

NEXIGA

LOCAL[®] Data for ArcGIS Online

Methodology paper

General

For about 40 years, Nexiga is the pioneering company and one of the market leaders in location intelligence (or geomarketing). LOCAL® by Nexiga has been the first microgeographic database in Germany. We offer a big variety of market data for more than 22 mio. buildings and all postal and administrative structures in Germany. All postal and administrative structures are available with digital boundaries and coordinates.

1. Data structure for Germany

1.1 Administrative structure

In Germany the official territorial structure is organized hierarchically. By means of a numeric referencing system the relation between the different levels is clearly defined. This structure is represented by the official ID for districts and communities (so called KGS).

Each community in Germany is defined by a unique 8-digit code (KGS 8). This code also includes information to which higher levels (district, region, county or federal state) the community belongs to.

The KGS 8 is structured as follows:

1 st and 2 nd position:	Federal State	(KGS 2)
3 rd position:	Administrative region	(KGS 3)
4 th and 5 th position:	District	(KGS 5)
6 th to 8 th position:	Community	(KGS 8)

Our data is updated on a yearly basis.

1.2 Postal structure

In some cases, the postal structure does not fit perfectly into the official territorial structure of communities or counties. Using both microgeographic information and different structure references, we have found a way to provide data on postal level.

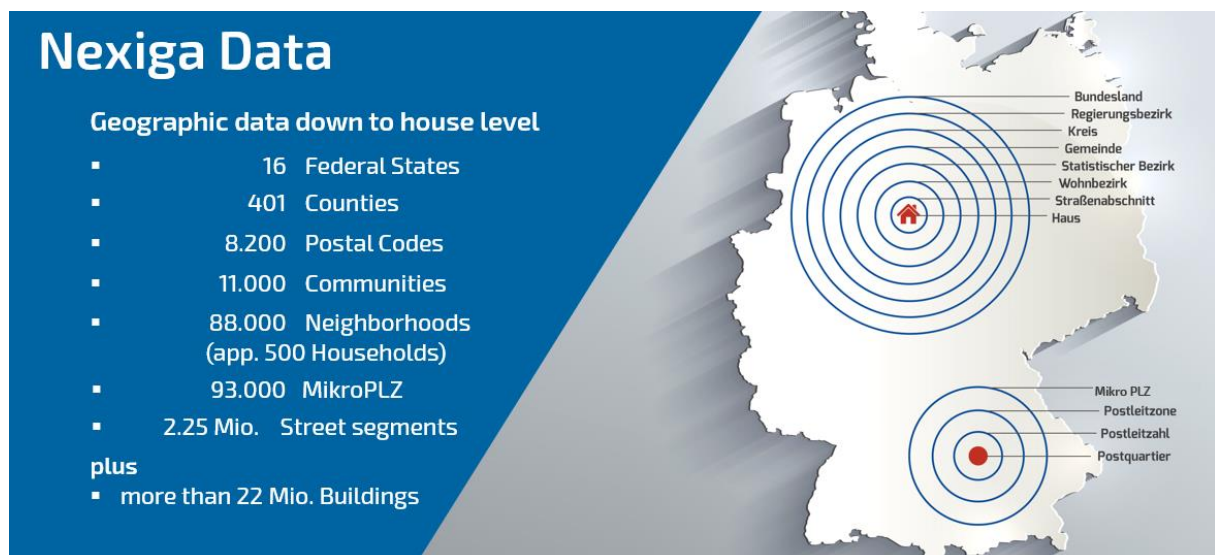
1.3 Microgeographic structure

Below the community boundaries, Nexiga offers even finer levels: we have developed several levels that fit perfectly into the hierarchical structure.

Originally representing voting districts with approx. 500 households, our neighborhoods (KGS 22) offer a more detailed level, for example. Being quite small, statistically stable and homogenous, it is an ideal analytical grid.

More than 2.2 million street segments (KGS 36) map all German streets and may be aggregated to upper levels like neighborhoods or communities.

The smallest component of the LOCAL[®] portfolio is the building (KGS 44), which may also be aggregated to coarser levels. With currently more than 22 mio. buildings, Nexiga owns a complete German address register. In this process all confirmed official and postal addresses are localized and georeferenced.



2. Major sources

Market data:

- Federal Labor Office
- State Offices for Statistics and Federal Office of Statistics
- Federal Motor Transport Authority
- Schober Information Group

Geodata:

- State Survey Offices
- Deutsche Post
- Deutsche Telekom
- Information from communities

Data categories

3. Demography

3.1 Inhabitants

As for every 31th of December, the State Offices for Statistics release the official population statistics. Besides the total number of inhabitants, information on gender as well as population classes are published. The official statistic is adopted completely and then projected on finer levels at Nexiga.

The Federal Office of Statistics also provides the area which is necessary to calculate the population density (inhabitants per square kilometer). Officially the inhabitants are classified in 17 age groups which one can find in the complete description of variables. From these we additionally derive 5 coarser age groups.

3.2 Population Change

Several variables come under the category population change. Single variables describing the natural change of population like relocations (regional influx and outflux), births and deceased (total/male/female) lead to more specific ones like the migration balance and change ratio.

The migration balance depicts the relation of regional influx and outfluxes whereas the population movement is determined by the relation of births and influx to deceased and outflux. The change ratio relates the influx and outflux to the number of inhabitants.

3.3 Demographic Development

This time series reveals the change in population compared to the preceding year. This information is provided as a total number of change in population as well as the change per each of the 5 age groups. Data is available since 2005 and is provided by the State Offices for Statistics.

3.4 Demographic Forecast

The demographic forecast category offers the total number of inhabitants in 2020, 2025 and 2030 as well as the number inhabitants per each of 5 age groups for these years.

The underlying data for this calculation is:

- Population projection of each federal state at county level for the years 2001 to 2020 (Source: State offices for statistics).
- Annual official follow-up of population as at 31th December 2004 on county level (Source: State offices for statistics).

Methods:

The project did not aim at the redevelopment of an own population forecast but rather at harmonizing the existing population projection for all federal states and transferring it to the currently available status-quo. Three steps were necessary for the processing of the incoming data:

- Step 1: Interpolation of missing (forecast) data

- Step 2: Harmonization of the age groups based on the current distribution
- Step 3: Calculation of developmental factors of each age group and county as well as transfer of these factors onto the current status-quo

3.5 Foreigners

Art. 116, § 1 of the German Constitutional Law defines who is regarded as foreigner. This also includes stateless people and persons with "undetermined nationality". For those Federal States where no current data is available, estimates were calculated based on county level. In communities with central reception centers for (post-war) repatriates, the official figures tend to be higher due to the sampling technique.

Our data provides information on the total number of foreigners per unit of different levels, but it also offers the differentiation of foreigners in 8 ethnic groups (Asia, Africa, Near East; Balkan states; Greece; Eastern Europe; Russia, Belarus, Ukraine; Turkey; Western Europe, North America, Australia; Other).

The Central Registry of Foreigners offers data on foreigners for each federal state on state level. These are grouped into the 8 ethnic groups and projected on the finer levels of community, neighborhood or post code.

Source: State Offices for Statistics; Central Registry of Foreigner (Federal Office for Statistics)

4. Households

Definition: A household is an economic entity consisting of at least one person. People budgeting only for themselves make up an own household (single-person household) even when sharing an apartment with others. Individuals that not only live together but also budget together and especially co-finance their living are regarded as a multi-person household). Those living in a retirement or nursing

home, in barracks or similar facilities however are not ranked among the single-person households but are considered as shared accommodations.

Alongside the primary residence a person can also belong to another household (secondary residence) and in this case is counted twice. Therefore the population in private households will differ slightly from the number of inhabitants (population at the primary residence).

4.1 Households (total number; by 3 sizes; by 5 sizes)

Households: total number

Since the number of households is not available on community level for Germany, they are determined by using statistical procedures. The data used for this calculation originates from the official population figures provided by the State Offices for Statistics as of 31th of December.

Serving as another relevant data source, the Federal Office for Statistics offers both the total numbers of households and households by size at so-called regional adaptive layers derived from the (micro-) census.

These data are used as benchmarks to calculate an officially certified total number of households on community level.

Households by size

To generate the households by size, the previously calculated number of households on community level is used and differentiated according to the number of persons living in the household. The micro census provides official data of household sizes on the level of adaptive layers. As an additional auxiliary quantity, information gained by the survey 'Lifestyle' is considered, which allow a more precise statement on family structures. Furthermore, communities categorized by number of inhabitants as well as inhabitants grouped by the year they were born, are used to identify regional differences in the structure of families and households. Particularly the distribution of minors is used to determine the structure of households

4.2 Households by dominant parental or landlord / tenant age

Households can also be grouped by age of the head of the household i.e. the principal earner. Thereby, Nexiga refers to the micro census and develops own age groups.

4.3 Households with kids

Besides the total number of kids per household, Nexiga also offers 4 age groups:

- Households with children aged 0 to 5 years
- Households with children aged 6 to 14 years
- Households with children aged 15 to 17 years
- Households with children aged 18 years and older.

Children are defined as unmarried persons without children of their own living together with at least one parent. In other words, children still living at their parent's house, though being parents themselves, are statistically counted as a separate household. There is however no restriction of age.

4.4 Households by monthly net income

The micro census data is also used to generate categories of households according to the monthly net income. Additional information from the **Income and Consumption Survey** conducted by the Federal Office of Statistics contributes to the calculation. In order to regionalize the data, information provided by the Federal Office of Statistics is associated with the wage and income statistics.

As a result, households can be classified into several income groups.

Sources:

- State Offices of Statistics and Federal Office of Statistics
- Micro census

- Age structure of the population
- On-site visits (conducted since 1986)
- Statistical data of communities
- Federal Office for Building and Regional Planning
- Survey 'Lifestyle'
- Schober Consumer Database

4.5 Households by way of living

A household consists of one or more people. The determination of lifestyle is based on the social relations between the members of a household. There may be married or unmarried couples with or without children, single parents or singles without partner and children.

LOHAS

The acronym LOHAS stands for 'Lifestyles of Health and sustainability'. Thereby people are meant maintaining a health-conscious way of life that is characterized by orientating oneself to the principles of sustainability.

YUPPIES

YUPPIE is the acronym for 'Young urban professional' referring to young career-oriented people living in big cities.

DINKS

DINKS is the acronym for 'Double income no kids', representing childless couples where both partners are working. Usually they are about 30 years old and belong to the upper middle class.

4.6 Households by other criteria

Households by academic titular

Households by academic titular identify people holding an additive to their last names indicating an academic degree.

Households by foreign head of household

The variable 'Households by foreign head of household' depends on the computed number of foreigners and provides information on the number of foreigners per household.

Households by denial of advertising media

Households by denial of advertising media are those households who refuse mailings by labeling their door accordingly.

5. Purchasing Power

5.1 General purchasing power

According to a definition of the Federal Statistical Office, the purchase power matches the disposable income of the (resident) population. Since the purchase power is measured at the place of residence and thus does not provide any indication of where the money is spent and thus should not be mixed up with turnover figures or retail indicators, which are measured at the point of sale. Its compilation is based on the net income of private households. Nevertheless, there are several different sources and statistics to calculate the purchase power from:

- Statistical authorities and Federal Statistical Offices
 - Wage and income tax statistics
 - Transfer payments for old-age pension
 - Social transfer payments (welfare, housing benefits, child raising benefits)
- Federal Employment Agency
 - Child benefits statistics

- Unemployment statistics
- Unemployment benefits and unemployment aid statistics

Purchasing Power Index

To facilitate regional data comparability, a per capita index (Germany = 100) is applied. An index of 119.1 in a given area indicates that the average purchasing power per capita exceeds the German average by 19.1%. Likewise, an index of 87.2 points to an area with a relatively low purchasing power per capita.

The purchasing power index can also be differentiated regionally by relating the average per capita income to another reference area. For the IDX1 the reference area are West respectively East Germany, for IDX2 the relevant Federal State, for IDX3 the government district and for IDX5 the associated county. The index can be generated even for neighborhoods by relating the average income to the community (IDX 8).

Applicability

- Determination of small-scale potentials
- Analysis of small-scale market penetration
- Detection of white spots
- Analyses of market reserves
- Sales planning
- Location planning

6. Product-specific purchasing power

Definition: The purchasing power for books, for example, is the part of the disposable income of the resident population that accounts for books. Like the purchasing power it is measured at the place of residence and thus does not provide any indication of where the money is spent on books.

The calculation of the purchase power for books is based on small-scale information on the income structure of households and expenditure profiles for particular products per income category.

Taking into account the age structure, size of household and the educational background, the shares of income spent on books can be calculated. By linking these shares with the income per income class the purchasing power for books is produced.

Additionally the currently forecasted purchasing power volume for books was compared with turnover taxes and trades statistics as well as with information of associations.

7. Retail and Centrality

7.1 Retail purchase power

The retail purchase power refers to the part of disposable income of the population of a given area that is available for spending on retail (at the place of residence)

In this case, retail is used in the narrower sense: without retail of motor vehicles, automotive accessories, fuels, petrol stations but it includes the sales of the food production sector (bakeries, pastry shops, butcheries). The total retail purchasing power is consistent with the sum of the stationary retail turnover plus the sum of turnover achieved by mail order. Private sales, direct purchases from farmers and expenditure abroad are not included.

Those spending that are attributed to the retail sector (per income group and spatial unit) make up the purchasing power for the retail sector

The retail purchasing power in Germany is nowadays about 30% of the total purchasing power. This percentage is slightly higher in the "new" federal states (Brandenburg, Mecklenburg-Vorpommern, Saxony, Saxony-Anhalt, Thuringia).

Thus, the following statement following Engel's law is confirmed: The higher the income the lower the percentage amount of income spent on retail. Or in other words: A household with an income of 50.000€ p.a. spends indeed more on retail but in no way twice than a household with an income of 25.000€ p.a.

7.2 Turnover key figures for retail

The retail turnover instead is the turnover of (local) retail trade at the point of sale. It includes the total turnover of the stationary retail plus the turnover of the food production sector.

7.3 Centrality, binding for purchase power

The centrality index is defined as the retail turnover in a given area in relation to the local retail purchasing power. If the local retail turnover is higher than the retail

purchasing power of the local population more purchasing power is accrued than drained off. Thus, the centrality index is a measurement for the ability of a given area to accumulate purchasing power.

The centrality index is marked as a per capita index (national average = 100) and shows the amenity or magnetic effect of an area to its environs.

A centrality of 100 implies that there is neither influx nor drain of retail purchasing power. If an area shows an index of 200 this means that there the retail turnover is twice the retail purchasing power. Thus, this area has a magnetic effect and outside retail purchasing power accrues. On the contrary an index of 50 means that only half of the populations purchasing power is bound by retail. Since consumers often don't go shopping at their place of residence negative values occur when they make their purchases somewhere else.

8. Construction Activity and Living

8.1 Official inventory of buildings

The Building Inventory categorizes buildings according to the number of apartments per building and also distinguishes between residential and non-residential buildings.

Data is available for total number of residential buildings and for three categories according to the number of apartments per building (single family, double family and multi family home). Additional data provides the total number of flats in both residential and non-residential buildings as well as the total number of flats in only residential buildings. Those are further classified according to the type of building they belong to (number of flats in a single family, double family or multi family home).

This data was provided by the State offices for Statistics on level of community (KGS 8) and was further converted to finer levels by Nexiga.

8.2 Building volume and activity

This data collection includes the volume for construction of both residential buildings and non-residential buildings (in Mio € and ppm Germany), the financial volume per inhabitant (€) and the according indices (Germany= 100).

The DIW (German Institute for Economic Research) states:

The construction volume comprises all domestic construction work in nominal and real terms. On the supply side, the calculation includes contributions from building construction and the finishing trades, the manufacturing industry (metal constructions, prefabricated buildings, electro-technical facilities and installations, etc.), additional construction services (planners, architects, etc.), as well as contributions from the investors.

From the demand side, the calculation includes residential construction, structural and civil engineering for corporations, as well as public structural, road, and other civil engineering. Here new construction work is differentiated from already existing building measures. The data collection is currently supported by the Federal Office for Building and Regional Planning in the framework of the research initiative "Zukunft Bau" (Future Construction) of the Federal Ministry of Transport, Building and Urban Affairs.

(Source: http://www.diw.de/sixcms/detail.php?id=diw_02.c.237047.en)

9. Renting and Purchasing (of buildings)

Follow-up of the official statistics of owners occupying or renting their flats. Both the number of resident households and number of households renting an apartment are recorded, no matter what type of building the apartment is located.

These data are an extrapolation of building- and housing census taking into account the inventory trend of single and 2-family houses (building permit and inventory statistics for residential buildings released by the regional authorities for statistics) as well as of results of the micro census on the housing situation of German households.

10. Motor vehicles

The fleet of motor vehicles data collection offers total counts of vehicles. Additionally, vehicles are classified by use (commercial/ business or private use). This data is available both in form of integers and percentage.

Source of the data is the Federal Motor Transport Authority (KBA).

11. Firms, Companies and Turnover

The Schober business addresses may be aggregated on the various levels by assigning each company to exactly one main sector. Thereby the companies are classified by company size (number of employees) and its primary sector.

Assigning a company to an industry is generally said not unique i.e. a company may have several finer industry codes. These fine industry codes (about 10.000) are yet clearly assigned to a coarser classification of 148 main sectors. These on the other hand belong to an even coarser classification of 15 groups. These are:

- Public authorities and administration
- Medical profession, physicians and
- Car dealers and car repair / automotive
- Banks and savings banks
- Services
- Retail
- Wholesale
- Craft, small trade, handcraft
- Manufacturer
- Hotel business, catering, gastronomy
- Agriculture
- Legal-, economic and investment counseling
- Other trade
- Insurance companies, agencies
- Unknown (no industry assigned)