

Sources for polygons

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The shapefile format . . .

- ▶ . . . is a popular geospatial vector data format for geographic information system (GIS) software.
- ▶ It is developed and regulated by Esri as a (mostly) open specification for data interoperability among Esri and other GIS software products.
- ▶ The shapefile format can spatially describe vector features: points, lines, and polygons, representing, for example, water wells, rivers, and lakes.
- ▶ Each item usually has attributes that describe it, such as name or temperature.

Source: Wikipedia

Global Administrastrive Boundaries - GADM - NUTS level 1

```
library(raster)
LUX1 <- getData('GADM', country='LUX', level=1)
plot(LUX1)
```



Let's have a look at the data

How to get the information on the polygons

```
LUX1@polygons[[1]]@Polygons[[1]]@coords
```

Coordinates in polygon slot

6.026519	50.17767
6.031361	50.16563
6.035646	50.16410
6.042747	50.16157
6.043894	50.16116
6.048243	50.16008

Data slot

```
head(LUX1@data)
```

```
##   OBJECTID ID_0 ISO      NAME_0 ID_1      NAME_1 TYPE_
## 1          1 131 LUX Luxembourg  1 Diekirch District
## 2          2 131 LUX Luxembourg  2 Grevenmacher District
## 3          3 131 LUX Luxembourg  3 Luxembourg District
##   NL_NAME_1           VARNAME_1
## 1      NA Dikrech|Dikkrich
## 2      NA Gréivemaacher
## 3      NA Lëtzebuerg|Luxemburg
```

GADM- NUTS level 3

```
LUX3 <- getData('GADM', country='LUX', level=3)  
plot(LUX3)
```



GADM- NUTS level 4

```
LUX4 <- getData('GADM', country='LUX', level=4)  
plot(LUX4)
```



GADM- NUTS level 3

```
DEU3 <- getData('GADM', country='DEU', level=3)  
plot(DEU3)
```



Postal codes for Germany

<http://datahub.io/de/dataset/postal-codes-de>

```
## OGR data source with driver: ESRI Shapefile  
## Source: "post_pl.shp", layer: "post_pl"  
## with 8270 features  
## It has 3 fields
```

```
library(maptools)  
PLZ <- readShapePoly("post_pl.shp")
```

R-command readShapePoly

To read shapefiles it is necessary to have three files with the following file extensions in the same directory:

- ▶ .shp
- ▶ .dbf
- ▶ .shx

Plot Mannheim

```
MA <- PLZ[PLZ@data$PLZORT99=="Mannheim",]  
plot(MA)
```



Source GeoData Germany

```
library(maptools)
setwd("D:/Daten/Daten/GeoDaten/vg250_ebenen")
krs <- readShapePoly("vg250_krs.shp")
plot(krs)
```



Districts for one federal state

```
fds <- substr(krs@data$AGS,1,2)
```

```
plot(krs[fds=="05",])
```



primary election-areas (Germany)

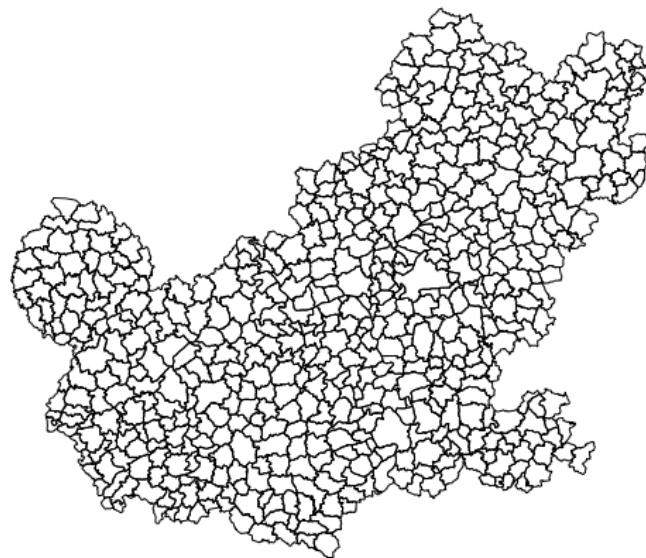
```
setwd("D:/Daten/Daten/GeoDaten")
onb <- readShapePoly("onb_grenzen.shp")

kable(head(onb@data))
```

	VORWAHL	NAME	KENNUNG
0	04651	Sylt	NA
1	04668	Klanxbüll	NA
2	04664	Neukirchen b Niebüll	NA
3	04663	Süderlügum	NA
4	04666	Ladelund	NA
5	04631	Glücksburg Ostsee	NA

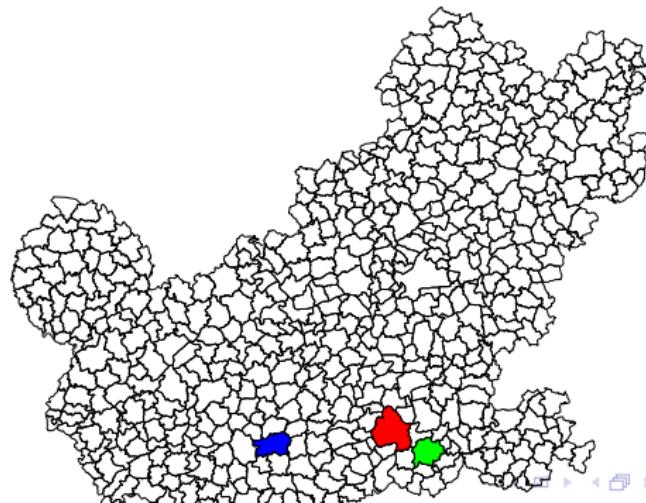
The primary election-areas 06

```
VW <- substr(onb@data$VORWAHL, 1, 2)  
plot(onb[VW=="06",])
```



Which is Mannheim?

```
Com <- onb@data$NAME  
plot(onb[VW=="06",])  
plot(onb[Com=="Mannheim",], col="red", add=T)  
plot(onb[Com=="Heidelberg",], col="green", add=T)  
plot(onb[Com=="Kaiserslautern",], col="blue", add=T)
```



World Port Index

Other sources

Extra Map Databases

```
library(mapdata)
```

- ▶ Information about rivers

Further sources

- ▶ Eurostat maps
- ▶ Open linked data
- ▶ World Borders Dataset
- ▶ National Historical Information System
- ▶ Free polygon data for the US