

Economic Activity With SPAG package Cheat Sheet

Data format

The SPAG function calculates index of economic activity based on two datasets – data frame with the companies and a SpatialPolygonsDataFrame with the map of the area on which the companies are located.

Data Frame

The data frame with information regarding the companies consists of four columns - the geographical coordinates of the company, the number of people employed there and the a column with information regarding the industry category:

lon	lat	emp	categ
22.00263	51.40935	5	4
22.34528	51.35417	5	3
22.96182	50.31523	5	2
21.83905	50.95910	5	4
23.37778	51.96064	5	1
22.25986	51.74347	5	4

Map

The maps are preserved with spatial polygons package. Given a Spatial Polygons Data Frame the map can be plotted using the following code:

```
mapDF <- fortify(ShapefilePoland)
ggplot() +
  geom_polygon(data=mapDF, aes(long, lat,
group =group), colour='#808080', fill=NA) +
  theme_nothing() +
  labs(long="longitude", lat="latitude")
```

Resulting in the following map:



Loading the map

Map format

Usually for best precision maps are saved as shapefiles. They can be loaded using **readOGR** function from rgdal package:

```
ShapefilePoland <- readOGR("directory",
"województwo")
```

The maps can use different coordinate systems. To check the system for your map use the proj4string slot:

```
ShapefilePoland@proj4string
```

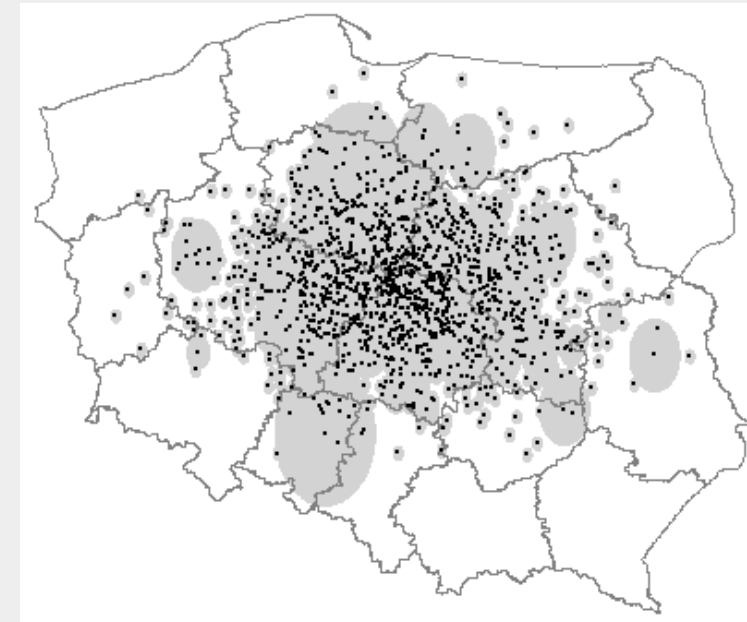
The SPAG function transforms to the following system:

```
"+proj=longlat +datum=WGS84"
```

SPAG Function

The SPAG package provides an interface for calculating the SPAG index. This can be done using the following function:

```
spagIndex <- SPAG(CompaniesPoland, ShapefilePoland)
plot(spagIndex)
```



The package calculates three components of the SPAG Index – the Distance, Overlap and Coverage Index:

```
print(spagIndex)
```

categories	IDist	IOver	ICov	ISPAG
C	0.4676398	0.3440758	1	0.1609035
Total	0.4671459	0.3440758	1	0.1607336