CPDCarGPS

Urban Labs

November 30, 2017

```
getwd()
```

```
## [1] "/export/home/keval/CPDCarGPS"
```

```
# Load required packages
library(raster)
```

```
## Loading required package: sp
```

```
library(rgdal)
```

```
## rgdal: version: 1.2-16, (SVN revision 701)
## Geospatial Data Abstraction Library extensions to R successfully loaded
## Loaded GDAL runtime: GDAL 1.11.4, released 2016/01/25
## Path to GDAL shared files: /usr/share/gdal
## GDAL binary built with GEOS: TRUE
## Loaded PROJ.4 runtime: Rel. 4.8.0, 6 March 2012, [PJ_VERSION: 480]
## Path to PROJ.4 shared files: (autodetected)
## Linking to sp version: 1.2-5
```

```
library(maptools)
```

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

```
library(sp)
library(dplyr)
```

```
##
## Attaching package: 'dplyr'
```

```
## 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(ggplot2)
library(RSQLite)
library(akima)
```

```
# Import Polygon shapefile
rasterData <- readOGR("/export/home/keval/CPDCarGPS/geo_export_a3cd5e21-a654-4db5-be62-27a6a906b72e.shp")
```

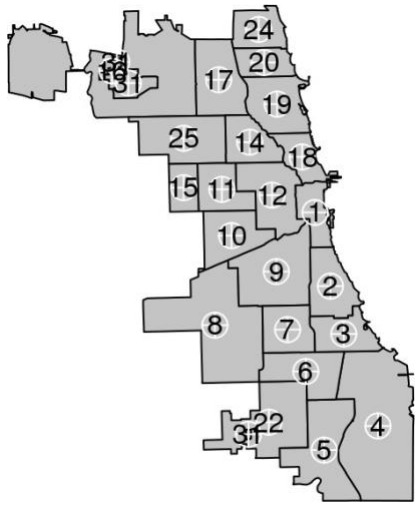
```
## OGR data source with driver: ESRI Shapefile
## Source: "/export/home/keval/CPDCarGPS/geo_export_a3cd5e21-a654-4db5-be62-27a6a906b72e.shp", layer: "geo_exp
ort_a3cd5e21-a654-4db5-be62-27a6a906b72e"
## with 25 features
## It has 2 fields
```

```
summary(rasterData)
```

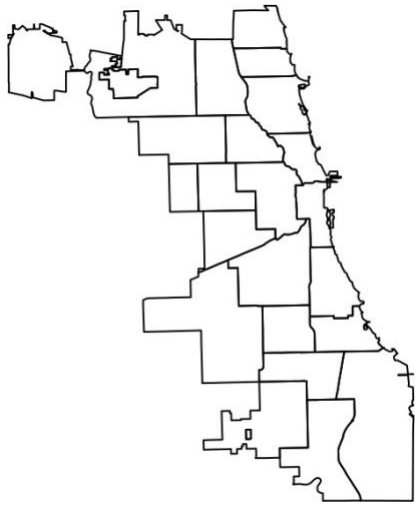
```
## Object of class SpatialPolygonsDataFrame
## Coordinates:
##         min       max
## x -87.94011 -87.52414
## y  41.64455  42.02303
## Is projected: FALSE
## proj4string : [+proj=longlat +ellps=WGS84 +no_defs]
## Data attributes:

##     dist_num    dist_label
##  31     : 3   31ST   : 3
##  1      : 1   10TH   : 1
##  10     : 1   11TH   : 1
##  11     : 1   12TH   : 1
##  12     : 1   14TH   : 1
##  14     : 1   15TH   : 1
##
    (Other):17   (Other):17
```

```
plot(rasterData, col="gray77", border="black")
xy = coordinates(rasterData)
points(xy, cex=2, pch=10, col='white')
text(rasterData, 'dist_num', cex=1)
```




```
# Extract 7TH District
rasterData7 <- rasterData[rasterData$dist_num == 7,]
plot(rasterData)
```



```
summary(rasterData7)
```

```
## Object of class SpatialPolygonsDataFrame
## Coordinates:
##         min       max
## x -87.67928 -87.62537
## y  41.75752  41.79420
## Is projected: FALSE
## proj4string : [+proj=longlat +ellps=WGS84 +no_defs]
## Data attributes:

##     dist_num   dist_label
##  7      :1   7TH    :1
##  1      :0   10TH   :0
##  10     :0   11TH   :0
##  11     :0   12TH   :0
##  12     :0   14TH   :0
##  14     :0   15TH   :0
##
    (Other):0   (Other):0
```

```
# Extract coordinates of District7
coords <- rasterData7 %>% fortify() %>% select(long,lat)
```

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

```
# District 7th coordinates
maxlat <- max(coords$lat)
minlat <- min(coords$lat)

maxlong <- max(coords$long)
minlong <- min(coords$long)

feb2016GPS <- read.csv("/export/projects/cpd_cargps/GPS_dump2016-02-01.csv")

# Subset Car GPS data for 7TH district only
feb2016GPS_7 <- subset(feb2016GPS, XCOORD >= minlong & XCOORD <= maxlong & YCOORD >= minlat & YCOORD <= maxla
t)
rm(feb2016GPS)
```

```
# Transform GPS Card data into SpatialPoints Data Frame
feb2016GPS_7_sp <- SpatialPointsDataFrame(coords = feb2016GPS_7[,c('XCOORD','YCOORD')], data = feb2016GPS_7, p
roj4string = CRS("+proj=longlat +ellps=WGS84 +no_defs"))

# Subset Feb2016 GPS dataframe for District 7 coordinates
feb2016GPS_7_sp_precise <- feb2016GPS_7_sp[rasterData7,]
```

```
# Plot the basemap and precise coordinates
plot(rasterData7, col="gray77")
points(feb2016GPS_7_sp_precise, cex=0.1, pch=4,  col="black")
```