오산시 주차장, 주차구획 시각화

```
library(ggmap)
```

```
## 필요한 패키지를 로딩중입니다: ggplot2
```

```
## Google's Terms of Service: https://cloud.google.com/maps-platform/terms/.
```

```
## Please cite ggmap if you use it! See citation("ggmap") for details.
```

```
library(ggplot2)
library(raster)
```

```
## 필요한 패키지를 로딩중입니다: sp
```

```
library(rgeos)
```

```
## rgeos version: 0.5-5, (SVN revision 640)
##  GEOS runtime version: 3.8.0-CAPI-1.13.1
##  Linking to sp version: 1.4-5
##  Polygon checking: TRUE
```

```
library(rgdal)
```

```
## rgdal: version: 1.5-23, (SVN revision 1121)
## Geospatial Data Abstraction Library extensions to R successfully loaded
## Loaded GDAL runtime: GDAL 3.2.1, released 2020/12/29
## Path to GDAL shared files:
## GDAL binary built with GEOS: TRUE
## Loaded PROJ runtime: Rel. 7.2.1, January 1st, 2021, [PJ_VERSION: 721]
## Path to PROJ shared files: C:/Users/신은주/Documents/R/win-library/4.1/rgdal/proj
## PROJ CDN enabled: FALSE
## Linking to sp version:1.4-5
## To mute warnings of possible GDAL/OSR exportToProj4() degradation,
## use options("rgdal_show_exportToProj4_warnings"="none") before loading rgdal.
## Overwritten PROJ_LIB was C:/Users/신은주/Documents/R/win-library/4.1/rgdal/proj
```

```
library(maptools)
```

```
## Checking rgeos availability: TRUE
```

```
library(tidyr)
```

```
##
## 다음의 패키지를 부착합니다: 'tidyr'
```

```
## The following object is masked from 'package:raster':
##
##     extract
```

```
library(dplyr)
```

```
##
## 다음의 패키지를 부착합니다: 'dplyr'
```

```
## The following objects are masked from 'package:rgeos':
##
##     intersect, setdiff, union
```

```
## The following objects are masked from 'package:raster':
##
##     intersect, select, union
```

```
## The following objects are masked from 'package:stats':
##
##     filter, lag
```

```
## The following objects are masked from 'package:base':
##
##     intersect, setdiff, setequal, union
```

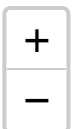
```
library(leaflet)
```

```
map=readOGR('TL_SCCO_EMD.shp')
```

```
## Warning in OGRSpatialRef(dsn, layer, morphFromESRI = morphFromESRI, dumpSRS =
## dumpSRS, : Discarded datum International_Terrestrial_Reference_Frame_2000 in
## Proj4 definition: +proj=tmerc +lat_0=38 +lon_0=127.5 +k=0.9996 +x_0=1000000
## +y_0=2000000 +ellps=GRS80 +units=m +no_defs
```

```
## OGR data source with driver: ESRI Shapefile
## Source: "C:WUsersW신은주WDesktopW오산시 데이터WTL_SCCO_EMD.shp", layer: "TL_SCCO_EMD"
## with 5051 features
## It has 3 fields
```

```
View(map)
df_map_info=map@data
View(df_map_info)
df_map = spTransform(x = map, CRSobj = CRS('+proj=longlat +datum=WGS84'))
leaflet(df_map)
```



Leaflet (https://leafletjs.com)

```
df_map = fortify(df_map)
```

```
## Regions defined for each Polygons
```

```
View(df_map)

data1<-read.csv('오산시_주차장정보.csv')
str(data1)
```

```
## 'data.frame':    11 obs. of  4 variables:
##  $ EMD_KOR_NM : chr  "윤계동" "지곶동" "원동" "오산동" ...
##  $ 주차장.개수: int  1 1 5 8 2 3 3 1 3 11 ...
##  $ 주차구획   : int  120 84 980 815 147 169 215 30 178 539 ...
##  $ id         : int  1 2 3 4 5 6 7 8 9 10 ...
```

```
# 오산시 데이터만 가져오기
df_map_info[, "id"] = (1:nrow(df_map_info)) - 1
df_map_info[, "SIDO"] = as.numeric(substr(df_map_info$EMD_CD,
                                          start = 1, stop = 4))
str(df_map_info)
```

```
## 'data.frame':    5051 obs. of  5 variables:
##  $ EMD_CD    : chr  "42110101" "42110102" "42110103" "42110104" ...
##  $ EMD_ENG_NM: chr  "Bongui-dong" "Yoseon-dong" "Nagwon-dong" "Jungangno 1(il)-ga" ...
##  $ EMD_KOR_NM: chr  "봉의동" "요선동" "낙원동" "중앙로1가" ...
##  $ id        : num  0 1 2 3 4 5 6 7 8 9 ...
##  $ SIDO      : num  4211 4211 4211 4211 4211 ...
```

```
id_sido = df_map_info[df_map_info$SIDO == 4137, c("id",'EMD_KOR_NM','EMD_CD')]
str(id_sido)
```

```
## 'data.frame':    24 obs. of  3 variables:
##  $ id        : num  618 619 620 621 622 623 624 625 626 627 ...
##  $ EMD_KOR_NM: chr  "오산동" "부산동" "원동" "궐동" ...
##  $ EMD_CD    : chr  "41370101" "41370102" "41370103" "41370104" ...
```

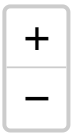
```
vec_label <- id_sido$EMD_KOR_NM
str(vec_label)
```

```
##  chr [1:24] "오산동" "부산동" "원동" "궐동" "청학동" "가장동" "금암동" ...
```

```
df_map$id<-as.numeric(df_map$id)
str(df_map)
```

```
## 'data.frame':    3545916 obs. of  7 variables:
##  $ long : num  128 128 128 128 128 ...
##  $ lat  : num  37.9 37.9 37.9 37.9 37.9 ...
##  $ order: int  1 2 3 4 5 6 7 8 9 10 ...
##  $ hole : logi  FALSE FALSE FALSE FALSE FALSE FALSE ...
##  $ piece: Factor w/ 238 levels "1","2","3","4",..: 1 1 1 1 1 1 1 1 1 1 ...
##  $ id   : num  0 0 0 0 0 0 0 0 0 0 ...
##  $ group: Factor w/ 10070 levels "0.1","1.1","2.1",..: 1 1 1 1 1 1 1 1 1 1 ...
```

```
new1<- inner_join(df_map,id_sido ,by='id')
leaflet(new1)
```



Leaflet (https://leafletjs.com)

```
str(new1)
```

```
## 'data.frame':    8993 obs. of  9 variables:
##  $ long      : num  127 127 127 127 127 ...
##  $ lat       : num  37.2 37.2 37.2 37.2 37.2 ...
##  $ order     : int  1 2 3 4 5 6 7 8 9 10 ...
##  $ hole      : logi  FALSE FALSE FALSE FALSE FALSE FALSE ...
##  $ piece     : Factor w/ 238 levels "1","2","3","4",..: 1 1 1 1 1 1 1 1 1 1 ...
##  $ id        : num  618 618 618 618 618 618 618 618 618 618 ...
##  $ group     : Factor w/ 10070 levels "0.1","1.1","2.1",..: 1387 1387 1387 1387 1387 1387 13
87 1387 1387 1387 ...
##  $ EMD_KOR_NM: chr  "오산동" "오산동" "오산동" "오산동" ...
##  $ EMD_CD    : chr  "41370101" "41370101" "41370101" "41370101" ...
```

```
new2<- left_join(new1 ,data1,by='EMD_KOR_NM')

leaflet(new2)
```

+
−

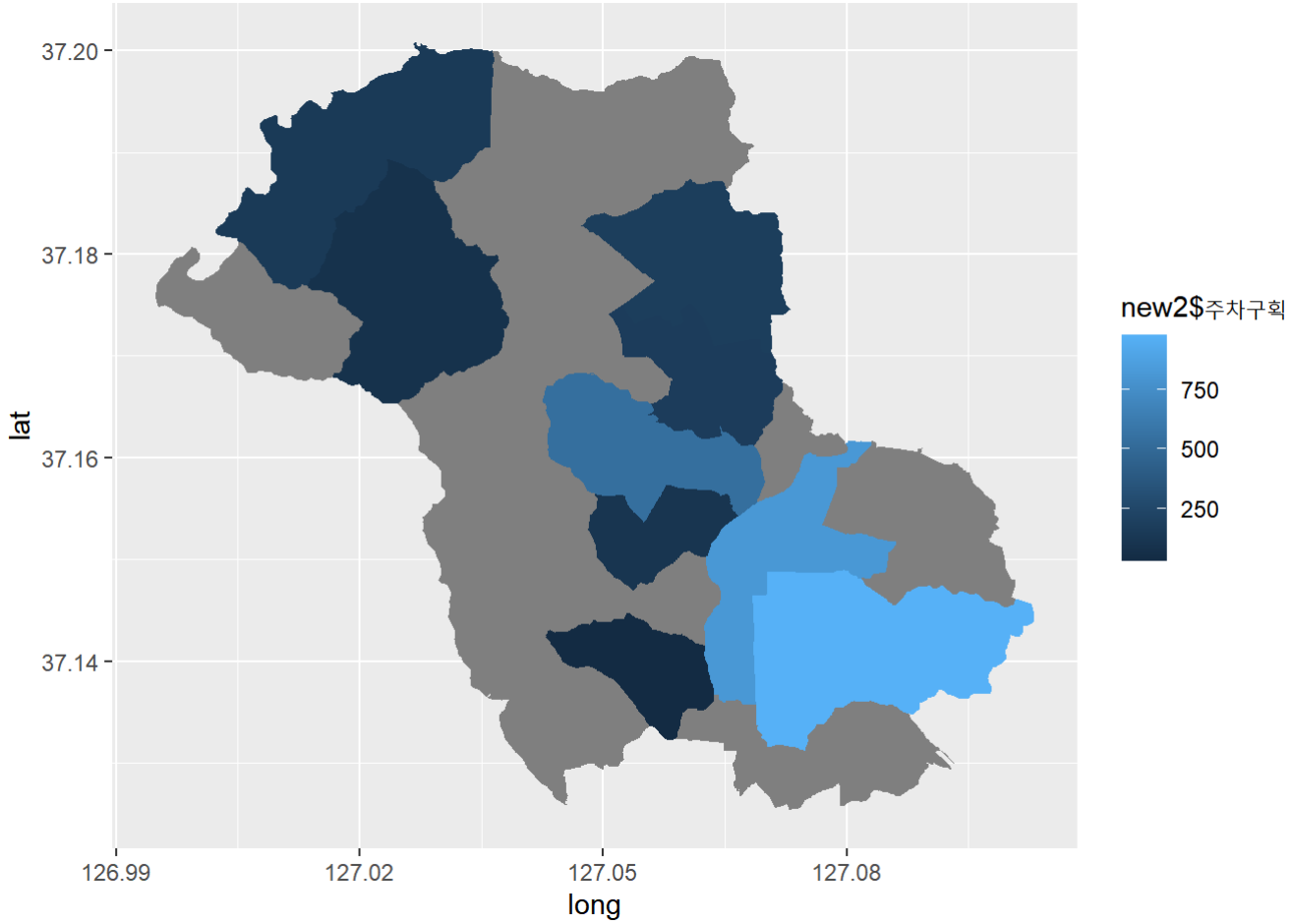
Leaflet (https://leafletjs.com)

```
str(new2)
```

```
## 'data.frame':    8993 obs. of  12 variables:
##  $ long       : num  127 127 127 127 127 ...
##  $ lat        : num  37.2 37.2 37.2 37.2 37.2 ...
##  $ order      : int  1 2 3 4 5 6 7 8 9 10 ...
##  $ hole       : logi  FALSE FALSE FALSE FALSE FALSE FALSE ...
##  $ piece      : Factor w/ 238 levels "1","2","3","4",..: 1 1 1 1 1 1 1 1 1 1 ...
##  $ id.x       : num  618 618 618 618 618 618 618 618 618 618 ...
##  $ group      : Factor w/ 10070 levels "0.1","1.1","2.1",..: 1387 1387 1387 1387 1387 1387 1
387 1387 1387 1387 ...
##  $ EMD_KOR_NM : chr  "오산동" "오산동" "오산동" "오산동" ...
##  $ EMD_CD     : chr  "41370101" "41370101" "41370101" "41370101" ...
##  $ 주차장.개수: int  8 8 8 8 8 8 8 8 8 8 ...
##  $ 주차구획   : int  815 815 815 815 815 815 815 815 815 815 ...
##  $ id.y       : int  4 4 4 4 4 4 4 4 4 4 ...
```

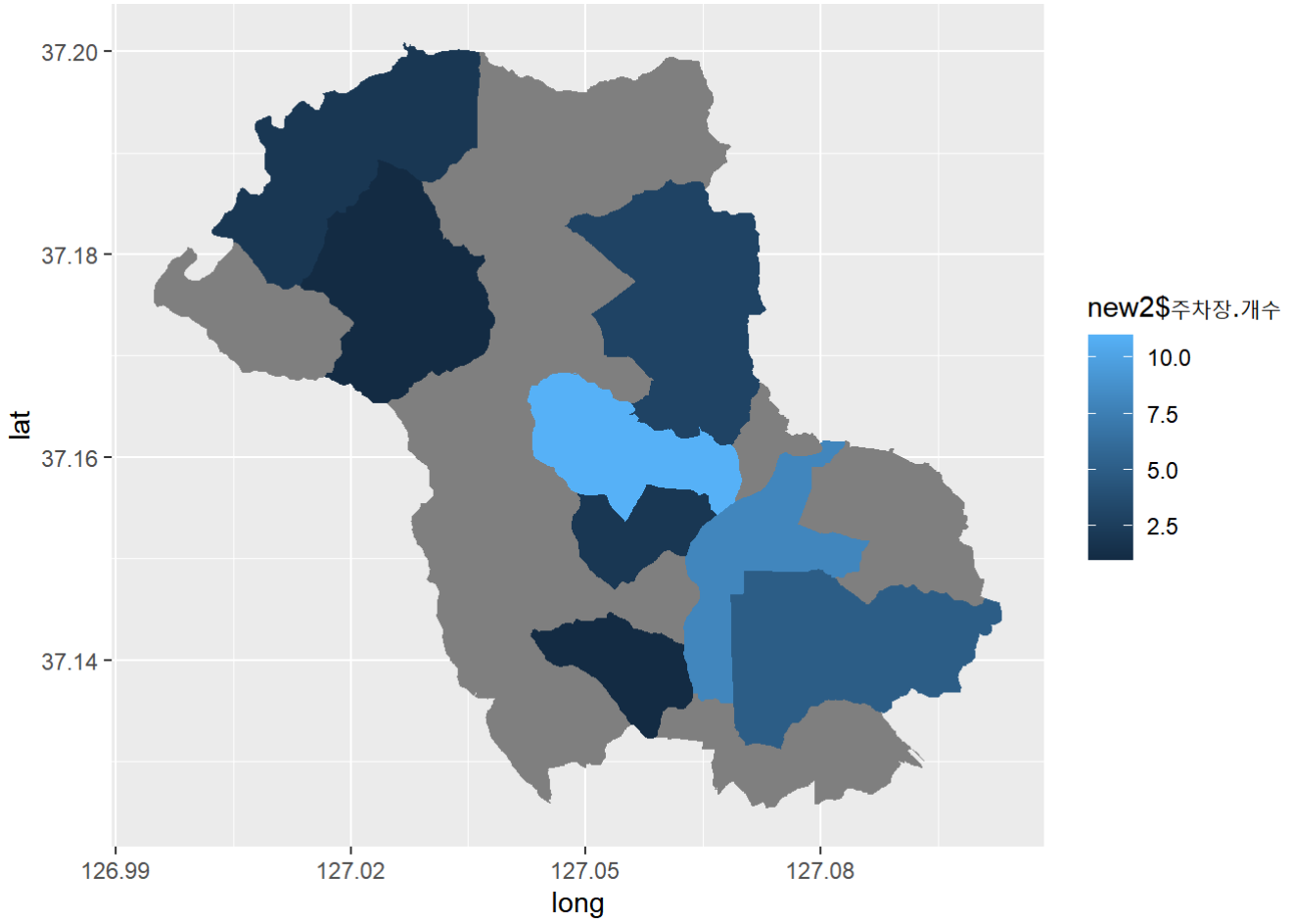
```
ggplot() + geom_polygon(data=new2, aes(x=long, y=lat, group=group,fill=new2$주차구획))
```

```
## Warning: Use of `new2$주차구획` is discouraged. Use `주차구획` instead.
```




```
ggplot() + geom_polygon(data=new2, aes(x=long, y=lat, group=group,fill=new2$주차장.개수))
```

```
## Warning: Use of `new2$주차장.개수` is discouraged. Use `주차장.개수` instead.
```




```
locate<-read.csv('오산시 위치, 전용면적대비 등록차량수 .csv')
locate$need<-locate$예측된.등록차량수/locate$전용면적
str(locate)
```

```
## 'data.frame':    105 obs. of  9 variables:
##  $ 단지코드          : chr  " 태양₩n" " 랜드마크1₩n" " 무궁화₩n" " 안국₩n" ...
##  $ 단지내주차면수    : int  9 27 9 9 7 107 9 920 514 9 ...
##  $ 위치              : chr  "경기도 오산시 갈곶동 218₩n" "경기도 오산시 궐동 6092₩n" "경기도
오산시 궐동 693₩n" "경기도 오산시 궐동 674₩n" ...
##  $ 전용면적별세대수 : chr  "37" "168" "50" "36" ...
##  $ 전용면적          : num  69.5 25.5 73 73 31 ...
##  $ 예측된.등록차량수: num  43.9 33.2 57 47.5 14.5 ...
##  $ Latitude          : num  37.1 37.2 37.2 37.2 37.2 ...
##  $ Longitude         : num  127 127 127 127 127 ...
##  $ need              : num  0.632 1.302 0.781 0.651 0.467 ...
```

```
locate$lon<-locate$Longitude
locate$lat<-locate$Latitude
str(locate)
```

```
## 'data.frame':    105 obs. of  11 variables:
##  $ 단지코드          : chr  " 태양₩n" " 랜드마크1₩n" " 무궁화₩n" " 안국₩n" ...
##  $ 단지내주차면수    : int  9 27 9 9 7 107 9 920 514 9 ...
##  $ 위치              : chr  "경기도 오산시 갈곶동 218₩n" "경기도 오산시 궐동 6092₩n" "경기도
오산시 궐동 693₩n" "경기도 오산시 궐동 674₩n" ...
##  $ 전용면적별세대수 : chr  "37" "168" "50" "36" ...
##  $ 전용면적          : num  69.5 25.5 73 73 31 ...
##  $ 예측된.등록차량수: num  43.9 33.2 57 47.5 14.5 ...
##  $ Latitude          : num  37.1 37.2 37.2 37.2 37.2 ...
##  $ Longitude         : num  127 127 127 127 127 ...
##  $ need              : num  0.632 1.302 0.781 0.651 0.467 ...
##  $ lon               : num  127 127 127 127 127 ...
##  $ lat               : num  37.1 37.2 37.2 37.2 37.2 ...
```

```
View(locate)
pal<-colorQuantile('YlOrRd',locate$need,n=8)


data_g<-leaflet(locate)%>%addTiles()%>%addCircleMarkers(~lon,~lat,radius =locate$need*3,color=
 ~pal(need))
data_g<-addLegend(data_g,'topright',pal=pal,values=~need,title='전용면적 대비 예측등록차량수')
data_g
```