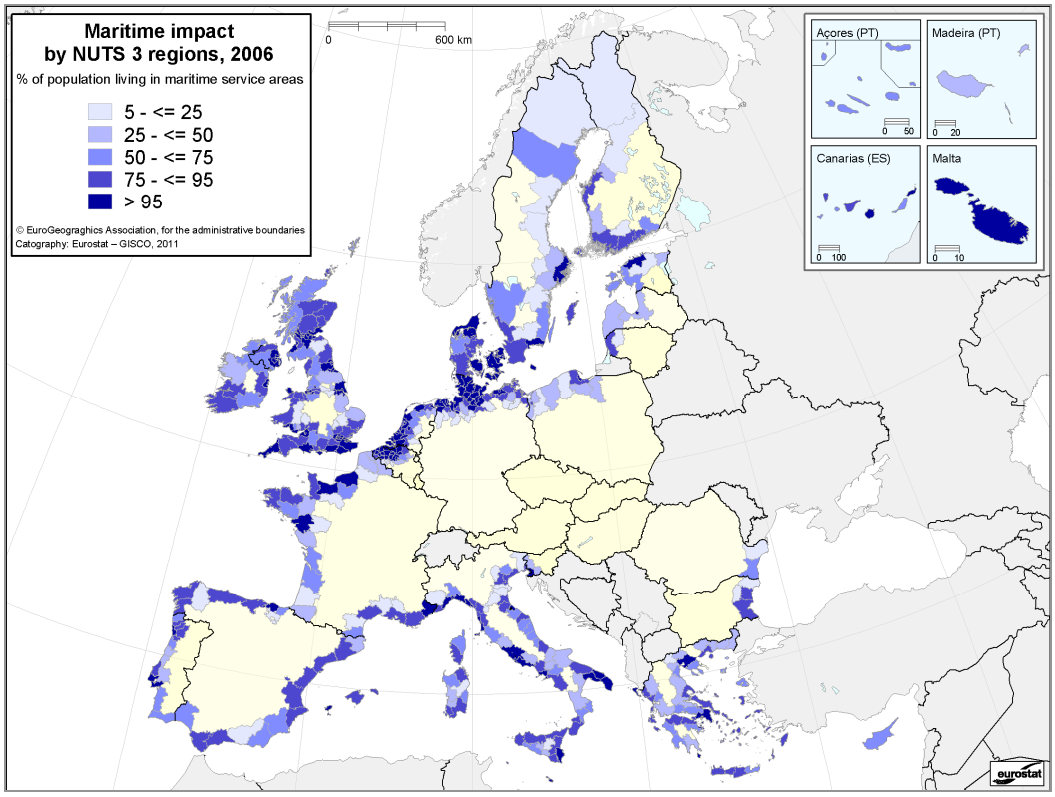
The outputs of this analysis will be used as part of the EU Integrated Maritime Policy[3] to define a socio-economic profile of the EU coastal regions and to highlight the inland impact of maritime activities on different geographic scales.

[1] *See the Methodological notes*

[2] *See the Methodological notes for further details on EU coastal regions.*

[3] *In October 2007, the Commission presented its vision for an Integrated Maritime Policy for the European Union.*

Map 1: Share of the population of the EU regions living in maritime service areas



Population figures are based on census 2001 data using NUTS3 2006 regions

Source: Eurostat (Gisco_database)

Impact of maritime service areas on EU coastal regions

Basically, maritime service areas reflect the attractiveness and inland influence of the maritime activities located along the European coast. They affect more than 26 700 local administrative units (LAU2)[4] in EU coastal regions, account for 79 % of their population and cover 36 % of the surface area of these regions, as shown in Table 1. The specific shapes of these areas especially bring out the type of impact of maritime activities within or beyond EU coastal regions. In particular, the outlines of the shapes can be highlighted and disseminated[5] using geographic information system (GIS) tools. Moreover, the structural variables such as the number of LAUs affected and the percentage of the population or surface area covered by maritime service areas in EU coastal regions reflect the scale of this impact.

Furthermore, these background and structural data can then be introduced into classification or multi-factorial analyses, in order to assess more accurately variables such as employment and value added generated by maritime activities in EU coastal regions on different geographic scales. The outputs can be used to study the scope of the EU Integrated Maritime Policy.

[4] *See the Methodological notes for further details on LAU2.*

[5] *See the Methodological notes for further detail on access.*

Table 1: LAUs, population and surface area affected by maritime service areas in EU coastal regions

EU coastal regions by MS	Number of communes impacted by maritime service areas	Share of communes with more than 5% of their surface covered by maritime service areas (%)	Share of the EU coastal regions population living in maritime service areas (%) (1)	Share of the EU coastal regions surface covered by maritime service areas (%) (2)
Total EU Coastal regions	26 720	95	79	36
BE	150	100	100	99
BG	350	88	70	33
CY	460	90	52	45
DE	1 820	99	93	89
DK	270	99	94	88
EE	100	84	69	29
EL	760	95	80	46
ES	1 690	94	81	40
FI	170	89	69	14
FR*	5 760	95	60	28
IE	2 130	91	74	40
IT	2 740	95	78	49
LT	30	86	78	51
LV	90	77	73	20
MT	70	100	100	100
NL	260	99	95	80
PL	120	88	50	19
PT	1 820	93	82	47
RO	50	62	47	6
SE	170	88	69	20
SI	20	89	60	42
UK	7 690	98	86	51

*Excluding outermost French coastal regions
(1) Population figures are based on census 2001; (2) Surface figures used NUTS3 2006 regions
Source: Eurostat (Gisco_database)

Calculating the maritime service areas

The analysis started by calculating and delineating the maritime service areas. The study applied spatial analysis tools using both geographical datasets and statistical information. The actual inputs for the spatial analysis consisted of specific points along the coastline, the design and characteristics of the transport network[6], commuting time and a classification of maritime

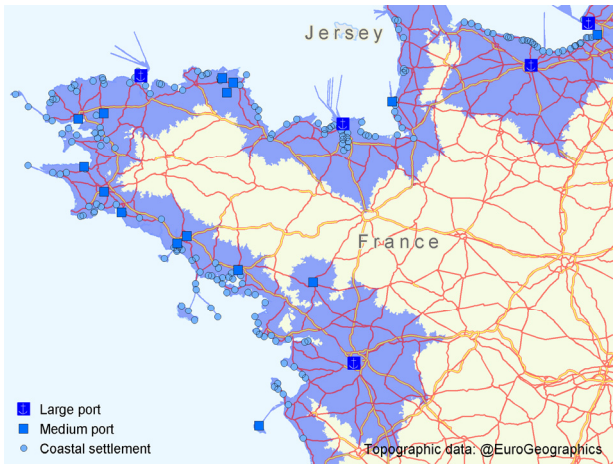
[6] *See the Methodological notes for further details on Tele Atlas Multinet.*

ports. These inputs were considered for the EU as a whole. The maritime service areas are the areas that can be reached within a given travelling time, starting from a location at the coast and using the existing transport network. Map 2 shows one case: the maritime service areas calculated and outlined along the coastline of North-West France.
From a geographical perspective, the maritime activities and interactions between the sea and coastal regions are linked to points on the coast. These are referred to as 'focal points'[7] and can take the form either of single points (e.g. ports) or of a sequence of points (e.g. sea resorts and coastal strip settlements). The analysis uses more than ten thousand focal points, including one thousand ports ranked by size and all the settlements located within one kilometre of the EU27 coast.

The commuting time reflects the attractiveness and impact of the focal points. A longer commuting time was applied for larger ports, assuming greater attractiveness and impact. Two travel time values were used, one for large ports and another for smaller ports and coastal settlements. The commuting times were taken from the EU Working Conditions Survey[8].

Moreover, the road transport network and its characteristics take accessibility and topography into account.

Map 2: Maritime service areas along the French coastline



Source: Eurostat (Gisco_database)

[7] *See the Methodological notes for further details on the focal points of interaction.*

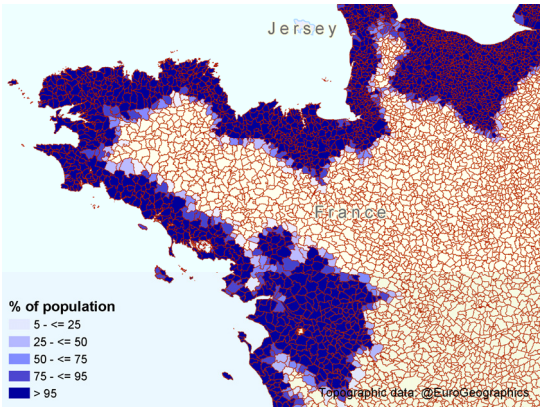
[8] *See the Methodological notes for further details on the Fourth Working Conditions Survey.*

Impact of maritime service areas in a specific surface area

The output of the spatial analysis can be used in two approaches, which cover several fields.

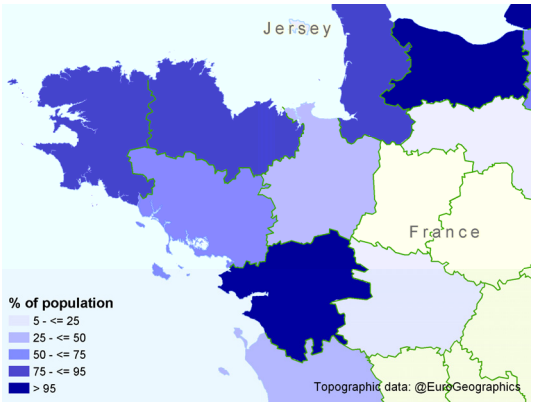
The first approach can be used for studying the impact or attractiveness of the surrounding ports and coastal settlements within a specific surface area, such as an LAU, a region, a country or another geographical level. As Map 2 shows, the first field of the output contains the shapes of maritime service areas. The delineation of the shapes may be used independently and take account of the administrative boundaries.

Map 3: Share of the population and surface area lying wihin the maritime service areas along the French coast



Population figures are based on census 2001 data.
Source: Eurostat (Gisco_database)

Map 4: Share of population living within maritime service areas in regions of North-West France



Population figures are based on census 2001 data using NUTS3 2006 regions
Source: Eurostat (Gisco_database)

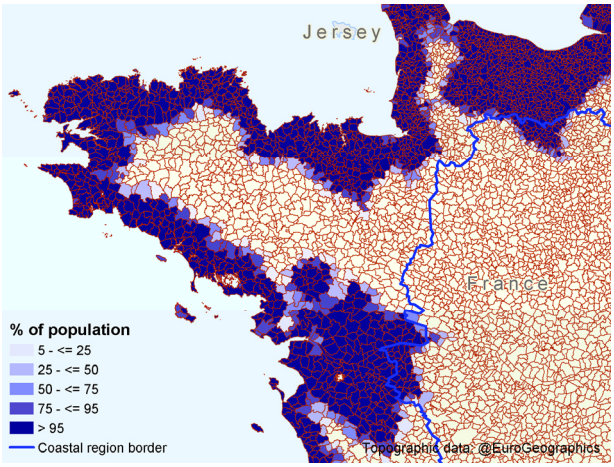
The second field of output is the structural indicator of population estimated for the territorial classification. First, the share of the population of each LAU living in the service areas was assumed to be equal to the percentage of the surface area of the LAU covered by the maritime service areas. Based on this assumption, Map 3 shows both the percentages of the population and the area of the LAU that lie within the maritime service areas.

The next step compared the population living in the maritime service areas with the regional population (NUTS3). As Map 4 shows, more than 90 % of the population of the French coastal region of Finistère live in maritime service areas. Using the same method, the indicator can also be estimated for the set of EU coastal regions by country, as in Table 1, or at different levels of the territorial classification (NUTS).

The output of the analysis can be used to compare the delineation of the maritime service areas, the share of the population affected and the regional boundaries. As Map 5 shows, most of the population of the French region of Loire-Atlantique live in maritime service areas and the maritime service areas extend beyond that region. This is mainly due to the attractiveness of Nantes-Saint-Nazaire and the good transport network. However, in the adjacent French region of Morbihan the maritime service areas and the population affected extend along the coastline.

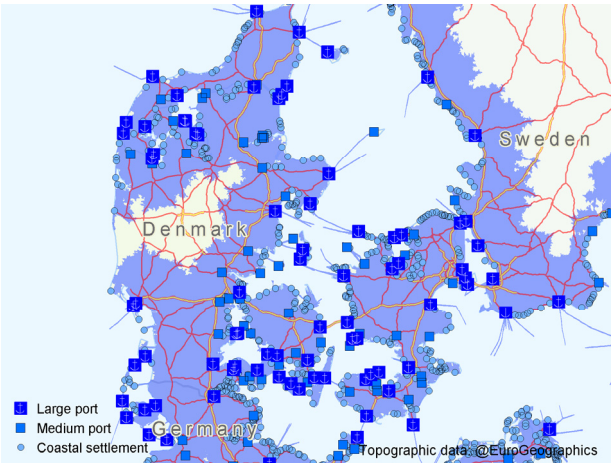
Lastly, the third field of output is the structural indicator of surface area. These indicators can be used independently to delineate the shape of the administrative boundaries. As Map 6 shows, in Denmark maritime service areas cover almost the entire country. However, some areas are still not covered and the image clearly shows that the maritime service areas are not entirely dependent on their proximity to the sea. At regional level, Map 7 shows that 68 % of the region of Vestjylland is covered by maritime service areas and as much as 98 % of the region of Østjylland.

Map 5: Population living in maritime service areas and border of French coastal regions



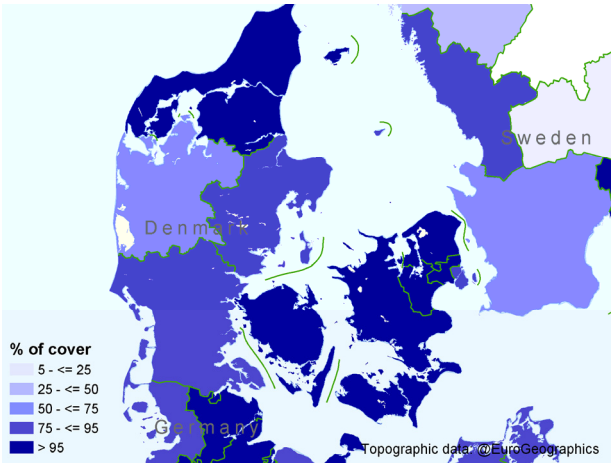
Population figures are based on census 2001 data.
Source: Eurostat (Gisco_database)

Map 6: Maritime service areas in Denmark



Source: Eurostat (Gisco_database)

Map 7: Share of the surface area of Danish regions covered by maritime service areas



Surface figures are based NUTS3 2006 regions.
Source: Eurostat (Gisco_database)

Maritime service areas of a specific port

This second approach can be used to study the impact of a single port or of a single interaction point on the surrounding areas. This dual approach also provides information on three fields: shape delineation and the two structural indicators of population by administrative units and surface area.

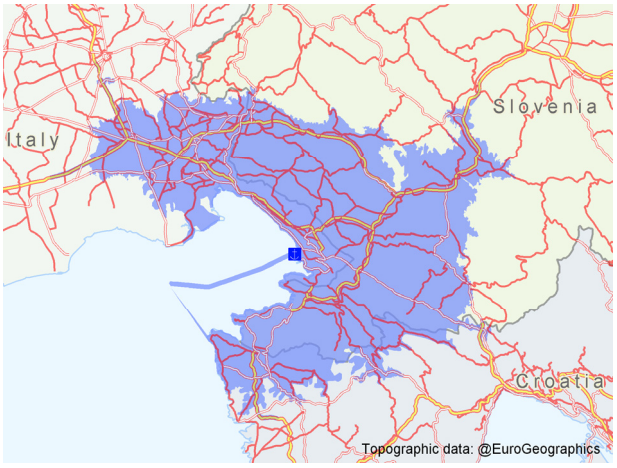
Among other things, the analysis provides information on the service areas of the individual EU27 maritime transport ports. Maritime ports, in particular ports for maritime transport, play a vital role in maritime impact. Ports are intrinsic part of the maritime and most maritime industries are concentrated in their vicinity. They also contribute to the economy of coastal regions and participate in maritime trade.

In order to estimate the influence of individual maritime ports, the spatial analysis provides data on the service areas of all ports covered by the study.

As Maps 8 and 9 show, the maritime service area of the Italian port of Trieste is relatively large. Its surface area is approximately 3 000 km² and encompasses 77 LAUs in the EU, including 17 beyond the national border. The maritime service area of the port of Trieste could be used to estimate the impact on the population and the surface area coverage extending beyond Italy's national boundaries on several administrative levels and geographical scales.

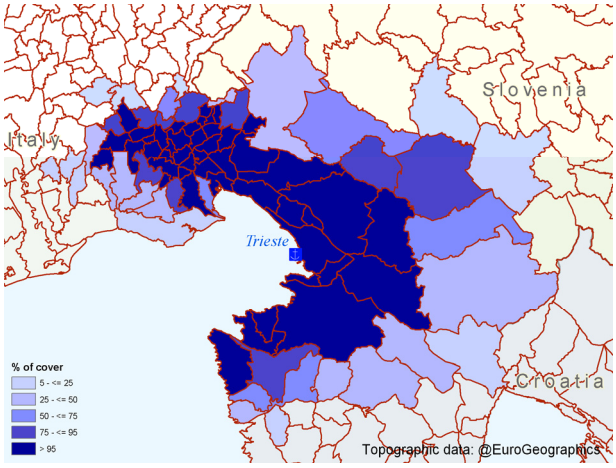
This output will be used to analyse the ports and, in particular, to determine, outline and evaluate the employment areas and their attractiveness.

Map 8: Maritime service area of the Italian port of Trieste



Source: Eurostat (Gisco_database)

Map 9: Area of the LAUs covered by the maritime service area of the port of Trieste



Source: Eurostat (Gisco_database)

Maritime service areas are linked to the importance of maritime ports

The importance of the maritime ports dataset lies, in particular, in the port classification. The classification is based on characteristics such as traffic type and traffic intensity, i.e. the gross weight of goods handled and number of passengers who embarked or disembarked in the ports. Following analysis of these characteristics, for the purposes of this study the ports were grouped into two categories: large ports and smaller ports.[9] It was assumed that the large ports in this classification would be more attractive and have a greater inland impact than the smaller ports.

[9] *See the Methodological notes for further details on port size.*

Using commuting time and the road transport network

The travel time and transport network determine the lengths of the journeys that delineate the shape and extent of the service areas. For the purposes of this analysis, the commuting time and road transport network are assumed to determine the extent of spatial distribution of the population and the areas involved in and affected by maritime activities. Both these factors have a strong impact on employment patterns and the attractiveness and shape of service areas. Given that the ultimate aim of the analysis is to evaluate the socio-economic impact of the maritime activities, the travel time values used are based on commuting time data and road transport network characteristics.

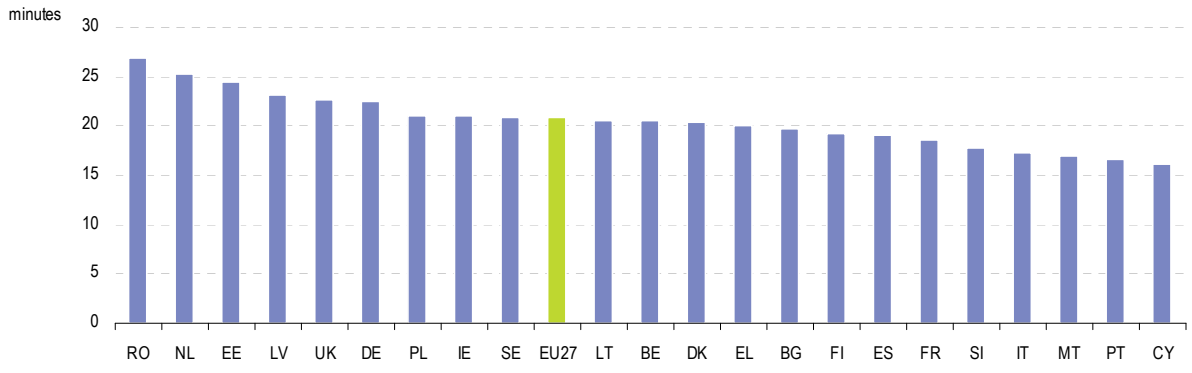
The Fourth Survey of Working Conditions (in 2007) provides the commuting time data for EU27. According to the results of this survey, workers in EU27 spend an average of 42 minutes every day travelling to and from work, which equals 21 minutes each way. The results show greater variability within countries (e.g. 85 % in Bulgaria) than between countries (around 10 %). According to this survey and other sources, the commuting time depends mainly on the size and attractiveness of the city and on the level of urbanisation at the start and end points of the journey. The variability of commuting time is also due to the shape and characteristics of road transport, such as size and speed limits. The Tele Atlas MultiNet[10] provides information on the shape of the transport network and characteristics such as speed limits.

Consequently, different commuting times are applied, depending on the port's size, and local variability is assessed on the basis of the transport network.

Two values are used for the travel time derived from the EU27 commuting time data, depending on the size of the port, i.e. 45 minutes for large ports and 20 minutes for smaller ports and coastal settlements. The purpose of the study is to provide the information in the most harmonised way across EU27. These two values are therefore used uniformly to calculate all service areas. However, the local characteristics were also taken into account by considering the transport network.

[10] *See the Methodological notes for further details on TeleAtlas Multinet*

Figure 1: Commuting time by countries for one journey, 2005



Source: (Fourth Working Condition Survey)

METHODOLOGICAL NOTES

EU coastal regions

An EU coastal region is a statistical region defined at NUTS3 level, responding to one of the following criteria:

Region with a sea border (372 meet this criterion);

Region with more than half of its population within 50 km from the sea (73 regions meet this criterion).

Hamburg (Germany) does not meet either of these criteria, but has been added to the list of EU coastal regions, because of its strong maritime influence.

Based on this definition, 446 EU coastal regions were identified in the 22 Member States with a coastline.

Maritime service areas

The maritime service areas are the areas that can be reached within a given travelling time, starting from a location at the coast and using the existing transport network. The selected travelling time is the commuting time. The applied commuting time depends on the points of interactions (large ports, small ports and coastal settlements).

The surface area of the maritime service areas was calculated by aggregating all the service areas of all maritime transport ports and coastal settlements in the EU. The aggregation method takes into account the coverage of a surface area, without double counting if several points affect the same areas.

The population housed in the maritime service areas was evaluated using the 2001 census data by LAU2. The population was estimated in proportion to the coverage. Each LAU2 has been affected to a NUTS3 2006.

The complete coverage of service areas from any port was calculated for each LAU2. This resulted in a set of 26 700 LAU2 with more than 5 % of their surface area covered by a service area.

NUTS: Nomenclature of territorial units

The NUTS classification is the common statistical classification of territorial units in order to enable collection, compilation and dissemination of harmonized regional statistics of the Union.

LAU2

To meet the demand for statistics at local level, Eurostat has set up a system of local administrative units (LAUs) compatible with NUTS.

At local level, two levels of LAU have been defined:

- The upper level (LAU1, formerly NUTS level 4) is defined for most, but not all, of the countries.
- The lower level (LAU2, formerly NUTS level 5) consists of municipalities or equivalent units in the 27 EU Member States.

Focal points of interaction

The focal points of interaction are: Large ports, small ports and coastal settlements. The focal points of interaction included around 400 large ports, 650 smaller ports and 9 260 coastal settlements.

Maritime transport port size

Large ports must meet one of the following criteria:

- Have handled over 10 million tonnes of goods for at least one year between 1997 and 2008;
- Have embarked/disembarked more than 100 000 passengers for at least one year between 1997 and 2008.

Small ports are ports other than large ports.

Access to geographical information HOW TO DOWNLOAD

The download procedure will be explained through the GISCO portal

The file of the shapes of maritime service areas is available at:

http://epp.eurostat.ec.europa.eu/portal/page/portal/nuts_nomenclature/documents/ServiceArea_0.zip

Fourth Working Conditions Survey

The European Working Conditions Survey is carried out by the European Foundation for the Improvement of Living and Working Conditions. During 2005, the Foundation carried out its fourth such survey. Almost 30 000 European workers were interviewed, answering more than 100 questions on a wide range of issues regarding their employment situation and working conditions. In particular, the questionnaire included items about their commuting.

Tele Atlas MultiNet 2009

Tele Atlas MultiNet is a detailed and comprehensive road network database. It is the basis for demanding applications such as routing, network analysis, geo-coding of objects, etc. The European Commission purchased the Tele Atlas MultiNet to strengthen its spatial analysis capacity.

TeleAtlas® MultiNet® 3.5.1

Further information

Eurostat Website: http://ec.europa.eu/eurostat

Further information about GISCO (Geographical information and maps)
http://epp.eurostat.ec.europa.eu/portal/page/portal/gisco_Geographical_information_maps/introduction

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European Statistical Data Support:

With the members of the 'European statistical system', Eurostat has set up a network of support centres in nearly every Member State and in some EFTA countries.

Their role is to provide help and guidance to Internet users of European statistics.

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