



## **Statistics Netherlands**

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# **URBAN AUDIT II THE IMPLEMENTATION IN THE NETHERLANDS**

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## **1. Introduction**

In 1998, the Directorate-General Regional Policy of the European Commission launched a project to collect data from European urban agglomerations, called the "Urban Audit". The project was designed as a pilot project to test the feasibility of obtaining and presenting information on a consistent pan-European basis for a wide range of indicators at the level of the city, the wider urban area and the sub-city district. The pilot project was carried out by a consortium of private contractors and was finished in early 2000.

After the completion of Urban Audit pilot phase and a thorough evaluation of its results the Commission decided to launch a follow-up, called Urban Audit II. Unlike the pilot project, the Urban Audit II gives a great deal of prominence to the National Statistical Offices in the European Union. In the data collection of the Urban Audit II, the National Statistical Offices act as the co-ordinators for their country, whilst Eurostat acts as the co-ordinator at the European level.

The Urban Audit project is to be viewed in the context of the Regional Policy of the European Union. The main priority of this policy is to improve social and economic cohesion in the European Union by seeking to reduce disparities between European regions. Cities play a specific and prominent part in this respect. Cities are namely important sources of economic growth, whilst on the other hand they are faced with large social imbalances.

The direct purpose of the Urban Audit II is to collect comparable statistics at the European level on a large number of variables for a range of topics at three spatial levels: the level of the administrative city, the sub-city level and the level of the larger urban zone.

This report gives an account of the implementation of the Urban Audit II in the Netherlands. Section 2 describes the organisational set-up, which has been chosen for the work to be done. Section 3 reviews the results of the analyses with regard to the spatial units used. Section 4 comments briefly on the delivery of the statistical data.

## **2. Organisational set-up**

Statistics Netherlands has carried out the Urban Audit II in co-operation with the Dutch City network of Departments for Research and Statistics (VSO) in four large and six medium sized cities. They represent about nineteen percent of the total population in the Netherlands.

To carry out the work for the Urban Audit the VSO has created a working group of the ten participating cities. The Department for Research and Statistics of the City of Amsterdam (O+S Amsterdam) chaired the VSO working party for the Urban Audit. The Department of O+S Amsterdam has also co-ordinated the work of the respective Departments for Research and Statistics in the participating cities.

Statistics Netherlands took care of the administrative and financial management of the total project, the data collection within its own organisation and the co-ordination of the data collection by the participating cities with the Department of O+S Amsterdam as focussing point. The Department of O+S Amsterdam took care of the co-ordination of the data collection in the participating cities.

From the outset, Statistics Netherlands and the VSO working group agreed that the basic collection of statistical data should consist of statistics compiled by Statistics Netherlands. The VSO working group would take care of the collection of statistics that would not be available at Statistics Netherlands.

The Department for Major Cities Policies of the Dutch Ministry of The Interior has strongly supported the implementation of the Urban Audit II project in the Netherlands. Already at an early stage, the then Minister for Major Cities Policies has sent a letter to every City Council of the potential Urban Audit cities in order to endorse their participation in the Urban Audit. Furthermore, a representative of the Department for Major Cities Policies has participated in the management meetings of the project. Finally, that Department supported the implementation of the Urban Audit II project in the Netherlands also financially.

### **3. Spatial units**

For the Urban Audit II statistical data had to be collected at three spatial levels: the level of the administrative city, the level of the city's larger urban zone and the sub-city district level.

#### **Cities**

In consultation with the Dutch City network of Departments for Research and Statistics and the Department for Major Cities Policies of the Ministry of The Interior Statistics Netherlands proposed a list of ten cities to the European Commission for participation in the Urban Audit II. In this list, all large cities have been included as well as a sample of medium sized cities with an appropriate geographical spread as the most important selection criterion. These ten cities are: Amsterdam, Rotterdam, The Hague, Utrecht, Eindhoven, Tilburg, Groningen, Enschede, Arnhem and Heerlen. The Commission agreed to this list of cities.

#### **Larger urban zones**

Even though functional urban regions (called 'stadsgewesten') do exist in the Netherlands, Statistics Netherlands nevertheless proposed to use the Dutch NUTS 3 regions (called COROP Regions) as a proxy for the larger urban zones. This proposal was made, simply because the COROP-Regions were delineated using the nodal principle as criterion in the early seventies of the last century. In addition, much more statistics are available at this regional level contrary to such an amount for the urban regions. The latter regions were delineated only recently and the data collection for those regions started not long ago.

In order to determine exactly which NUTS 3 regions could be used as the best proxy for the larger urban zones of the ten cities it was necessary to perform a thorough analysis in this respect. Two kinds of data sources were used for this analysis. The main source was the list of urban regions for comparison purposes with the NUTS 3 regions. The second source referred to data on inter-municipal commuting flows in order to determine whether there exists a one-sided orientation of municipalities at an Urban Audit city within a particular NUTS 3 region that do not belong to the urban region.

The analysis has been performed in various steps. The first step consisted of the identification of the NUTS 3 region and the urban region for each of the ten cities. Once those NUTS 3 regions were identified, those NUTS 3 regions and the urban regions were compared in terms of population shares resulting in the percentage of the population of the NUTS 3 region that lives in the urban region of the particular Urban Audit city.

In the next step the municipalities within the relevant NUTS 3 regions were identified that do not belong to the urban region but which have a one-sided orientation (in terms of commuting) at the relevant Urban Audit city. Subsequently the percentage of the population of a NUTS 3 region living in those local units was calculated.

Finally, both percentages together were used to define the relevant NUTS 3 region(s) to be used as a proxy for the larger urban zone for each individual Urban Audit city.

The result of this analysis has been summarised in table 1. More information about this analysis can be found in Annex I.

**Table 1. Urban Audit cities and their larger urban zones**

Urban Audit City		Larger urban zone (NUTS 3 region)		
Name	Code	Name	NUTS code	Urban Audit code
's-Gravenhage	NL001C	Agglomeratie 's-Gravenhage and Delft en Westland	NL332; NL333	NL001L
Amsterdam	NL002C	Groot-Amsterdam and Zaanstreek	NL326; NL325	NL002L
Rotterdam	NL003C	Groot-Rijnmond	NL335	NL003L
Utrecht	NL004C	Utrecht	NL310	NL004L
Eindhoven	NL005C	Zuidoost-Noord-Brabant	NL414	NL005L
Tilburg	NL006C	Midden-Noord-Brabant	NL412	NL006L
Groningen	NL007C	Overig Groningen	NL113	NL007L
Enschede	NL008C	Twente	NL213	NL008L
Arnhem	NL009C	Arnhem/Nijmegen	NL223	NL009L
Heerlen	NL010C	Zuid-Limburg	NL423	NL010L

## **Sub-city districts**

The concept of the sub-city district has been introduced in the Urban Audit in order to be able to analyse particularly segregation tendencies within a city. Eurostat recommended, therefore, delineating the sub-city districts in such a way that those districts should be internally as homogeneous as possible and should show a maximum variation between them. For practical reasons, the sub-city districts should also have a target of twenty thousand inhabitants each, with a variation between five thousand and forty thousand.

In addition to those recommendations of Eurostat, two other criteria were used to delineate the sub-city districts, namely

- first, to use the neighbourhoods (census tracts) co-ordinated nation-wide by Statistics Netherlands as their building blocks;
- secondly, to take also into account existing larger sub-city territorial units of an administrative or political significance within the cities.

The delineation of the sub-city districts has taken place in close co-operation of Statistics Netherlands with the Departments for Research and Statistics of the ten Urban Audit cities. The following procedure for the delineation was adopted.

First, the Department for Research and Statistics of every city made a proposal for the delineation of its territory in districts taking into account (a) the criteria mentioned above and (b) its knowledge of the internal social and socio-economic structure of their city. Subsequently, Statistics Netherlands checked the individual proposals paying special attention to

- a well-balanced distribution of the districts between the cities according to the average number of inhabitants in the proposed sub-city districts in relation to the target population criterion;
- the homogeneity / maximum variation criterion using the average available income per capita for the year 2000 as an indicator.

Any comments of Statistics Netherlands on the proposals were sent to the Departments for Research and Statistics of the cities. They reported on those comments, until the final delineation was settled.

Table 2 gives a summary of the results. It contains the number of districts per city, the average population per district as well as the variation in the population figures and in the average available income per capita between the districts. More information on the delineation of the sub-city districts can be found in Annex II.

## **4. Data delivery**

The first delivery of statistical data took place halfway through March. Since then, statistics were delivered more or less at regular intervals until the end of July when the last delivery took place. Data could be collected for 320 variables (out of 333) at the city level, for 153 variables (out of 172) at the level of the larger urban zone and

for 30 variables (out of 33) at the sub-city level. The following subsections summarize the most important characteristics of the statistics delivered.

**Table 2. Summary of the sub-city districts per city**

City	Number of districts	Average population	Variation in population		Variation in average available income per capita (x 100 EUR)	
			Min.	Max.	Min.	Max.
's-Gravenhage	26	17010	6460	33630	73	167
Amsterdam	37	19850	9280	33880	86	170
Rotterdam	31	19200	9440	30160	78	140
Utrecht	15	17090	6750	26470	84	145
Eindhoven	13	15650	1690	27780	103	137
Tilburg	12	16320	6430	31010	84	131
Groningen	9	19360	12170	27300	88	136
Enschede	6	25070	19220	25520	87	106
Arnhem	7	19890	14160	26770	85	122
Heerlen	5	19030	10350	21890	95	128

## 4.1 Demography

### Population, Nationality, Household Structure

Statistics could be delivered for all demographic variables: forty-three at the spatial level of the city, forty at the level of larger urban zone, and four at the sub-city level. All figures on the population, the nationality and the household structure have been collected by Statistics Netherlands using the system of interconnected municipal population registers (Gemeentelijke basisadministratie persoonsgegevens) as data source. The figures refer, therefore, to the registered population in the municipalities of the Netherlands. Basically, a municipal population register includes all persons permanently residing in the municipality where the night's rest is mainly enjoyed.

Although the figures on the household structure are also based on the municipal population registers, an additional estimation method had to be used for the final compilation of those figures. Basically, address information is used for the household formation. However, the relation between the persons residing at a particular address is not unambiguous in all cases. At the national level, an unambiguous relation between persons exists at 93 percent of all addresses. The household formation for the persons residing at the other 7 percent of the addresses has been estimated by imputation on basis of logistic regression. Data for the regression have been derived from a linked data set from the municipal populations registers and the Labour Force Survey.

## 4.2 Social aspects

### Housing

Statistics on housing could be delivered for all nineteen variables at the city level as well as for the three variables at the sub-city level. Delivery of statistics at the spatial level of the larger urban zone was only possible for twelve of the eighteen variables.

Statistics Netherlands compiled figures for those housing variables of which the characteristics were available in three sources, namely the registers of dwellings at Statistics Netherlands (number of dwellings), the municipal population registers (households) and the Housing Demand Survey (houses/apartments and owners/tenants).

Figures on the number of dwellings, the empty and non-conventional dwellings as well as on the average occupancy rate have been compiled using a linked data set from the dwelling register and the municipal population registers. The linkage of those registers has effects on some definitions. In this respect, non-conventional dwellings refer to localizations in the population registers with no localization in the dwelling register and, conversely, empty conventional dwellings refer to localizations in the dwelling register with no localization in the municipal population registers. Consequently, the definition of the latter variable does not correspond with the usual definition of empty conventional dwelling (empty for more than three months), but refers to a non-occupation at a certain point in time.

The figures on number of houses and apartments as well as their ownership and occupation by households have been compiled from The Housing Demand Survey. They have ultimately been reweighted on the linked data set from the dwelling register and the municipal population registers. The variable 'Dwellings lacking basic amenities' is not relevant in the Dutch situation, since such dwellings are hardly found in the Netherlands. Therefore, we estimated the value of this variable by 'zero'.

The cities have delivered statistics for the other seven housing variables (price/rent for houses and apartments; area of living accommodation, homeless persons). A great variety with regard to the availability of data for those variables does exist between the cities. From the four large cities, for example, only the three bigger ones (Amsterdam, Rotterdam and The Hague) were able to deliver figures for all price/rent variables and the area of living accommodation. On the other hand, four out of the six medium sized cities were not able to deliver any statistics at all for those variables.

As for the statistics on the number of homeless persons, it should be mentioned that almost every city has derived those statistics from external sources. The figures themselves are estimations and they refer to various categories of homeless persons. Consequently, they are not comparable between most of the cities.



## **Health**

Statistics on health could be delivered for all variables at the three spatial levels required. Statistics Netherlands compiled the statistics on live births, deaths and life expectancy. The basic data for those statistics has been derived from the municipal population registers. Some figures have been rounded off in order to prevent disclosure of individual persons.

The figures on doctors and dentists have been taken from the Official Register of Medical Professions (BIG-Register) of the Chief Medical Department of Public Health. The figures refer to the number of persons and they are residence based. No information exists on the workplace and on the working hours (full-time/part-time) of the doctors and dentists in the BIG-register.

The figures on hospital beds and patients have been derived from a register (named Prismant) maintained by the Dutch Centre for Health Care Information.

## **Crime**

The figures on recorded crimes have been compiled by Statistics Netherlands with the exception of the recorded crimes at the sub-city district level. Those figures have been collected by the cities. The figures at the sub-city level do not add up to totals that are consistent with the figures at the city level compiled by Statistics Netherlands, although the various police registrations are the same basis for both kinds of figures. Probably differences in the type of registration, in operational definitions or in selections from those registrations between the cities and Statistics Netherlands account for those inconsistencies.

The statistics on murders and violent deaths have been compiled by Statistics Netherlands. They are based on the cause of death forms filled out by doctors. The figures relate to persons who have been registered in the municipal population registers.

## **4.3 Economic aspects**

### **Labour market**

All statistics in the domain of the Labour Market have been compiled by Statistics Netherlands. They have been derived from the Labour Force Survey with the exception of the figures on long-term unemployment. The latter has been compiled from a linked data set of variables from the Labour Force Survey and the Unemployment Register of the Public Employment Department.

All figures with the Labour Force Survey as the only source refer to an estimated three-yearly average for the years 2000-2002. The estimated figures on long-term unemployment refer to an average for the years 2000 and 2002 only. All estimated figures less than 500 are statistically unreliable. They have been replaced by a 'dot' (figure not available).

The estimations from the Labour Force Survey at the sub-city level should be treated carefully, because the original survey results have only been reweighted at the city

level. Moreover, the reliability of the estimate for some city district is questionable due to high non-response rates and probably also to selective response rates.

As for the definitions, part-time employment has been defined according to the national definition as 34 hours a week or less and full-time employment as 35 hours or more.

### **Economic Activity**

The vast majority of statistics on Economic Activity has been compiled by Statistics Netherlands. The only statistics collected by others are the figures on total and vacant net office floor space. The figures on the total net office floor space have been derived from an external source, namely the publication 'Kantorenatlas'. This publication can be found on the Website of the Dutch City network of Departments for Research and Statistics (VSO). The figures on the vacant net floor space have been collected by the cities using also external sources in most cases. For some cities, only data on gross floor space was available. In these cases vacant net floor space has been estimated by multiplying the gross space by a factor of .85. Real estate experts have suggested this correction factor.

Statistics on GDP at NUTS 3 level are compiled annually in accordance with the European System on National and Regional Accounts (ESA) 1995. Starting from the availability of statistics at that level GDP for the cities has been estimated in two steps. First, taking the value added for a particular NUTS 3 region for granted the value added for the city located within this region has been estimated using the ratio of the number of jobs in that city and the number of jobs in that particular NUTS 3 region. That estimation has been detailed at the level of the NACE sections. In the second step, the GDP for the cities has been calculated from the estimated value added using the ratio of GDP and value added at the national level. The total resident population relating to the GDP at the city level has been derived from the municipal population registers.

The Business Register has been used for the compilation of the statistics on total number of companies and companies quoted on the national stock exchange. Figures on the new business have been derived from the results of an annual survey of new entrances into the Business Register.

Figures on bankruptcy have been derived from the annual statistics on this topic. Reports from the court registries are the source of these statistics.

The basic figures for the estimation of total employment have been derived from two sources, namely

- (a) the survey on Employment and Earnings for the employment of employees;
- (b) a specific tax register for persons with entrepreneurial income for the employment of self-employed.

The survey on Employment and Earnings measures, among others, the jobs of the employees at the level of the municipalities. The specific tax register for persons with entrepreneurial income does measure only the number of self-employed and not their jobs. The number of jobs of the self-employed has been estimated by adjusting

the number of persons with an entrepreneurial income by means of the known ratio between the number of self-employed persons and the number of jobs of these persons at the national level. This adjustment has been differentiated according to the NACE sections.

### **Income disparities and poverty**

The statistics on income disparities and poverty have been compiled by Statistics Netherlands. They have been derived from a sample of administrative income records of persons of fifteen years or older from the Tax Department of the Ministry of Finance. Those persons constitute the 'nucleus persons' of the sample. All persons resident together with the 'nucleus person' at the address have been added to the sample. The total sample refers to about 1,9 million households with over 5 million persons.

The sample size allows generally publication of reliable figures on the income distribution for territorial units (regions, municipalities, municipal districts, etc.) with one hundred inhabitants or more. There is only one restriction: to estimate income figures for a particular category of persons or households the number of sample units for that category should be ten or more. For territorial units not satisfying that criterion figures have been replaced by the character 'x' (confidential figure). Income figures of persons in collective households and institutions are not included.

The income definition refers to available income, i.e. income from primary sources (wages and salaries including benefits paid by the employer for sickness, unemployment and disablement, profits, received transfers and income from property) minus contributions to social security and other paid transfers (taxes on wage, salary, income and property included). Therefore, the available income concept can be considered as a good proxy for the disposable income concept.

## **4.4 Civic involvement**

### **Civic involvement**

The election figures for the Urban Audit are compiled by Statistics Netherlands with the administration of the municipalities as source for the rough data. No basic data about the age of the electorate are recorded. Therefore, no figures are available about the total votes counted by voters aged less than 25 years.

### **Local administration**

Statistics Netherlands compiled the figures on municipality income and expenditure with the municipal accounts as source. The municipal account figures have been adjusted according to the definitions and prescriptions of the European System on National and Regional Accounts (ESA) 1995.

The cities themselves compiled the figures on the employment in the local administration. With a very few exceptions every city was able to provide the figures for all variables on this topic.

## **4.5 Training and education**

### **Education and training provision**

Statistics on day-care for children aged 0-4 years are only available at the city level. They have been provided by the cities. Several cities were unable to provide figures on these variables at all, whilst other cities were only able to provide the figure on the total number of children aged 0-4 years in day-care.

No statistics on day-care could be provided at the level of the larger urban zone (LUZ). Figures on this topic are only available at the national level at Statistics Netherlands. They cannot be regionalised, since they refer to day-care institutions as legal units and no information exists on the relationship between the local units and the legal ones. Estimation of the figures at this regional level is also doomed to failure, since few legal units dominate the 'day-care market' with many local units spread over the whole territory of the country.

The statistics compiled on educational participation are 'workplace based' in the sense that they are spatially referenced to the geographical unit (city, larger urban zone) in which the educational institution (and not the student) is domiciled. All figures were provided by Statistics Netherlands.

A similar problem with regard to the regionalisation of the statistics on educational participation exists as in case of the day-care statistics. The basic data refers namely to legal units and not to local units. This problem is particularly serious in the case of the vocational institutions at the ISCED level 3 (Upper secondary education). However, information is available on the territorial referencing of the local units belonging to a legal unit. This piece of information in combination with figures on the relevant population group (15-20 years) at the city level was used to make a rough estimation of the educational participation at the ISCED levels 3-4.

This territorial referencing problem exists also for the vocational institutions at the ISCED levels 5 and 6, but less seriously. Therefore, all students of these institutions have been referenced at the geographical level in which the educational institution is domiciled. Since this assumption is questionable, the figures on the number of students in higher education are also rough indications.

The model used for the estimation of the number of students registered for final year of compulsory education as well as of those students continuing education after compulsory education contains also questionable elements. In this model, the former variable has been operationalised as the number of students of sixteen years old on 31-12-2000 in schools and other institutions for secondary education. The latter variable has been operationalised as the number of students of seventeen years old on 31-12-2001 in schools and institutions for secondary and tertiary education. Here again, only a rough estimation of the students of those age groups in the vocational education at the ISCED level 3-4 was possible. For this rough estimation, for example, the age distribution of the students in this kind of education at the national level had to be used in combination with the known geographical relationship between the legal and local units.

## **Educational qualifications**

The figures on the educational qualifications of the population have been derived from the Labour Force Survey and are compiled by Statistics Netherlands. The figures relate only to the population of 15-64 years old. They are estimated as a three-yearly average for the years 2000-2002.

As has been mentioned earlier the estimations from the Labour Force Survey at the sub-city level should be treated carefully. First, the original survey results have only been reweighted at the city level. Secondly, the reliability of the estimate for some city district is questionable due to high non-response rates and probably to selective response rates.

## **4.6 Environment**

### **Climate / geography**

The figures on temperature, rain and sunshine have been taken from a publication of the Royal Dutch Meteorological Institute (KNMI). Rain has been defined as a precipitation of more than 0,1 mm. The respective weather stations are not located in the cities but near the cities.

### **Air quality and noise**

The figures on smog, NO<sub>2</sub> and PM<sub>10</sub> concentrations have been taken from a publication of the National Institute of Public Health and the Environment (RIVM). The figures on summer smog refer to an exceeding of 110 µg/m<sup>3</sup>. The threshold value of 120 µg/m<sup>3</sup> is still not used in the Netherlands. The figures are available (for some variables even only partly) for the five largest cities, due to the absence of monitoring stations in the other cities.

The National Institute of Public Health and the Environment (RIVM) has calculated the figures on the number of residents exposed to both noise levels on request of Statistics Netherlands. The calculation has been based on grid squares of 500 x 500 meters. The results of those calculations have been adjusted to the total population figure by Statistics Netherlands.

Figures on the emission variables have been taken from the Data Warehouse Emission registration of the Ministry for Housing, Spatial Planning and the Environment (VROM). The annual data on emissions in this database are used for the monitoring of the progress made in environment policies.

### **Water**

The figures on water consumption as well as on annual tests on drinking water quality and determinations of exceeding prescribed concentration values have been obtained from third parties (mostly Waterworks) by the cities. The figures on concentration values are based on Directive 98/83/EG, which is already in use in the Netherlands. However, not for all cities statistics were available. The figures on water rationing and water cuts have also been compiled by the cities.

Since dwellings without a connection to a potable drinking water system or to a sewerage treatment system are hardly found in the Netherlands, we estimated the number of dwellings with such connections as almost equal to the number of dwellings as such. This assumption has been verified by means of data from District Water Boards and from Sewage Treatment Boards.

### **Waste management**

The figures on waste management have been collected by Statistics Netherlands. The basic data has been obtained by way of the waste survey at the municipalities taken by Statistics Netherlands. The figures refer only to domestic waste, since data on industrial waste are not collected in that survey. Basic data on the latter waste is obtained by means of a two-yearly enterprise survey. Unfortunately, the results of that survey can only be regionalised as far as the NUTS 2 level. Estimation at the city level is not possible, since no proper additional information is available.

### **Land use**

With the exception of the figures on the area subject to special or physical planning conservation measures, all other figures on land-use have been compiled by Statistics Netherlands. The former figures have been collected by the cities. They refer preponderantly to build-up areas protected in the field of physical and town planning. Those figures are not available for all cities, however.

The area figures for the land-use variables have been compiled in a GIS environment. Several digital maps in various combinations have been used for the compilation of those figures. These maps are: the digital Land use map of Statistics Netherlands, the digital Topographic map of the Topographic Agency of the Netherlands (TDN), the digital Road map and the digital Waterway map of the Ministry of Transport and Public Works (V&W). The digital land use map has been used as the basic map; the other maps supplementary to the land use map.

The population within 15 minutes walking distance of urban green areas has been estimated by using spatial techniques in the GIS environment. The data sources used were the digital Land use map and the municipal population registers, which have been referenced by co-ordinates in a particular procedure.

For some land-use variables, it was not possible to compile (or even to estimate) statistics from the digital land use map, due to the great differences between the definitions in the LUCAS classification and those in the national classification.

### **Energy use**

Figures with regard to this subject have been obtained from a third party by the cities. It has to be noted that quite many figures are lacking, due to deficiencies in or total lacking of a territorial referencing of the basic data in the databases of the third parties.

## **4.7 Travel patterns**

The cities delivered figures on the average waiting time for a bus, the length of public transport, the total kilometre driven in public transport and the public transport supply. For the collection of those figures the cities were depending on third parties, particularly the passengers transport companies. Not all cities were able to obtain data from these third parties.

Statistics Netherlands compiled the figures for almost all other variables in this field. The only exceptions are the statistics on road accidents resulting in deaths and serious injury. Those figures were obtained from the Ministry of Transport and Public Works.

The basic figures on journeys to work as well as on the occupants of cars (restricted to the inner-city traffic and weighted by travel distance) were obtained from the general survey on moving behaviour. The basic figures on private cars were compiled from the automated register of vehicle badges from the governmental administration named “RDW, Centrum voor Voertuigtechniek en informatie”.

Finally, the commuting figures were compiled from a database with linked data from the municipal population registers and the Survey on employment and earnings.

## **4.8 Information society**

### **Users & Infrastructure**

No figures could be provided for quite many variables on this topic in spite of the many actions undertaken in this respect. The figures delivered on the remaining variables have several sources.

Statistics Netherlands compiled the figures on households with a PC and Internet access at home as well as the number of ICT students at ISCED levels 5 and 6. The figures on the first two variables are based on a sample of the population and are subject to sample fluctuations. The figures on ICT students are ‘work-place’ based and are derived from registers with educational data at the level of the legal unit and not at the level of the local unit. As has been pointed out in paragraph 5.5. (training and education), those figures should be considered as rough indications.

The cities delivered the statistics on the Internet use and on the households with broadband access. However, not all cities could do so. The cities delivering the figures used various sources so that the figures are not completely comparable.

### **Local e-Government**

The figures for all variables on this topic have been compiled by the cities. Only for two cities, statistics on the administrative forms were not available.

### **ICT sector**

All statistics on this topic have been compiled by Statistics Netherlands. The figures on the local units have been derived from the Business Register; the figures on the employed persons from the Survey on employment and earnings.

## **4.9 Culture and recreation**

### **Culture and recreation**

The collection of statistics on this topic proved to be extremely difficult, due to the vagueness of the definitions in comparison with the availability of data. This was particularly the case with regard to the statistics on theatres and concerts.

With the exception of the figures on cinemas (seats and attendance), all other statistics on this topic have been compiled by the cities. The figures on public libraries and museums could be compiled for all cities with only one exception (number of museums for one city). It should be noted that in case of some cities, the figures on museums are not complete, i.e. not all museums are included in the figures.

With respect to the statistics on theatres, six cities were able to deliver figures for all three variables (number, seats and attendance). Three cities could deliver figures for two variables and one city the figure for one variable (number of theatres). Here too, not all theatres are included in the figures for some cities.

The concerts variables proved to be the most problematic from the viewpoint of data availability. Only four cities were able to deliver figures for all three variables, whilst no statistical data were available on this topic for four cities. The problem of incompleteness exists here too, since some from the data delivering cities were not able to include all concerts in their figures.

The figures on cinemas have been obtained from a third part, namely the Dutch Cinematographic Federation (NCF).

### **Tourism**

Statistics Netherlands has computed the figures on air passengers using the nearest airport. The basic data for this computation were obtained from the various airport administrators in the Netherlands. The threshold of one-hour travelling time from the airport to the centre of the city has been strictly applied in this calculation. This threshold of one hour was derived from the official train and bus schedules.

The figures on tourist overnight stays in registered accommodations and on available beds in those accommodations were compiled by the cities. The figures refer only to hotels. A few cities were not able to deliver figures on the tourist overnight stays.



## ANNEX 1

### NUTS 3 REGIONS AS PROXY FOR THE LARGER URBAN ZONES

#### 1. Introduction

In Eurostat's paper on the spatial levels for which data are to be collected and represented in the Urban Audit II, some guidelines and proposals are made with regard to the territorial units to be used in that project (Carlquist, 2002). As a follow-up of that paper, this document gives an overview of the NUTS 3 regions, which will be used as a proxy for *the larger urban zones* for the Dutch cities participating in the Urban Audit II.

This overview is mainly a result of a similar analysis, which has been described on this topic in the paper of Eurostat. The sources in that analysis were GISCO data on agglomerations and the NUREC atlas of urban areas. However, those data reflect a morphological concept of an urban area. In our analysis, on the other hand, data has been used that are primarily based on a functional interpretation of an urban area. Paragraph 2 gives a description of those data. Paragraph 3 presents the results of the analysis on these data. In conclusion, paragraph 4 summarizes those results for the ten cities.

#### 2. Data used in the analysis

The problem of functional urban regions lies not in their various definitions, since those definitions are in the most cases comparable in spirit. The real problem with regard to the urban regions is the variety of parameters used in practice for the delineation of such urban regions (Pumain, 1992).

Given this situation, we have used in the 'NUTS 3 proxy' analysis two kinds of data. The main source for this analysis has been the list of urban regions (called 'stadsgewesten') delineated not long ago for the provision of urban statistics in the Netherlands. As an additional source, we have used commuting data for those local units (municipalities) within a NUTS 3 region, which do not belong to an urban region.

The latter source has been added due to the specific methodology used for the delineation of the urban regions mentioned above. The most important characteristics of that methodology can be listed as follows. First, the core of an urban region consists principally of the city concerned together with the surrounding local units as far as city and surrounding local units constitute an urban agglomeration in the morphological sense. With the exception of the city of Enschede, this is the case for all cities participating in the Urban Audit II.

Secondly, for the delineation itself not only data on commuting, but also data on removals have been used in the analysis. Thirdly, the technique applied in the analysis has been a non-hierarchical cluster analysis. Fourthly, the algorithm in that cluster analysis consists of a symmetric criterion, which does not only take the number of commuters (as well as removals) from area A to area B into account, but also of the number of commuters (as well as removals) in the opposite direction. Additionally, also the size of those areas has been taken account of in that criterion<sup>1</sup>. The main reason for the choice of this operational criterion has been to stress the mutual connectedness between the local units within an urban region.

It should be noted that this symmetric criterion reduces considerably the chance of a local unit to be included into an urban region in the case that a local unit has a one-sided orientation at a city as a centre of employment. Since in many studies such a one-sided orientation in terms of commuting is taken as a principal delineation criterion, we have extended the ‘proxy-analysis’ to include also any existence of this kind of orientation. This additional part of the ‘proxy-analysis’ has only been carried out for those municipalities within a given NUTS 3 region, which do not belong to an urban region of an Urban Audit city.

### 3. NUTS 3 Regions as proxies for larger urban zones

#### 3.1 Steps in the analysis

The first step of the analysis consisted of the identification of the relevant NUTS 3 region and urban region for each of the ten cities as well as the identification of the adjacent NUTS 3 regions for those cities in the case the relevant urban region spreads into several NUTS 3 regions. The map used for that identification is given at the next page.

Once those NUTS 3 regions had been identified, a comparison has been made between those NUTS 3 regions and the relevant urban regions in terms of population shares resulting in the percentage of the population of a NUTS 3 region that lives in the urban region of the Urban Audit city concerned.

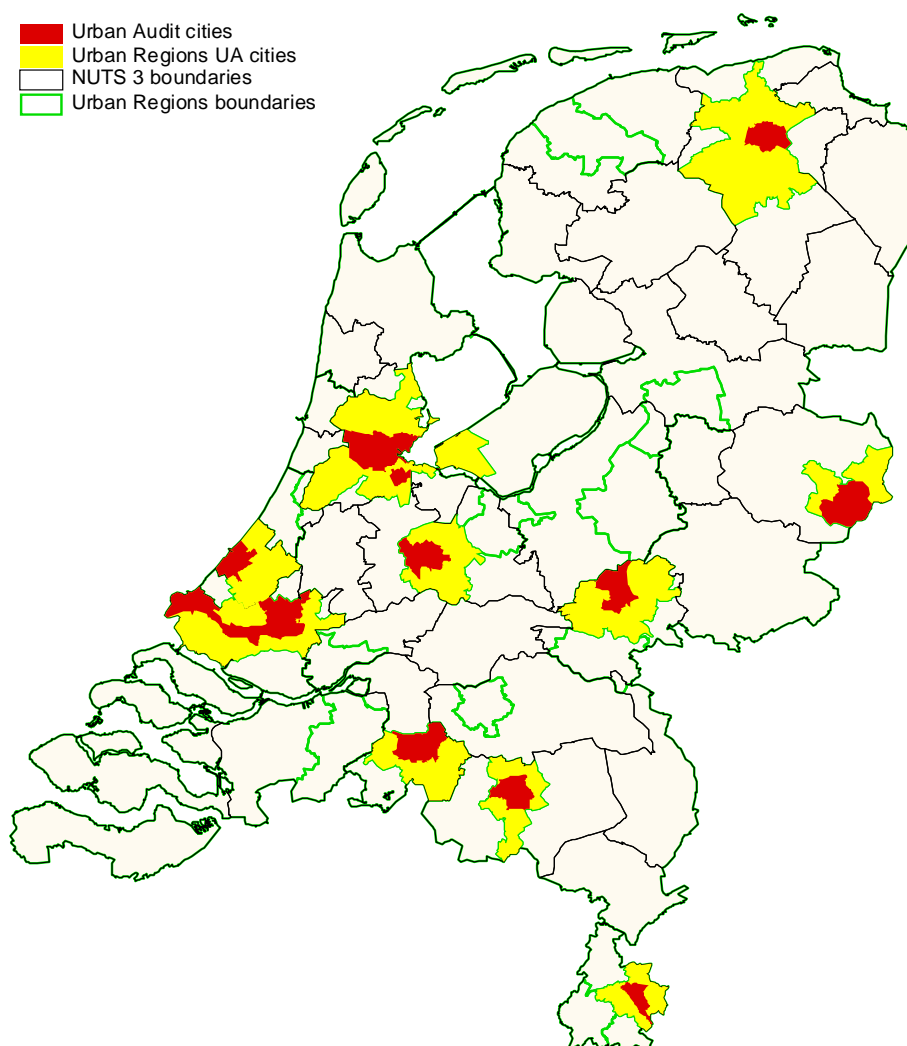
In the next step those municipalities within the relevant NUTS 3 regions have been identified, which do not belong to an urban region but which have a one-sided orientation (in terms of commuting) at the Urban Audit city concerned. Subsequently the percentage of the population of a NUTS 3 region that lives in such local units has been calculated.

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<sup>1</sup> In formula: 
$$\frac{C_{AB}}{R_A} \times \frac{C_{AB}}{W_B} + \frac{C_{BA}}{R_B} \times \frac{C_{BA}}{W_A}$$

Finally, both percentages added together have been used to define the NUTS 3 regions, which will be used as proxies for *the larger urban zones* for the Dutch cities participating in the Urban Audit II.

**Figure 1. Urban Audit cities, urban regions and NUTS 3 regions**



### 3.2 Definition of NUTS 3 regions as proxies

#### 3.2.1 's-Gravenhage

The urban region of the city of 's-Gravenhage spreads into the NUTS 3 region 'Agglomeratie 's-Gravenhage' and the NUTS 3 region 'Delft en Westland'. Both NUTS 3 regions should be consolidated into one larger urban zone for this city.

The analyses show that

- the total population of the NUTS 3 region 'Agglomeratie 's-Gravenhage' lives in the urban region of the city of 's-Gravenhage;
- 59 percent of the population of the NUTS 3 region 'Delft en Westland' lives in the urban region of 's-Gravenhage, and additionally, 10 percent of that population lives in local units which have an one-sided orientation at the city of 's-Gravenhage, although these units do not belong to that urban region in the strict sense.

### 3.2.2 *Amsterdam*

The urban region of the city of Amsterdam spreads into five NUTS 3 regions, namely 'Groot-Amsterdam', 'Zaanstreek', 'Flevoland', 'Utrecht' and 'Het Gooi en Vechtstreek'. The NUTS 3 regions 'Groot-Amsterdam' en 'Zaanstreek' should be consolidated into one larger urban zone for the city of Amsterdam.

The analyses show that:

- 92 percent of the population of the NUTS 3 region 'Groot-Amsterdam' lives in the Amsterdam urban region, and additionally, 6 percent of the population of that NUTS 3 region lives in local units which have a one-sided orientation at the city of Amsterdam, although these units do not belong to the Amsterdam urban region in the strict sense;
- the total population of the NUTS 3 region 'Zaanstreek' lives in the Amsterdam urban region;
- from the other three NUTS 3 regions, only a minority of the population of those regions are living in the Amsterdam urban region. One finds the greatest minority of that population in the NUTS 3 region of Flevoland, namely 48 percent, due to the city of Almere. Even in the case of any population majority, it is not feasible to include the whole NUTS 3 region of Flevoland as a proxy for the larger urban zone of Amsterdam, due to its geographical location.
- in the other two NUTS 3 regions ('Utrecht' and 'Het Gooi en Vechtstreek'), that population minority is very small (one and three percent respectively).

### 3.2.3 *Rotterdam*

The urban region of the city of Rotterdam spreads into the NUTS 3 region 'Groot-Rijnmond' and into the NUTS 3 region 'Delft en Westland' for a very small part. Only the NUTS 3 region 'Groot-Rijnmond' should be considered as the larger urban zone for this city.

The analyses show that

- 87 percent of the population of the NUTS 3 region 'Groot Rijnmond' lives in the Rotterdam city region, and additionally, 6 percent of that population lives in local units which have a one-sided orientation at the city of Rotterdam, although these units do not belong to the relevant urban region in the strict sense;

- only 3 percent of the population of the NUTS 3 region ‘Delft en Westland’ lives in the Rotterdam city region.

#### 3.2.4 *Utrecht*

The urban region of the city of Utrecht is completely located within the NUTS 3 region ‘Utrecht’. That NUTS 3 region can also be considered as a proxy for the larger urban zone, since a little majority of the population of this NUTS 3 region lives either in the urban region of Utrecht (48 percent) or in additional local units with a one-sided orientation at the city of Utrecht (3 percent).

Still another urban region is located in this NUTS 3 region, namely the urban region of Amersfoort. However, the population share of the Utrecht NUTS 3 region in this urban region amounts only to 20 percent, whilst there is no additional local unit in the Utrecht NUTS 3 region with an on-sided orientation at the city of Amersfoort.

#### 3.2.5 *Eindhoven*

The urban region of the city of Eindhoven is completely located within one NUTS 3 region, namely the region ‘Zuidoost-Noord-Brabant’. This NUTS 3 region is to be considered as a proxy for the larger urban zone, since a majority of the population of this region lives either in the Eindhoven urban region (54 percent) or in additional local units with an one-sided orientation at this city (14 percent).

#### 3.2.6 *Tilburg*

The urban region of the city of Tilburg is completely located within the NUTS 3 region ‘Midden-Noord-Brabant’. That NUTS 3 region is to be considered as a proxy for the larger urban zone of that city, since a majority of the population of that region (64 percent) lives in the urban area of Tilburg. There are no additional local units with a one-sided orientation at the city of Tilburg outside the urban region of that city.

#### 3.2.7 *Groningen*

The urban region of the city of Groningen spreads into the NUTS 3 region ‘Overig Groningen’ and the NUTS 3 region ‘Noord-Drenthe’. Only the NUTS 3 region ‘Overig Groningen’ can be considered as a proxy for the larger urban zone of the Urban Audit city of Groningen.

The analyses show namely that:

- 75 percent of the population of the NUTS 3 region ‘Overig Groningen’ lives in the functional urban region of Groningen, and additionally, 21 percent of the population of that region lives in local units which have a one-sided orientation at the city of Groningen, although they do not belong to the Groningen urban region in a strict sense;
- 34 percent of the population of the NUTS 3 region ‘Noord-Drenthe’ lives in the functional urban region of Groningen. There is no additional local unit in

that region with an on-sided orientation at the Urban Audit city of Groningen.

### *3.2.8 Enschede*

The urban region of the city of Enschede is completely located within the NUTS 3 region 'Twente'. This NUTS 3 region can be considered as a proxy for the larger urban zone for the city of Enschede. The analyses show that a little more than half of the population of this region lives either in the urban region of this city (50 percent) or lives in additional local units with a one-sided orientation at this city (4 percent).

### *3.2.9 Arnhem*

The urban region of the city of Arnhem does not spread into more than one NUTS 3 region, but is completely located within the NUTS 3 region 'Arnhem/Nijmegen'. This NUTS 3 region can also be considered as a proxy for the larger urban zone. The analyses show that – as is the case for Enschede - a little more than half of the population of this region lives either in the urban region of Arnhem (50 percent) or lives in additional local units with a one-sided orientation at the city of Arnhem itself (4 percent).

It should be noted that another urban region is located in this NUTS 3 region, namely the urban region of Nijmegen. The population share of the NUTS 3 region in that urban region amounts only to 38 percent, whilst the NUTS 3 population share in the additional local units with a one-sided orientation does not yet amount to one percent.

### *3.2.10 Heerlen*

The urban region of the city of Heerlen is completely located within the NUTS 3 region 'Zuid-Limburg'. However, two other urban regions are located in this NUTS 3 region, namely the urban regions of Maastricht and of Sittard-Geleen. These three urban regions together with the two remaining local units constitute as it were a polynuclear urban region or a conurbation.

The analyses show that

- 41 percent of the population of the NUTS 3 region 'Zuid-Limburg' lives in the Heerlen urban region;
- the two remaining local units mentioned above are mainly oriented at the Heerlen city region and its population share of the NUTS 3 region amounts to 4 percent;
- 29 percent of the population of the NUTS 3 region lives in the Maastricht urban region and 26 percent lives in the urban region of Sittard-Geleen.

Although the population share of the urban region of Heerlen does not make up a majority of the whole NUTS 3 region, the urban region of Heerlen (including the additional local units) dominates the conurbation in terms of population shares. Therefore, it is proposed to consider the NUTS 3 region 'Zuid-Limburg' as the larger urban zone for the city of Heerlen.

#### 4. Cities and NUTS 3 Regions

The names and codes of the ten cities and their NUTS 3 regions to be used in the Urban Audit II can be summarised as follows.

**Table 1. Urban Audit cities and their larger urban zones**

<b>City</b>	<b><i>NUTS 3 region</i></b>			
<b>Name</b>	<b>UA code</b>	<b>Name</b>	<b>NUTS code</b>	<b>UA code</b>
Groningen	NL007C	Overig Groningen	NL113	NL007L
Enschede	NL008C	Twente	NL213	NL008L
Arnhem	NL009C	Arnhem/Nijmegen	NL223	NL009L
Utrecht	NL004C	Utrecht	NL310	NL004L
Amsterdam	NL002C	Groot-Amsterdam en Zaanstreek	NL326; NL325	NL002L
's-Gravenhage	NL001C	Agglomeratie 's-Gravenhage, Delft en Westland	NL332; NL333	NL001L
Rotterdam	NL003C	Groot-Rijnmond	NL335	NL003L
Tilburg	NL006C	Midden-Noord-Brabant	NL412	NL006L
Eindhoven	NL005C	Zuidoost-Noord-Brabant	NL414	NL005L
Heerlen	NL010C	Zuid-Limburg	NL423	NL010L

#### References

- Carlquist, 2002 Carlquist, T. *Spatial units in the Urban Audit II*, Luxembourg, 2002.
- Pumain, 1992 Pumain, D. and T. Saint-Julien, N. Cattan and C. Rozenblat. *The statistical concept of the town in Europe*, Statistical document, The 3, Series E, Luxembourg, 1992

## **ANNEX II**

### **DELINEATION OF SUB-CITY DISTRICTS**

#### **1. Introduction**

In Eurostat's paper on the spatial levels for which data are to be collected and disseminated in the Urban Audit II, some recommendations have also been presented with regard to the delineation of the territorial units at the sub-city level (Carlquist, 2002). The purpose of these recommendations is to be able to measure disparities within cities in the respective Member States at the same way.

The first recommendation concerns the internal homogeneity of the sub-city districts. Those territorial units should be internally as homogeneous as possible and should show a maximum variation between them. The second recommendation refers to the number of inhabitants of those territorial units. The sub-city districts should have a target of twenty thousand inhabitants each, with a variation between five thousand and forty thousand.

This document gives an overview of the sub-city districts in the ten Dutch cities participating in the Urban Audit II. These districts have been delineated specifically for that project. The overview is the result of a process of consultation of Statistics Netherlands with the Departments for research and statistics in the ten cities. In this process, the recommendations mentioned above have been taken as much as possible into account. Paragraph 2 gives some details of this consultation process. Paragraph 3 presents the overview of the districts per city. Maps of the sub-city districts are presented per city at the end of the Annex.

#### **2. Delineation process of the sub-city districts**

At a general meeting of Statistics Netherlands with representatives of the Departments for research and statistics in the ten cities on 7 November 2002, it was decided to use four criteria for the delineation of the sub-city districts to be used in the Urban Audit project. In addition to Eurostat's recommendations of the internal homogeneity / maximum variation criterion and the inhabitants criterion it was decided

- to use the neighbourhoods (formerly census tracts) co-ordinated nation-wide by Statistics Netherlands as the building block for the final delineation of the Urban Audit sub-city districts;
- to take also into account existing larger sub-city territorial units of an administrative or political significance within the cities for that delineation.

After this general meeting Statistics Netherlands organised three separate meetings with the cities: one for the cities in the western part of the country (Amsterdam,



Rotterdam, The Hague and Utrecht), one for the cities in the northern and eastern part (Groningen, Enschede and Arnhem) and one for the cities in the southern part (Eindhoven, Tilburg and Heerlen). The purpose of these meetings was to go into more detail with regard to the actual delineation of the territory of the individual cities into sub-city districts.

In these meetings, it was decided that the city statistical Departments should make a proposal for the delineation in Urban Audit districts using their knowledge of the internal social and socio-economic structure of their own city and taking into account the four criteria mentioned above. Subsequently, Statistics Netherlands would check the individual proposals paying special attention to

- the homogeneity / maximum variation and the population criterion;
- a well-balanced distribution of the districts between the cities according to the average number of inhabitants in those districts per city.

In the actual checking of the city proposals Statistics Netherlands has used the average available income per capita for the year 2000 as an indicator for the homogeneity / maximum variation criterion. Recent data on this kind of income had become available in the Statline database on the Internet site of Statistics Netherlands.

The comments of Statistics Netherlands on the city proposals were then sent to the city statistical Departments concerned. The city Departments checked the comments of Statistics Netherlands and most of those Departments reported that they could agree on those comments.

### **3. Overview of the sub-city districts**

#### **3.1 General remarks**

In this paragraph, an overview of the sub-city districts is given per city. This overview consists of:

- a table with the codes and names of the districts together with the number of inhabitants as well as the average available income per capita for every sub-city district;
- where necessary, some comments on the delineation of the sub-city districts.

The figures on the number of inhabitants and the average income are provisional. They are compiled from figures rounded off per separate neighbourhood published in the Statline database on the Internet site of Statistics Netherlands.

A map with the location of the districts per city has been added at the end of this Annex. The maps have been constructed in such a way that:

- the city code is given between brackets after the name of the city in the title;
- the codes for the sub-city districts in the map are made up of the character 'D' followed by five numeric characters in a sequential form as proposed in Eurostat's paper on those codes (Carlquist, 2003).

## 3.2 Sub-city districts

### 3.1.1 's-Gravenhage (NL001C)

The territory of 's-Gravenhage has been subdivided into 26 sub-city districts as is shown in table 1. The number of inhabitants in the sub-city districts varies from 5.8 thousand to 33.6 thousand with an average of 17 thousand per district. The average available income per capita varies from EUR 7.3 thousand to EUR 19.1 thousand with an average of EUR 11.5 thousand for the city as a whole.

**Table 1. Sub-city districts of 's-Gravenhage: codes, names, population and average available income**

Sub-city code	Sub-city name	Population 2001	Average available income 2000 per capita (x 100 EUR)
NL001D00001	Loosduinen west	11860	149
NL001D00002	Loosduinen oost	28840	113
NL001D00003	Loosduinen midden	6460	160
NL001D00004	Escamp zuidwest	24740	96
NL001D00005	Escamp midden	17680	107
NL001D00006	Escamp zuidoost	7110	110
NL001D00007	Escamp oost	19310	100
NL001D00008	Escamp noord	18030	100
NL001D00009	Escamp west	14790	122
NL001D00010	Segbroek zuid	10500	132
NL001D00011	Segbroek oost	30540	107
NL001D00012	Segbroek west	18850	144
NL001D00013	Scheveningen midden	16370	122
NL001D00014	Scheveningen zuid	5830	98
NL001D00015	Scheveningen noord	32490	143
NL001D00016	Centrum noord	17660	126
NL001D00017	Centrum noordwest	7230	167
NL001D00018	Centrum west	10690	119
NL001D00019	Centrum noordoost	8690	97
NL001D00020	Centrum midden	33630	73
NL001D00021	Centrum zuid	21170	82
NL001D00022	Laak west	11260	89
NL001D00023	Laak oost	18050	96
NL001D00024	Laak noord	8910	80
NL001D00025	Haagse Hout west	13300	191
NL001D00026	Haagse Hout oost	28380	132

### 3.1.2 Amsterdam (NL002C)

The city of Amsterdam has been subdivided into 37 sub-city districts as table 2 shows. The number of inhabitants in those districts varies from 9.3 thousand to 33.9 thousand with an average of almost 20 thousand per district. The average available

income per capita varies from EUR 8.6 thousand to EUR 17.9 thousand with an average of EUR 11.6 thousand for the city as a whole.

**Table 2. Sub-city districts of Amsterdam: codes, names, population and average available income**

Sub-city code	Sub-city name	Population 2001	Average available income 2000 per capita
			<i>(x 100 EURO)</i>
NL002D00001	Burgwallen-Nieuwe Zijde, Grachtengordel en Weteringbuurt	21780	170
NL002D00002	Haarlemmerbuurt en Jordaan	25470	137
NL002D00003	Burgwallen-Oude Zijde en Nieuwmarkt	13010	136
NL002D00004	Plantage en Oostelijke Eilanden	19040	118
NL002D00005	Spaarndammerbuurt en Houthavens	12150	102
NL002D00006	Staatslieden- en Frederik Hendrikbuurt	22270	113
NL002D00007	Da Costa-, Kinker- en Van Lennepbuurt	16650	116
NL002D00008	Overtoom- en Helmersbuurt	15520	132
NL002D00009	Museum-, Apollo- en Willemparksbuurt	25810	179
NL002D00010	De Pijp en Diamantbuurt	33880	117
NL002D00011	Hoofddorpplein- , Schinkel- en Stadionbuurt	23910	129
NL002D00012	Rivierenbuurt	26450	139
NL002D00013	Zuidas en Buitenveldert	19570	169
NL002D00014	Weesperzijde en Oosterpark	15350	113
NL002D00015	Transvaal- en Dapperbuurt	18440	96
NL002D00016	Watergraafsmeer	23630	126
NL002D00017	Indische buurt	23610	92
NL002D00018	Oostelijk Havengebied en IJburg	13340	143
NL002D00019	Bijlmer Centrum	21330	94
NL002D00020	Bijlmer Oost	27550	95
NL002D00021	Holendrecht/Reigersbos	18990	104
NL002D00022	Gein, Nellestein en Driemond	16940	114
NL002D00023	Baarsjes Zuid en Oost	18850	112
NL002D00024	Baarsjes Noord en West	16110	100
NL002D00025	Bos en Lommer Oost	18260	97
NL002D00026	Bos en Lommer West	12670	86
NL002D00027	Overtoomse Veld en Westlandgracht	14940	97
NL002D00028	Slotervaart	15500	111
NL002D00029	Nieuw Sloten	13570	125
NL002D00030	Slotermeer	24490	99
NL002D00031	Geuzenveld en Eendracht	15180	92
NL002D00032	Osdorp-oost	24930	100
NL002D00033	Osdorp-west	18500	114
NL002D00034	Oud Noord en Tuindorp Oostzaan	27840	95
NL002D00035	Banne Buiksloot, Kadoelen en Oostzanerwerf	25220	106
NL002D00036	Buikslotermeer en Nieuwendam-Noord	24600	105
NL002D00037	Waterland en Nieuwendammerdijk e.o.	9280	117

### 3.1.3 Rotterdam (NL003C)

The subdivision of the city of Rotterdam counts 31 sub-city districts as is shown in table 3. The number of inhabitants in the sub-city districts varies from 9.4 thousand to 30.2 thousand with an average of 19 thousand per district. The average available income per capita varies from EUR 7.8 thousand to EUR 14.5 thousand with an average of EUR 10.5 thousand for the city as a whole.

**Table 3. Sub-city districts of Rotterdam: codes, names, population and average available income**

Sub-city code	Sub-city name	Population 2001	Average available income 2000 per capita <i>(x 100 EUR)</i>
NL003D00001	Stadscentrum oost	14950	140
NL003D00002	Stadscentrum west	13390	101
NL003D00003	DG Delfshaven west	17580	84
NL003D00004	DG Delfshaven oost	30160	90
NL003D00005	DG Delfshaven zuid	24300	87
NL003D00006	Overschie	16490	105
NL003D00007	DG Noord oost	17990	92
NL003D00008	DG Noord noord	15960	105
NL003D00009	DG Noord west	17370	127
NL003D00010	Hillegersberg-Schiebroek west	23880	118
NL003D00011	Hillegersberg-Schiebroek oost	16730	145
NL003D00012	DG Kralingen-Crooswijk west	20900	92
NL003D00013	DG Kralingen-Crooswijk midden	15940	102
NL003D00014	DG Kralingen-Crooswijk overig	15010	144
NL003D00015	DG Prins Alexander zuid	20990	125
NL003D00016	DG Prins Alexander noord	25390	121
NL003D00017	DG Prins Alexander oost	17910	102
NL003D00018	DG Prins Alexander midden	20250	118
NL003D00019	DG Feijenoord zuid	14840	99
NL003D00020	DG Feijenoord zuid-west	14740	80
NL003D00021	DG Feijenoord centrum	24000	78
NL003D00022	DG Feijenoord noord	18460	99
NL003D00023	DG IJsselmonde west	14530	107
NL003D00024	DG IJsselmonde midden	28760	104
NL003D00025	DG IJsselmonde oost	17520	98
NL003D00026	DG Charlois zuid	26290	98
NL003D00027	DG Charlois noord-west	25120	93
NL003D00028	DG Charlois overig	15130	109
NL003D00029	Hoogvliet noord	18640	99
NL003D00030	Hoogvliet zuid	22570	108
NL003D00031	Hoek van Holland	9440	118

### 3.1.4 Utrecht (NL004C)

The city of Utrecht has been subdivided into 15 sub-city districts as table 4 shows. The number of inhabitants in the sub-city districts varies from 6.8 thousand to 26.5 thousand with an average of 17 thousand per district. The average available income per capita varies from EUR 8.4 thousand to EUR 14.5 thousand with an average of EUR 11.5 thousand for the city as a whole.

**Table 4. Sub-city districts of Utrecht: codes, names, population and average available income**

Sub-city code	Sub-city name	Population 2001	Average available income 2000 per capita
			<i>(x 100 EUR)</i>
NL004D00001	Oog in Al e.o.	6750	140
NL004D00002	Lombok - Lageweide	18260	104
NL004D00003	Pijlsweerd, Ondiep e.o.-west, Zuilen-west	19630	107
NL004D00004	Ondiep e.o.-oost, Zuilen noord + oost	21450	96
NL004D00005	Overvecht Vechtzijde	11810	115
NL004D00006	Overvecht Polderzijde	17900	98
NL004D00007	Votulast	11440	116
NL004D00008	Tuindorp, Voordorp, Wittevrouwen	22680	138
NL004D00009	Abstede, Krommerijn en omgeving	8450	112
NL004D00010	Wilhelminapark e.o., Rijnsweerd, De Uithof	18600	135
NL004D00011	Binnenstad	15080	145
NL004D00012	Utrecht-zuid	26080	110
NL004D00013	Transwijk, Rivierenwijk, Dichterswijk	16470	116
NL004D00014	Kanaleneiland	15240	84
NL004D00015	Leidsche Rijn en Vleuten-De Meern	26470	124

### 3.1.5 Eindhoven (NL005C)

The subdivision of the Eindhoven territory consists of thirteen sub-city districts as table 5 shows. Two of those districts do not meet minimum the population criterion of 5 thousand inhabitants.

**Table 5. Sub-city districts of Eindhoven: codes, names, population and average available income**

Sub-city code	Sub-city name	Population 2001	Average available income 2000 per capita
			<i>(x 100 EUR)</i>
NL005D00001	Binnenstad	4020	137
NL005D00002	Stratum west	17680	124
NL005D00003	Stratum oost	13770	107
NL005D00004	Tongelre	19560	111
NL005D00005	Woensel Zuidwest	19840	120
NL005D00006	Woensel Zuidoost	14730	105
NL005D00007	Ontginning	14780	114
NL005D00008	Achtse molen	17670	114
NL005D00009	Aanschot	19030	113
NL005D00010	Dommelbeemd	13890	113
NL005D00011	Strijp oud	18890	107
NL005D00012	Meerhoven	1690	103
NL005D00013	Gestel	27780	111

As regards the city core (NL005D00001: Binnenstad), the reason for that exception is its socio-economic structure. This structure differs significantly from the surrounding areas as the income indicator shows very clearly.

The exception with regard the district ‘Meerhoven’ (NL005D00012) is based on a different reason. The Department for research and statistics of the city of Eindhoven has urged strongly to treat this area as a separate district, because of the rapid development of this area into a build-on ward of the city. Up to 2008, around 5.5 thousand dwellings will be build there: an average of about nine hundred a year.

The number of inhabitants of the sub-city districts, which do meet the minimum population criterion varies from 13.8 thousand to 27.8 thousand with an average of 18 thousand per district. The average available income per capita for all sub-city districts varies from EUR 10.3 thousand to EUR 13.7 thousand with an average of EUR 11.3 thousand for the city as a whole.

### 3.1.6 Tilburg (NL006C)

The city of Tilburg has been subdivided into 12 sub-city districts as table 6 shows. The number of inhabitants in those districts varies from 6.4 thousand to 31 thousand with an average of about 16 thousand per district. The average available income per capita varies from EUR 8.4 thousand to EUR 13.1 thousand with an average of EUR 10.5 thousand for the city as a whole.

**Table 6. Sub-city districts of Tilburg: codes, names, population and average available income**

Sub-city code	Sub-city name	Population 2001	Average available income 2000 per capita (x 100 EUR)
NL006D00001	Centrum	6430	131
NL006D00002	Binnenstadvleugels	12030	112
NL006D00003	Jeruzalem-Groenewoud	8420	94
NL006D00004	Overig Oud-Zuid	23390	96
NL006D00005	Oud-Noord en Loven	31010	98
NL006D00006	Overig Noord	11520	107
NL006D00007	Stokhasselt en Vlashof	12060	84
NL006D00008	Blaak-Zorgvliet-Buitengebied ZW	11500	121
NL006D00009	3-West en Gesworenhoeck	29960	104
NL006D00010	Reeshof	29930	106
NL006D00011	Udenhout	8650	112
NL006D00012	Berkel-Enschot en Moerenburg	10920	118

With regard to the sub-city district ‘Binnenstadsvleugels’ (NL006D00002) it should be noted that this district consists of two areas that are not contiguous (see the map of Tilburg in the Annex). However, both areas are adjacent to the core city (one to the west and the other to the east) and are of a similar socio-economic structure. Although not contiguous, they can be considered as comparable to each other.

### 3.1.7 Groningen (NL007C)

The subdivision of the city of Groningen counts nine sub-city districts as is shown in table 7. The number of inhabitants in the sub-city districts varies from 12.2 thousand to 27.3 thousand with an average of about 19 thousand per district. The average available income per capita varies from EUR 8.8 thousand to EUR 13.6 thousand with an average of EUR 10.1 thousand for the city as a whole.

**Table 7. Sub-city districts of Groningen: codes, names, population and average available income**

Sub-city code	Sub-city name	Population 2001	Average available income 2000 per capita
			<i>(x 100 EUR)</i>
NL007D00001	Centrum	15090	97
NL007D00002	Centrumschil	22170	99
NL007D00003	Omgeving Papiermolen	16720	113
NL007D00004	Helpman-Hoornsemeer	18000	136
NL007D00005	Korreweg-Oosterpark	26170	92
NL007D00006	Beijum-Lewenborg	23770	90
NL007D00007	Oost buiten	12820	107
NL007D00008	Noord-west	27300	88
NL007D00009	Hoogkerk en omgeving	12170	101

### 3.1.8 Enschede (NL008C)

The city of Enschede has been subdivided into six sub-city districts as table 8 shows. The number of inhabitants in the sub-city districts varies from 19.2 thousand to 35.0 thousand with an average of 25 thousand per district. The average available income per capita varies from EUR 8.7 thousand to EUR 10.6 thousand with an average of EUR 9.7 thousand for the city as a whole.

**Table 8. Sub-city districts of Enschede: codes, names, population and average available income**

Sub-city code	Sub-city name	Population 2001	Average available income 2000 per capita
			<i>(x 100 EUR)</i>
NL008D00001	Binnensingelgebied	21370	98
NL008D00002	Hogeland, Ribbelt-Stokhorst, Stroikslanden-Noord	27690	106
NL008D00003	Boswinkel, Wesselerbrink, Stroinkslanden-Zuid	34970	87
NL008D00004	Stadsveld en Helmerhoek	19220	97
NL008D00005	Bedrijfsterreinen Enschede-West en landelijk gebied	21630	106
NL008D00006	Enschede-Noord en Tweekelerveld	25520	96

Note that the district ‘Stadsveld en Helmerhoek’ consists of two areas that are nearly not contiguous (see the map of Enschede in the Annex). They are only joined together with a common road. From a socio-economic viewpoint, however, both areas are more or less alike. More importantly however, they contrast socio-economically sharply with their immediate surroundings.

### 3.1.9 Arnhem (NL009C)

The subdivision of the territory of the city of Arnhem consists of seven sub-city districts as table 9 shows. The number of inhabitants in the sub-city districts varies from 14.2 thousand to 26.8 thousand with an average of almost 20 thousand per district. The average available income per capita varies from EUR 8.5 thousand to EUR 11.2 thousand with an average of EUR 10.9 thousand for the city as a whole.

**Table 9. Sub-city districts of Arnhem: codes, names, population and average available income**

Sub-city code	Sub-city name	Population 2001	Average available income 2000 per capita
			<i>(x 100 EUR)</i>
NL009D00001	Centrum en omliggende wijken	26770	107
NL009D00002	Presikhaaf	14820	100
NL009D00003	Cranevelt tot Paasberg	19460	122
NL009D00004	Lombok tot Schaarsbergen	14160	139
NL009D00005	Malburgen	16990	85
NL009D00006	Vredenburg, Rijkerswoerd	21470	112
NL009D00007	Elden tot Schuytgraaf	25650	105

### 3.1.10 Heerlen (NL010C)

The city of Heerlen has been subdivided into five sub-city districts as table 10 shows. The number of inhabitants in those districts varies from 10.4 thousand to 21.9 thousand with an average of about 19 thousand per district. The average available income per capita varies from EUR 9.5 thousand to EUR 12.8 thousand with an average of EUR 10.5 thousand for the city as a whole.

**Table 10. Sub-city districts of Heerlen: codes, names, population and average available income**

Sub-city code	Sub-city name	Population 2001	Average available income 2000 per capita
			<i>(x 100 EUR)</i>
NL010D00001	Hoensbroek	21890	100
NL010D00002	Heerlerheide	21690	95
NL010D00003	Heerlen-Stad (Oost)	21000	98
NL010D00004	Heerlen-Stad (West)	20210	128
NL010D00005	Heerlerbaan	10350	106

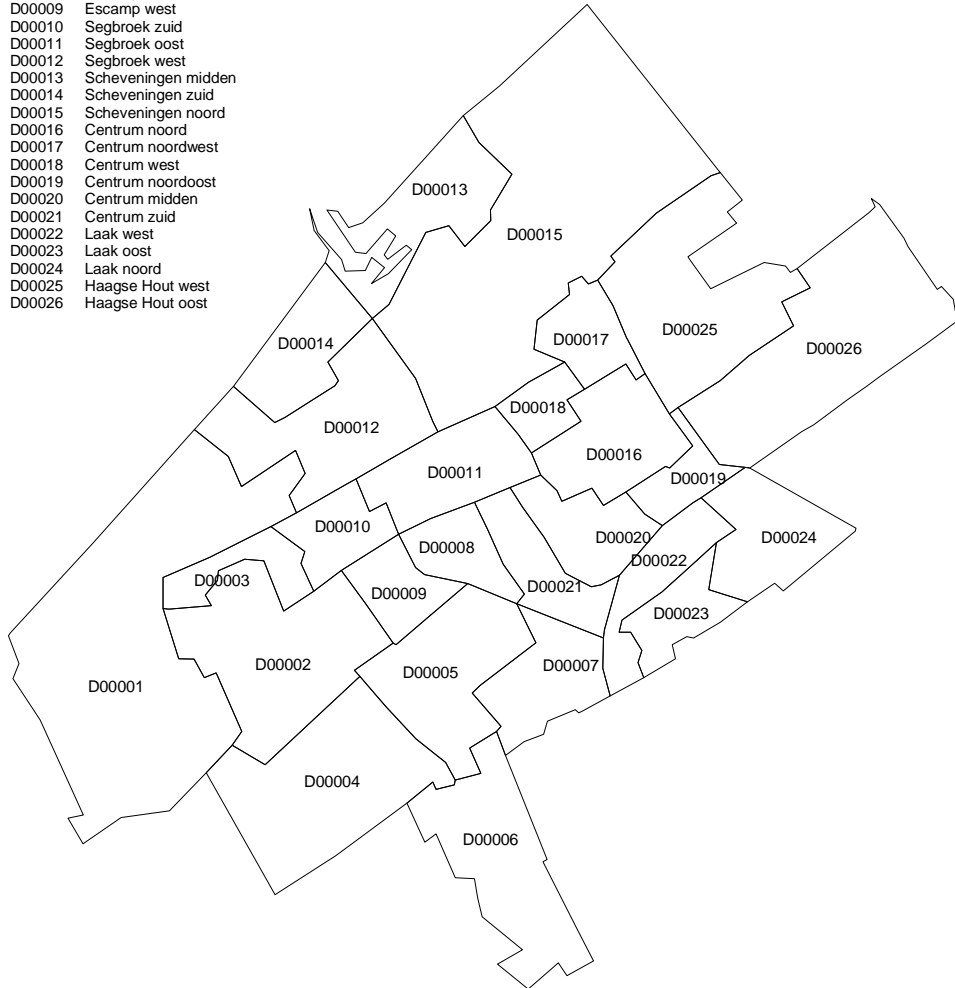


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## Sub-city districts of 's-Gravenhage (NL001C)

D00001	Loosduinen west
D00002	Loosduinen oost
D00003	Loosduinen midden
D00004	Escamp zuidwest
D00005	Escamp midden
D00006	Escamp zuidoost
D00007	Escamp oost
D00008	Escamp noord
D00009	Escamp west
D00010	Segbroek zuid
D00011	Segbroek oost
D00012	Segbroek west
D00013	Scheveningen midden
D00014	Scheveningen zuid
D00015	Scheveningen noord
D00016	Centrum noord
D00017	Centrum noordwest
D00018	Centrum west
D00019	Centrum noordoost
D00020	Centrum midden
D00021	Centrum zuid
D00022	Laak west
D00023	Laak oost
D00024	Laak noord
D00025	Haagse Hout west
D00026	Haagse Hout oost

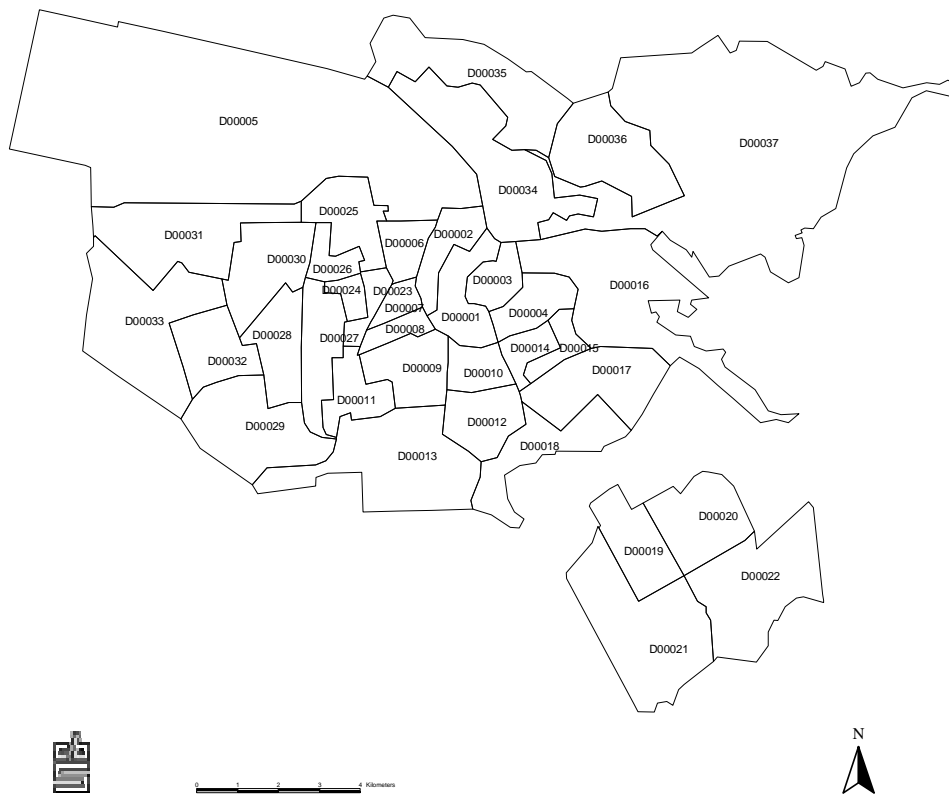


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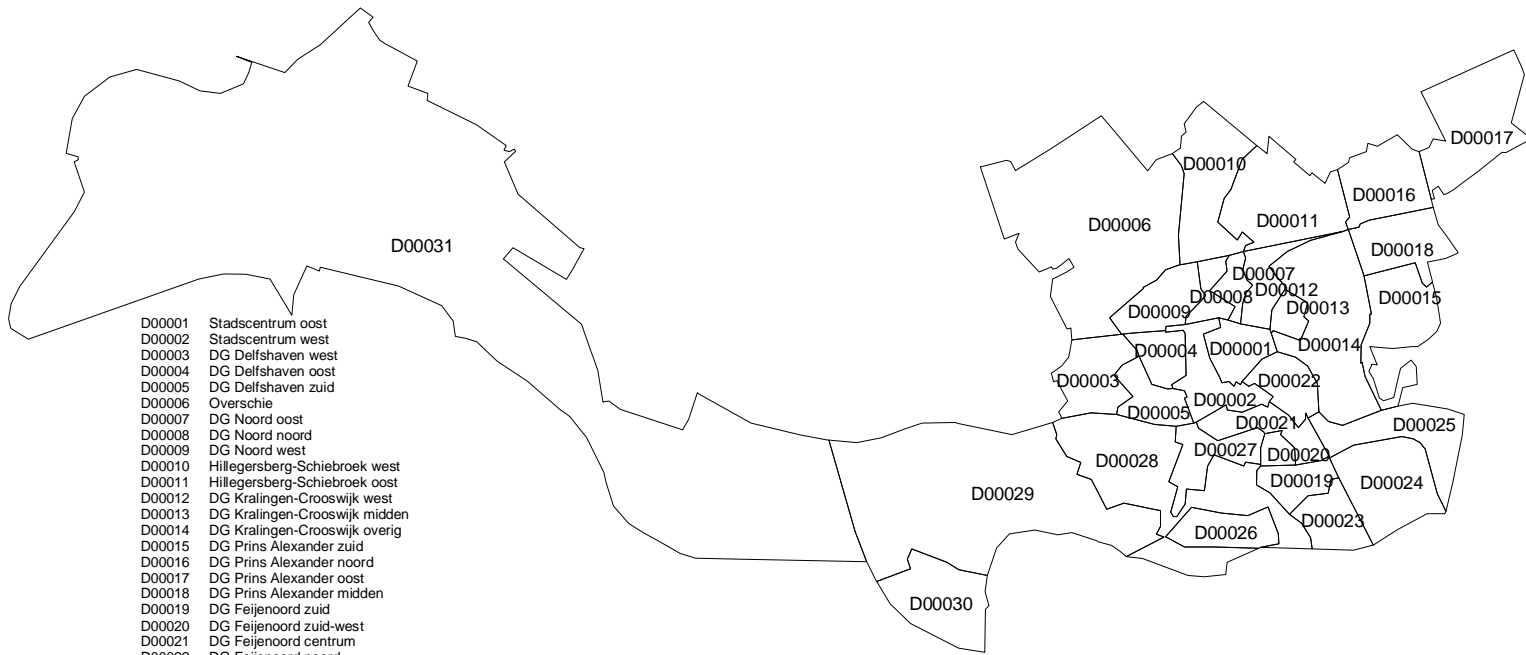


## Sub-city districts of Amsterdam (NL002C)

- D00001 Burgwallen-Nieuwe Zijde, Grachtengordel en Weteringsbuurt
- D00002 Haarlemmerbuurt en Jordaan
- D00003 Burgwallen-Oude Zijde en Nieuwmarkt
- D00004 Plantage en Oostelijke Eilanden
- D00005 Spaarndammerbuurt en Houthavens
- D00006 Staatslieden- en Frederik Hendrikbuurt
- D00007 Da Costa-, Kinker- en Van Lennepbuurt
- D00008 Overtoom- en Helmersbuurt
- D00009 Museum-, Apollo- en Willemparksbuurt
- D00010 De Pijp en Diamantbuurt
- D00011 Hoofddorpplein-, Schinkel- en Stadionbuurt
- D00012 Rivierenbuurt
- D00013 Zuidas en Buitenveldert
- D00014 Weesperzijde en Oosterpark
- D00015 Transvaal- en Dapperbuurt
- D00016 Watergraafsmeer
- D00017 Indische buurt
- D00018 Oostelijk Havengebied en IJburg
- D00019 Bijlmer Centrum
- D00020 Bijlmer Oost
- D00021 Holendrecht/Reigersbos
- D00022 Gein, Nellestein en Driemond
- D00023 Baarsjes Zuid en Oost
- D00024 Baarsjes Noord en West
- D00025 Bos en Lommer Oost
- D00026 Bos en Lommer West
- D00027 Overtoomse Veld en Westlandgracht
- D00028 Slotervaart
- D00029 Nieuw Sloten
- D00030 Slotermeer
- D00031 Geuzenveld en Eendracht
- D00032 Osdorp-oost
- D00033 Osdorp-west
- D00034 Oud Noord en Tuindorp Oostzaan
- D00035 Banne Buikstoot, Kadoelen en Oostzanerwerf
- D00036 Bulkslotermeer en Nieuwendam-Noord
- D00037 Waterland en Nieuwendammerdijk e.o.



# Sub-city districts of Rotterdam (NL003C)



- D00001 Stadscentrum oost
- D00002 Stadscentrum west
- D00003 DG Delfshaven west
- D00004 DG Delfshaven oost
- D00005 DG Delfshaven zuid
- D00006 Overschie
- D00007 DG Noord oost
- D00008 DG Noord noord
- D00009 DG Noord west
- D00010 Hillegersberg-Schiebroek west
- D00011 Hillegersberg-Schiebroek oost
- D00012 DG Kralingen-Crooswijk west
- D00013 DG Kralingen-Crooswijk midden
- D00014 DG Kralingen-Crooswijk overig
- D00015 DG Prins Alexander zuid
- D00016 DG Prins Alexander noord
- D00017 DG Prins Alexander oost
- D00018 DG Prins Alexander midden
- D00019 DG Feijenoord zuid
- D00020 DG Feijenoord zuid-west
- D00021 DG Feijenoord centrum
- D00022 DG Feijenoord noord
- D00023 DG IJsselmonde west
- D00024 DG IJsselmonde midden
- D00025 DG IJsselmonde oost
- D00026 DG Charlois zuid
- D00027 DG Charlois noord-west
- D00028 DG Charlois overig
- D00029 Hoogvliet noord
- D00030 Hoogvliet zuid
- D00031 Hoek van Holland



## Sub-city districts of Utrecht (NL004C)

D00001	Oog in Al e.o.
D00002	Lombok - Lageweide
D00003	Pijlsweerd, Ondiep e.o.-west, Zuilen-west
D00004	Ondiep e.o.-oost, Zuilen noord + oost
D00005	Overvecht Vechtzijde
D00006	Overvecht Polderzijde
D00007	Votulast
D00008	Tuindorp, Voordorp, Wittevrouwen
D00009	Abstede, Krommerijn en omgeving
D00010	Wilhelminapark e.o., Rijnsweerd, De Uithof
D00011	Binnenstad
D00012	Utrecht-zuid
D00013	Transwijk, Rivierenwijk, Dichterswijk
D00014	Kanaleneiland
D00015	Leidsche Rijn en Vleuten-De Meern



## Sub-city districts of Eindhoven (NL005C)

D00001	Binnenstad
D00002	Stratum west
D00003	Stratum oost
D00004	Tongelre
D00005	Woensel Zuidwest
D00006	Woensel Zuidoost
D00007	Ontginning
D00008	Achtse molen
D00009	Aanschot
D00010	Dommelbeemd
D00011	Strijp oud
D00012	Meerhoven
D00013	Gestel

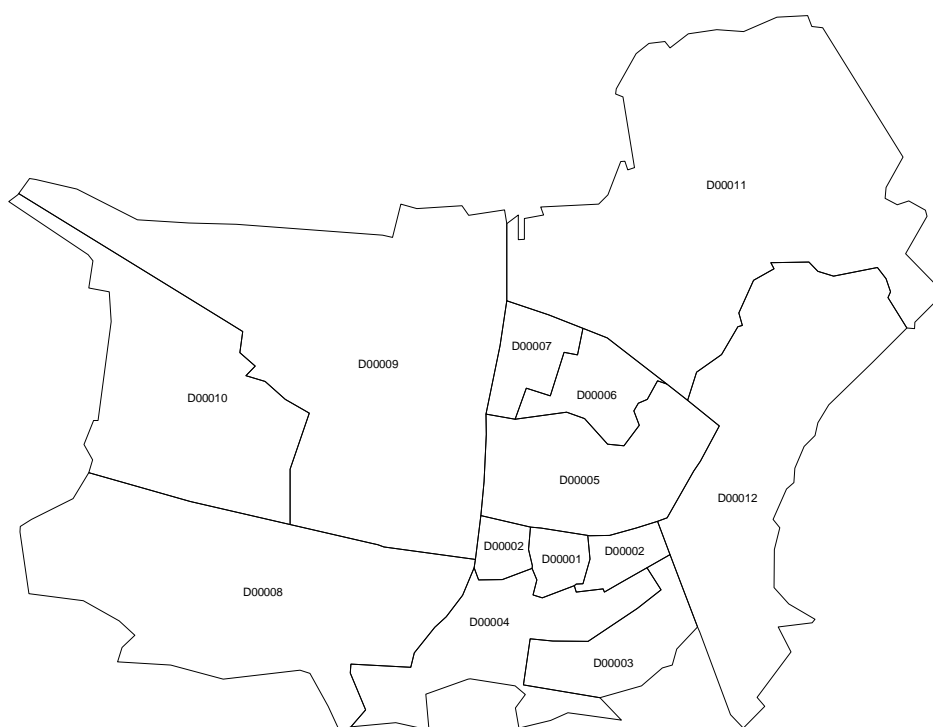


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## Sub-city districts of Tilburg (NL006C)

D00001	Centrum
D00002	Binnenstadvleugels
D00003	Jeruzalem-Groenewoud
D00004	Overig Oud-Zuid
D00005	Oud-Noord en Loven
D00006	Overig Noord
D00007	Stokhasselt en Vliashof
D00008	Blaak-Zorgvliet-Buitengebied ZW
D00009	3-West en Gesworenhoek
D00010	Reeshof
D00011	Udenhout
D00012	Berkel-Enschot en Moerenburg



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## Sub-city districts of Groningen (NL007C)

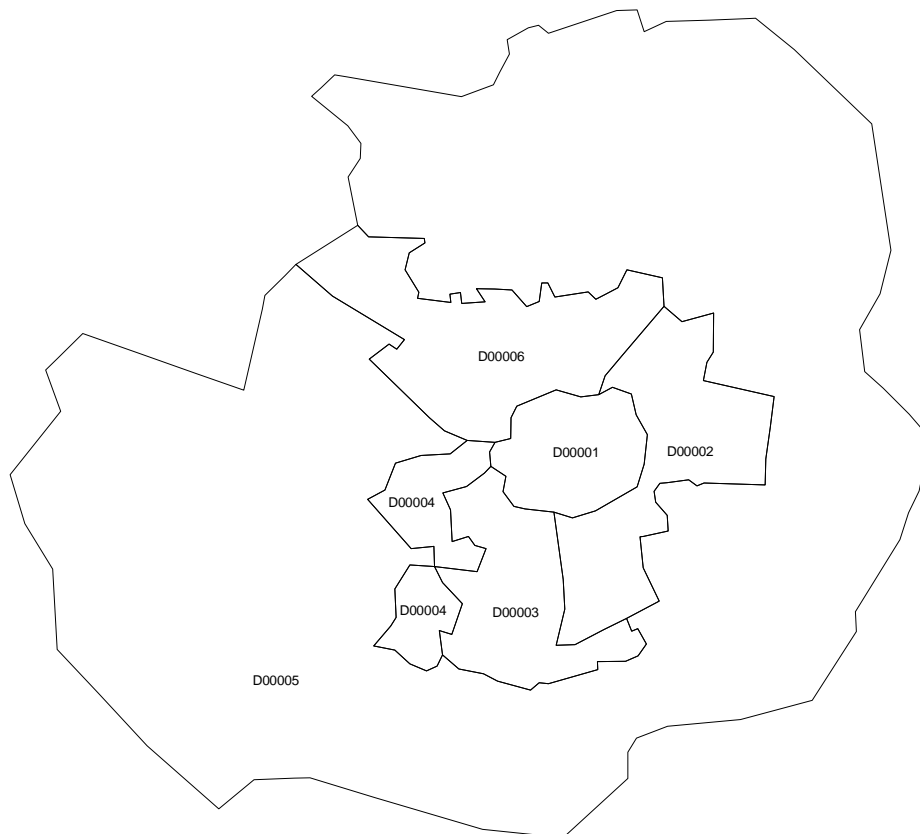
D00001	Centrum
D00002	Centrumschil
D00003	Omgeving Papiermolen
D00004	Helpman-Hoornsemeer
D00005	Korreweg-Oosterpark
D00006	Beijum-Lewenborg
D00007	Oost buiten
D00008	Noord-west
D00009	Hoogkerk en omgeving





## Sub-city districts of Enschede (NL008C)

D00001	Binnensingelgebied
D00002	Hogeland, Ribbell-Stokhorst, Stroikslanden-Noord
D00003	Boswinkel, Wesselerbrink, Stroikslanden-Zuid
D00004	Stadsveld en Helmerhoek
D00005	Bedrijfsterreinen Enschede-West en landelijk gebied
D00006	Enschede-Noord en Twekkelveld



0 0,2 0,4 0,6 0,8 Kilometers



## Sub-city districts of Arnhem (NL009C)

D00001	Centrum en omliggende wijken
D00002	Presikhaaf
D00003	Cranevelt tot Paasberg
D00004	Lombok tot Schaarsbergen
D00005	Malburgen
D00006	Vredenburg, Rijkerswoerd
D00007	Elden tot Schuytgraaf



## Sub-city districts of Heerlen (NL010C)

D00001	Hoensbroek
D00002	Heerlerheide
D00003	Heerlen-Stad (Oost)
D00004	Heerlen-Stad (West)
D00005	Heerlerbaan

