Cheatography

Datos georeferenciados Cheat Sheet

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Basic functions

Archvios en el directorio

```
dir()
```

Archivos en carpeta

```
dir("folder")
```

```
require(dgdal)
```

Cargar cartografía

```
map=readOGR("folder_address","name",
  stringsAsFactors = FALSE)
```

Check structure of map

```
View(map)
View(map@data)
```

Map summary

```
summary(map)
```

Plot map

```
plot(map)
```

Add borders to map

```
require(tmap)
tm_shape(CCAA_MAP)+ tm_borders()
```

Dynamic representation

```
require(rgdal)
```

```
require(leaflet)
```

```
map=readOGR("folder","map_name")
```

```
leaflet(map,
  options = leafletOptions(attributionControl = FALSE))
  %>% addPolygons(data=CCAA_MAP, stroke=TRUE,
  opacity = 0.5, fillOpacity = 0.7,color="grey10",
  fillColor = ~colorQuantile("YlOrBr", n=9, SALARIO,
  na.color = "white")(SALARIO))
```

```
leaflet(CCAA_MAP,options = leafletOptions(attributionControl = FALSE)) %>% addTiles()%>% addPolygons(data=CCAA_MAP, stroke=TRUE, color="grey10")
```

Cargamos el OpenStreetMap (OSM)

Dynamic representation (cont)

```
leaflet(CCAA_MAP,options = leafletOptions(attributionControl = FALSE)) %>% addTiles()%>% addPolygons(data=CCAA_MAP, stroke=TRUE, opacity = 0.25, fillOpacity = 0.27,color="grey10", fillColor = ~colorQuantile("YlOrBr", n=9, SALARIO, na.color = "white")(SALARIO))
```

Realizamos la representación dinámica + OSM

```
library(tmap)
tmap_mode("view")
```

```
tm_shape(CCAA_MAP) + tm_fill(palette ="Blues",col = "SALARIO",style = "quantile")
```

Otra opción sin OpenStreetMap

Localización de datos espaciales

```
datos_map<-data.frame(
  longx= c(-3.741274,-3.718765,-3.707027),
  laty=c(40.38479, 40.36751, 40.45495))
```

Para situar marcadores

```
marker_icon <- makeIcon( iconUrl = "https://cdnjs.cloudflare.com/ajax/libs/leaflet/1.8.0-beta.0/images/marker-icon.png", shadowUrl = "https://cdnjs.cloudflare.com/ajax/libs/leaflet/1.8.0-beta.0/images/marker-shadow.png")
```

Obtenemos los marcadores del repositorio de la libería leaflet

```
leaflet(data=datos_map) %>% addTiles()%>% addMarkers(data=datos_map,lng=~longx, lat=~laty, icon = marker_icon)
```

```
# Para integrarlo con la librería leaflet
```

Add info from csv to map

Add info from csv to map (cont)

Cambiar el nombre de los polígonos para que sean igual que tengan el mismo nombre que las filas de los datos mapa

```
new_IDs = rownames(map@data)
for (i in 1:length(slot(map, "polygons"))){
  slot(slot(map, "polygons")[[i]], "ID") = new_IDs[i]
}
```

Mapa con los nuevos datos

```
require(tmap)
tm_shape(map) + tm_borders()
tm_shape(map) + tm_polygons(col = "SALARIO")
```

Cambiar la paleta de colores

```
tm_shape(CCAA_MAP) + tm_borders() +
  tm_fill(palette ="Blues",col = "SALARIO",
  style = "quantile")
```

Más información

```
tm_shape(CCAA_MAP) + tm_fill(palette ="Blues",col = "SALARIO",style = "quantile")+ tm_bubbles(size = "SALARIO",scale=1,style = "quantile", col = "darkblue")
```

Cambiar algunas opciones de leyenda

```
map1 = tm_shape(CCAA_MAP) +
  tm_fill(palette ="Blues",col = "SALARIO",style = "quantile")+
  tm_bubbles(size = "SALARIO",scale=1,style = "quantile", col = "SALARIO")+
  tm_layout(legend.title.size = .7,
  legend.text.size =0.6,
  legend.position = c("right","bottom"),
  legend.bg.color = "white",
  legend.bg.alpha = 1,
  legend.stack = "horizontal",
  legend.width = 1.5,
  legend.height = 1.5)
map1
```

guardar la nueva cartografía

```
writeOGR(obj=map, dsn="folder", layer="CCAA_SALARIOS", driver="ESRI Shapefile")
```

Load csv

```
new_data=read.csv("new_data.csv",sep = ";")
```

Check info

```
View(new_data)
```

Add data to map

```
require(dplyr)
map@data=dplyr::left_join(map@data,new_data,
  by=c("map_col"="new_data_col"))
```

Check new data

```
View(CCAA_MAP@data)
```

Adding data changes row names, so we change them back

```
rownames(map@data)=map@data$map_col
```

Add info from csv to map (cont)

guardar la imagen en formato jpeg

tmap_save(map1, filename="map1.jpeg", width=15, height=10, units="cm")

Añadir fichero con localizaciones

load(file="datos_CCAA/Data_Housing_Madrid.RData") # Ojo con el directorio View(Datos_house)

Cargamos datos desde fichero

par(mfrow=c(1,1)) hist(Datos_house$house.price)

acemos un histograma para ver la distribución del precio de la vivienda en Madrid

mapa_pisos = leaflet(data=Datos_house[sample(nrow(Datos_house),100),]) %>% addTiles() %>% # Add default OpenStreetMap map tiles addMarkers(lng=~longitude, lat=~latitude, icon = marker_icon, popup=~paste0(type.house, " - ", house.price, " euros"))

Localizamos dichos datos y lo integramos con la librería leaflet

mapa_pisos

Representamos dinámicamente el objeto creado antes

More tools

Color map based on information already contained

```
tm_shape(CCAA_MAP) +
  tm_borders(col = "black")+
  tm_shape(Munic_ESP)+
  tm_fill(col="PrecioIn16", style = "quantile" )
```

Cambiar sistema de referencia

```
require(rgdal)
CRS.new = CRS("+init=epsg:4258")
Munic_ESP = spTransform(Munic_ESP, CRS.new)
View(Munic_ESP@data)
```

Loading maps alternative

require(sf)

map=st_read("map.shp")

View(CCAA_MAP)

Visualizamos su estructura

summary(CCAA_MAP)

class(CCAA_MAP)

Clase del objeto creado (data.frame)

Lista de geometría

st_geometry(CCAA_MAP)

Una de las geometrías

st_geometry(CCAA_MAP)[[13]]

methods(class='sfc')

Operaciones con geometría

map2 = cbind(map, st_coordinates(st_centroid(map)))

Obtain centroid of map

plot(CCAA_MAP[1])

Map of each variable

require(ggplot2)
ggplot(data=CCAA_MAP)+
  geom_sf()+
  theme_minimal()

Another option to style maps

salarios=read.csv("datos_CCAA/SALARIOS.csv",sep = ";")

require(dplyr)

CCAA_MAP<-dplyr::left_join(CCAA_MAP,salarios, by=c("cod_CCAA"="COD_CCAA"))

View(CCAA_MAP)

require(tmap)

require(RColorBrewer)

tm_shape(CCAA_MAP) + tm_borders()

tm_shape(CCAA_MAP) + tm_polygons(col = "SALARIO")

tm_shape(CCAA_MAP) + tm_fill(palette ="Blues",col = "SALARIO",style = "quantile")

Loading maps alternative (cont)

tm_shape(CCAA_MAP) + tm_fill(palette ="Blues",col = "SALARIO",style = "quantile")+ tm_bubbles(size = "SALARIO",scale=1,style = "quantile", col = "SALARIO")

st_write(obj=CCAA_MAP,dsn = "cartografías/CCAA_SALARIOS.shp", append=FALSE)

Plotting new info changes a bit