

# **Choropleth Map of Poland (Area and Population)**

**An example in R (RStudio) and Quarto**

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This is an example of choropleth maps created in R (RStudio), using the ‘ggplot2’ library. The maps show the area and population of Poland by voivodeship (province) and selected county (district).

## **1 Packages used**

```
library(sf)
library(dplyr)
library(ggplot2)
library(ggspatial)
library(readxl)
library(gridExtra)
```

## 2 Data Sources

Maps and statistics were taken from the following sources:

[https://gadm.org/download\\_country\\_v3.html](https://gadm.org/download_country_v3.html),

<https://stat.gov.pl/statystyka-regionalna/>.

```
gadm_3sf <- readRDS("dane/gadm36_POL_3_sf.rds")
gadm_2sf <- readRDS("dane/gadm36_POL_2_sf.rds")
gadm_1sf <- (readRDS("dane/gadm36_POL_1_sf.rds"))
gadm_0sf <- (readRDS("dane/gadm36_POL_0_sf.rds"))

woj <- read_excel("wojewodztwa.xlsx")
```

## 3 Poland. Geographical location

```
war_x = 21.03
war_y = 52.2

ggplot(gadm_0sf) +
# annotation_spatial(gadm_0sf) +
layer_spatial(gadm_0sf) +
annotation_map_tile(type = "osm", zoomin = -1) +
geom_sf(data = gadm_0sf, fill = "#48948e") +
coord_sf(
# Longitude
xlim = c(-160, 160),
# Latitude
ylim = c(-80, 80)) +
geom_hline(yintercept = 0, linetype = "dashed", color = "#5a84b8",
size = 0.1) +
```

```
geom_vline(xintercept = 0, linetype = "dashed", color = "#5a84b8",
           size = 0.1)
```

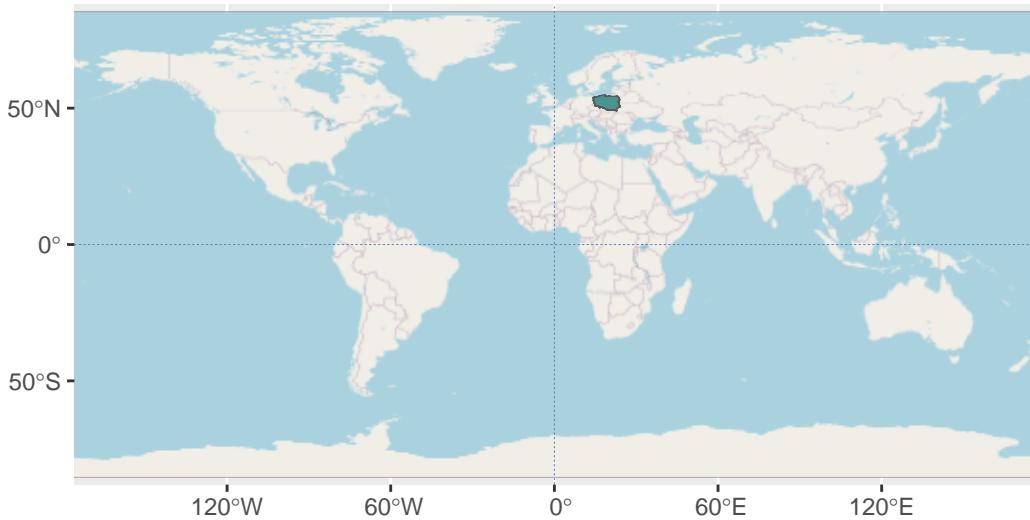


Figure 1: Poland. Geographical location

## 4 Poland in Europe

```
ggplot(gadm_0sf) +
#  annotation_spatial(gadm_0sf) +
layer_spatial(gadm_0sf) +
annotation_map_tile(type = "osm", zoomin = -1) +
geom_sf(data = gadm_0sf, fill = "#48948e") +
annotate("text", x = war_x-1.5, y = war_y+1.25, colour = "white",
        label = "Polska", size = 4) +
annotate("point", x = war_x, y = war_y, colour = "#87ede5", size = 1) +
annotate("text", x = war_x, y = war_y-0.5, colour = "white",
        label = "Warszawa", size = 2) +
coord_sf(
# Longitude
xlim = c(-5, 40),
```

```
# Latitude  
ylim = c(37, 60),  
crs = 4326)
```



Figure 2: Poland in Europe

## 5 Seats of the Governors

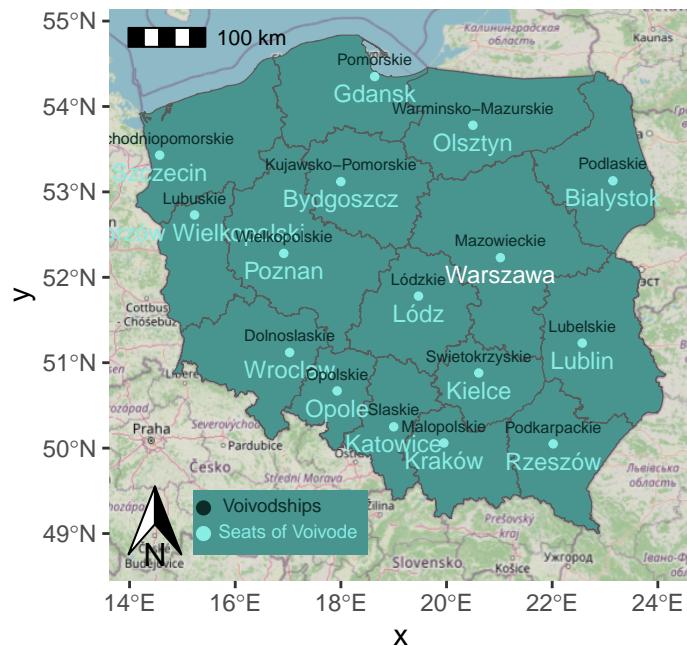


Figure 3: Seats of the Governors

## 6 Voivodship area and polulation

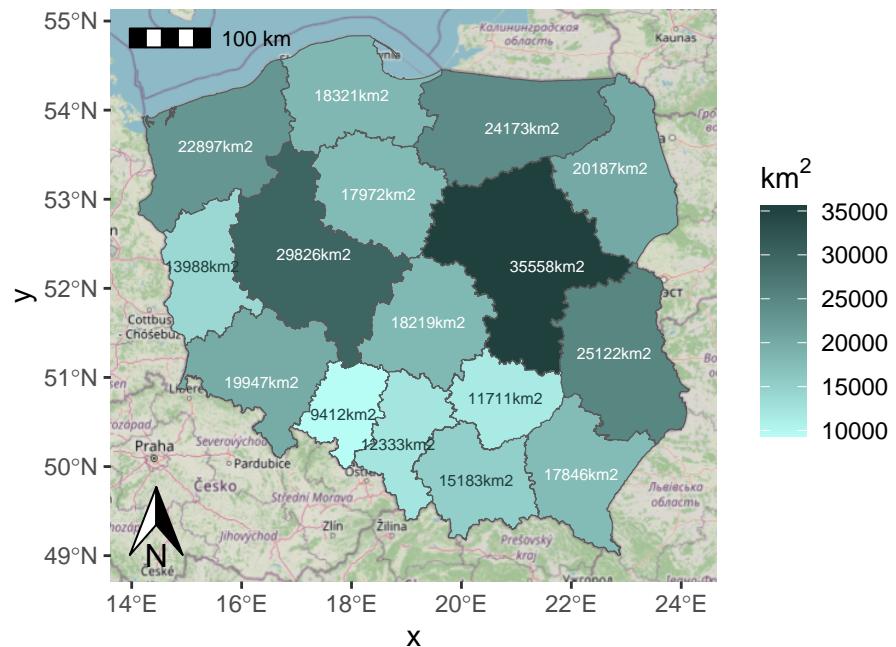


Figure 4: Voivodship area

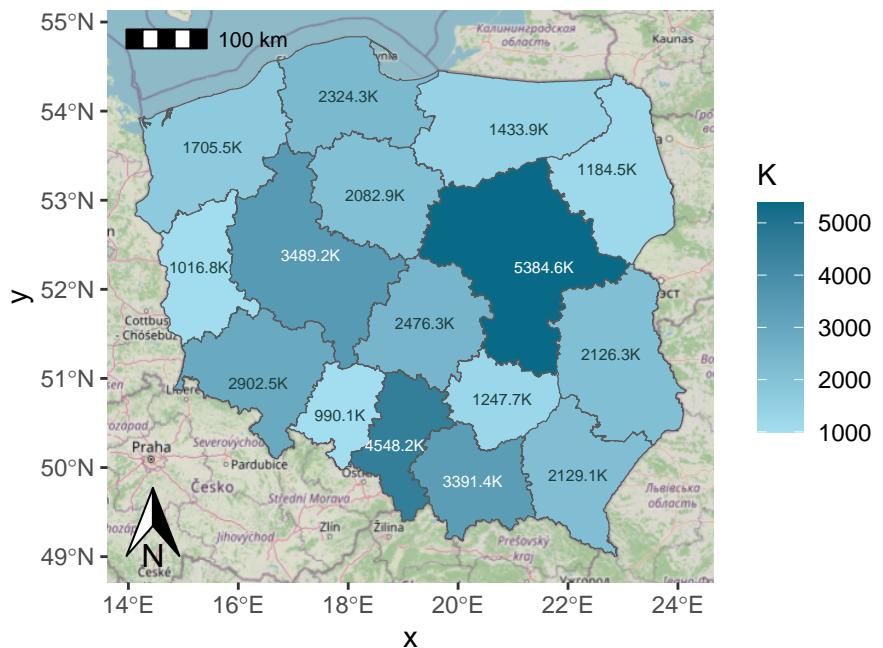


Figure 5: Voivodship population

## 7 Selected voivodeships

### 7.1 Lublin voivodeship. Counties area and population

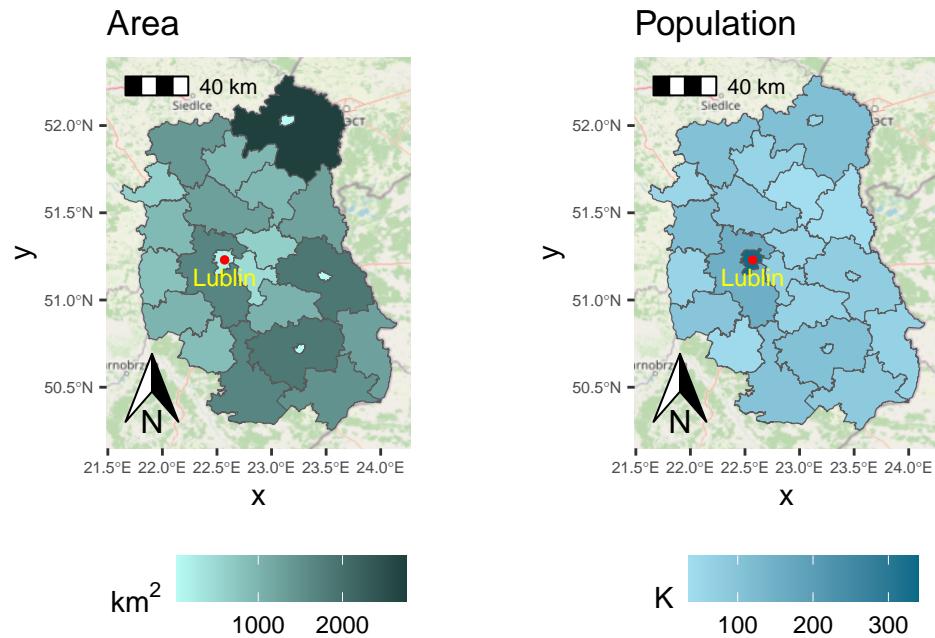


Figure 6: Lublin voivodeship. Area and Population

## 7.2 Podlaskie voivodship. Counties area and population

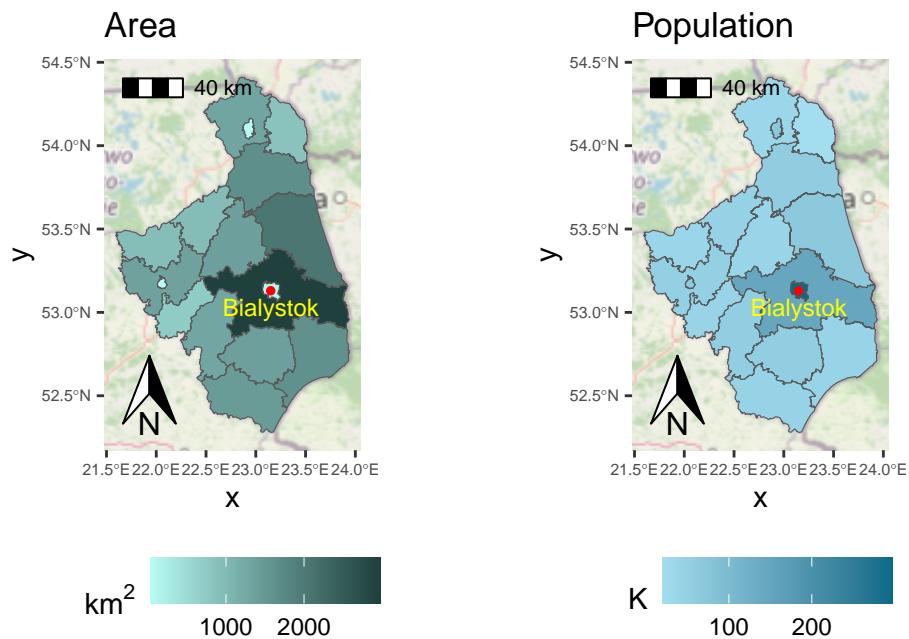


Figure 7: Podlaskie voivodship. Area and population