# Zonal Statistics for GPW

Zonal statistics in GIS refers to the calculation of statistics on values of a raster within the zones of another dataset.

This project is a collaborative work of UXO India and IDFC.

In the following example the sum of the raster values of the zones are calculated.

### Including Packages

```
library(rgdal) # To import raster data

library(maptools) # To plot the data

library(proj4)  # To reproject raster

library(xtable) # To export data to html tables

library (raster) # Required for rgdal

library (rgeos) # Required for maptools

library (spatstat) # Analysing spatial point patterns

library (tiff) # Read TIFF images and required for rgdal

library (sp) #Required for maptools

library (data.table) # Modifying columns

library (modeest) #To calculate mode value for the zone

library (foreign) # Required for maptools
```

### To read shapefile and assign to a variable [zone]

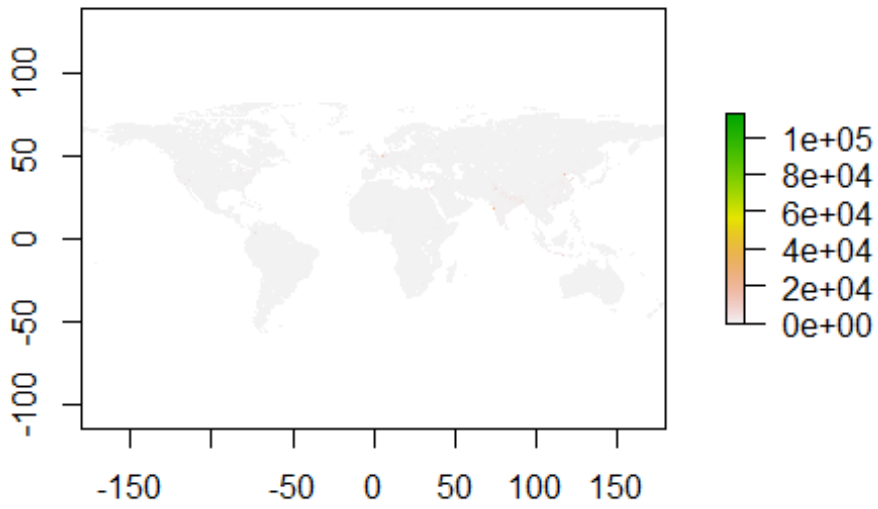
```
Zone<-readOGR("D:/IDFC work/Bulk Zonal Stat Calculation/INPUT/R_Script_Directory","29_Admin_Boundary")

## OGR data source with driver: ESRI Shapefile
## Source: "D:/IDFC work/Bulk Zonal Stat Calculation/INPUT/R_Script_Directory", layer: "29_Admin_Boundary"
## with 29 features
## It has 6 fields

plot(Zone)
```

**To read Raster data and assign to a variable [Lumin]**

```
Lumin <- raster("D:/K/New folder/R Markdown/Input/GPW population/density/gpw-v4-population-density_2020.tif")
plot(Lumin)
```




**Calculate sum of the values of the raster data falling in the zone**

```
out <- extract(Lumin, Zone, fun = sum, na.rm = T, small = T, df = T)
```

**Extract the attributes from zone**

```
z <- Zone@data
```

**Bind the extracted attributes and the output**

```
M <- cbind(z,out)
```

**Write the output to the CSV format**

```
write.csv(M,"D:/K/New folder/R Markdown/Input/GPW population/count/zonal_stat_GPW_2020_density_Dist_2001.csv", na="NA") # Enter Output csv file name and path
```