



Geog 312 Assignment 5

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2 & 3 code



```
fdir =  
"/Users/trejimmy5562/Desktop/GEOG312_2/Assn5/assignment05_data/"  
  
fnames = list.files(fdir, pattern = ".csv")  
  
fpaths = paste0(fdir, fnames)  
  
pdfnames = substr(fnames,1,nchar(fnames)-4)  
  
pdfpath = paste0(fdir, paste0(pdfnames, ".pdf"))  
  
pdf(pdfpath)  
  
xc = vector()  
  
yc = vector()  
  
st1 = vector()  
  
--->
```

```
for (i in 1:length(fpaths)){  
  tab = read.csv(fpaths[i], header = T)  
  x = tab$lon_dd  
  y = tab$lat_dd  
  plot(x,y, pch = 3)  
  xc[i] = mean(x)  
  yc[i] = mean(y)  
  points(xc[i],yc[i], pch=16)  
  st1[i] = sqrt(sum((x - xc[i])^2) + sum((y - yc[i])^2))  
  par(new=T)  
  symbols(xc[i], yc[i], circles = st1[i], xlim = range(x), ylim =  
range(y), xlab = "", ylab = "", main = fnames[i])  
}  
dev.off()  
  
table2 = matrix(c(xc[1], xc[2], xc[3], xc[4], xc[5], st1[1], st1[2],  
st1[3], st1[4], st1[5]), ncol=2, nrow = 5)  
  
rownames(table2) = c("covers", "lampsrackhydrants", "signs",  
"stairsbenches", "trash")  
  
colnames(table2) = c("Spatial Center", "Standard Distance")  
  
table2 = as.table(table2)  
  
print(table2)
```

Part 2

	Spatial Center	Standard Distance
covers	-96.3413799	0.01760567
lampsrackhydrants	-96.34134124	0.01790618
signs	-96.34177294	0.01195479
stairsbenches	-96.34144741	0.01201623
trash	-96.34135462	0.011045



Part 3

PDF's of plots at end



The Nearest Neighbor Analysis null hypothesis is that the distance between each point will be randomly distributed.



Feature Tye	Density (n/A)	NNDr	NND	Z
covers	15078125	.0001287646	6.730781e-5	-1.0315453
Lampsrackshydrant	17343750	.0001200600	6.275779e-05	-0.4637669
signs	5000000	.0002236068	1.168837e-04	-0.9873891
stairsbenches	10000000	.0001581139	8.264929e-05	-0.8033944
trash	6015625	.0002038589	1.065611e-04	-0.2974477



Part 6

Since the z scores calculated for each feature indicates a random arrangement, all the features will fail to reject the null hypothesis



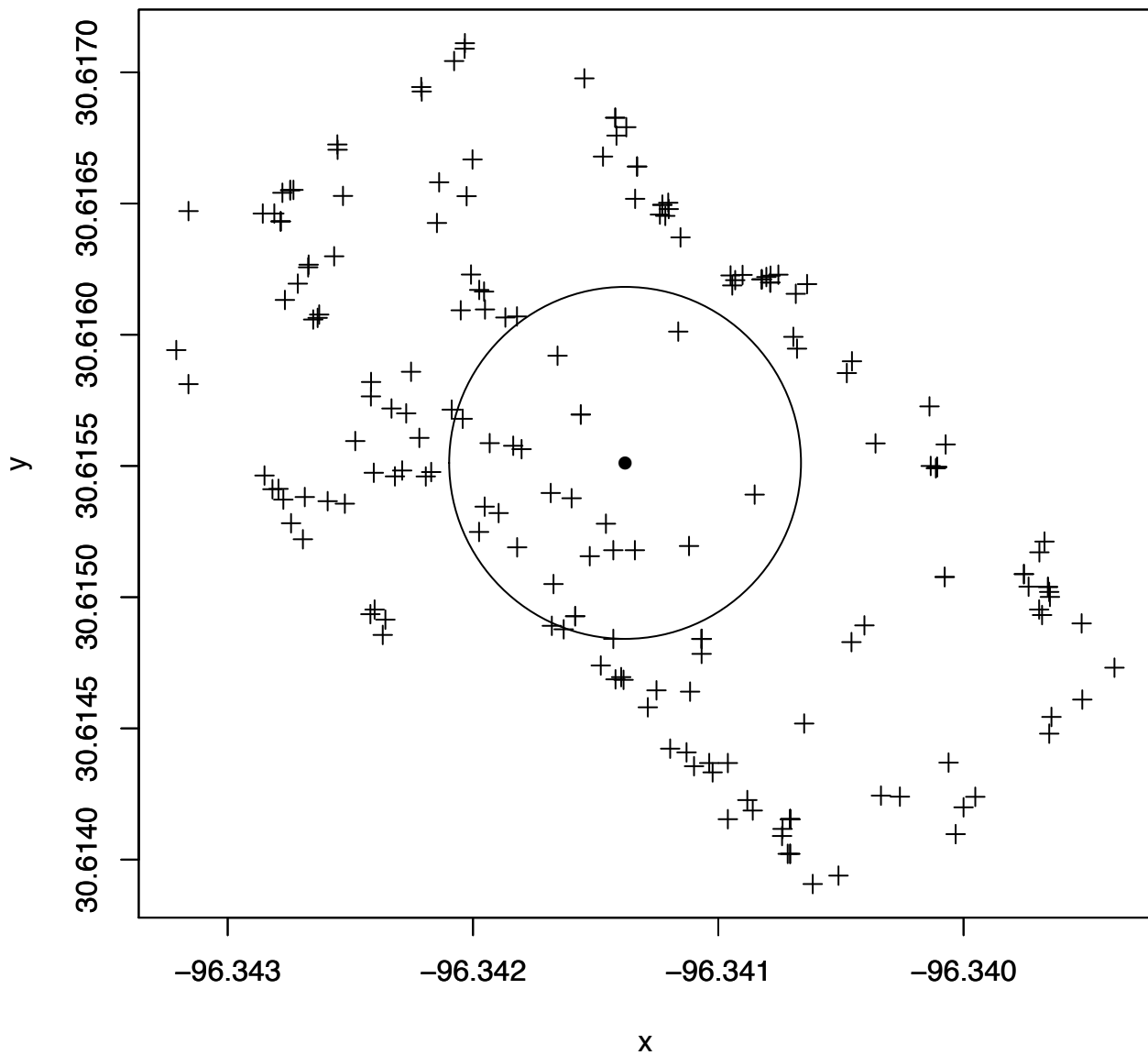
Part 7

Because all of the Z scores are negative, each feature has a random arrangement according to the nearest neighbor analysis.

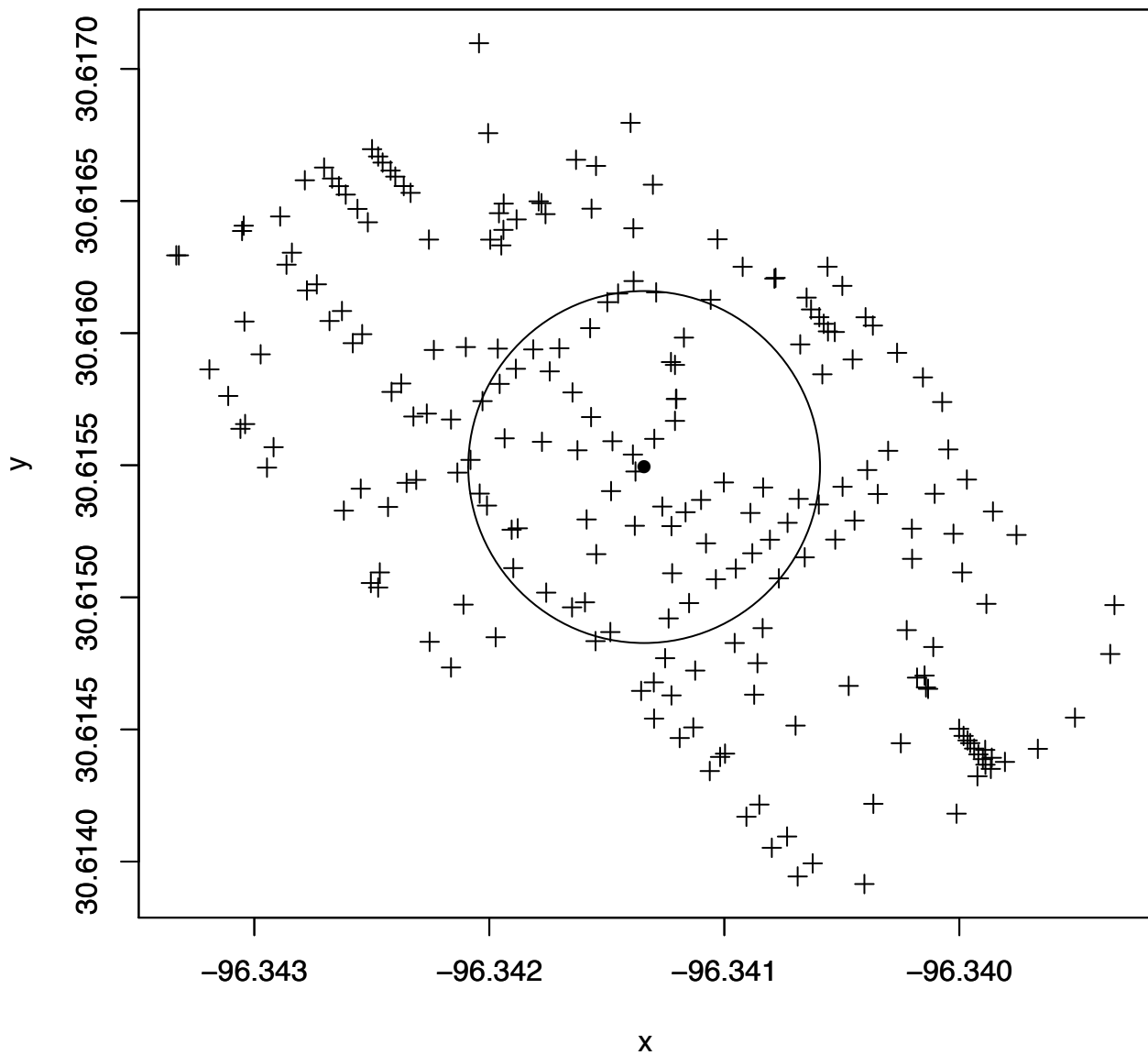
R Code

```
fdir = "/Users/maxA4/Desktop/GEOG312/Assn5/Assn5/"
fname = list.files(fdir, pattern = ".csv")
fPath = paste0(fdir, fname)
for (a in 1:length(fPath)) {
  #Indicating a csv file
  table <- read.csv(fPath[a])
  x = table$lon_dd
  y = table$lat_dd
  id = table$id
  #area of sample region
  A = 0.0000128
  #density equation
  den = length(id)/A
  #nearest neighbor random
  NNDR = 0.5 * (1/(sqrt(length(id)/A)))
  #sample standard error
  NNDRt = 0.26136/(sqrt((length(id^2))/A))
  #nearest neighbor dist
  nn_idx = vector()
  nn_dist = vector()
  for (b in 1:length(id)) {
    dist = sqrt((x[b]-x)^2 + (y[b]-y)^2)
    nn = order(dist)[2]
    nn_idx[b] = nn
    nn_dist[b] = dist[nn]}
  NND = mean(nn_dist)
  nn_stats = rbind(nn_stats, data.frame(d, NNDR,
    NNDRt, NND))}
  #nearest neighbor table
  nn_table = cbind(fName, nn_stats)
  #z.score calculation
  z.score = NULL
  for (c in 1:length(nn_table)) {
    Z = (nn_table$NND[c] -
      nn_table$NNDR[c])/nn_table$NNDRt[c]
    z.score = rbind(z.score, data.frame(Z))
```

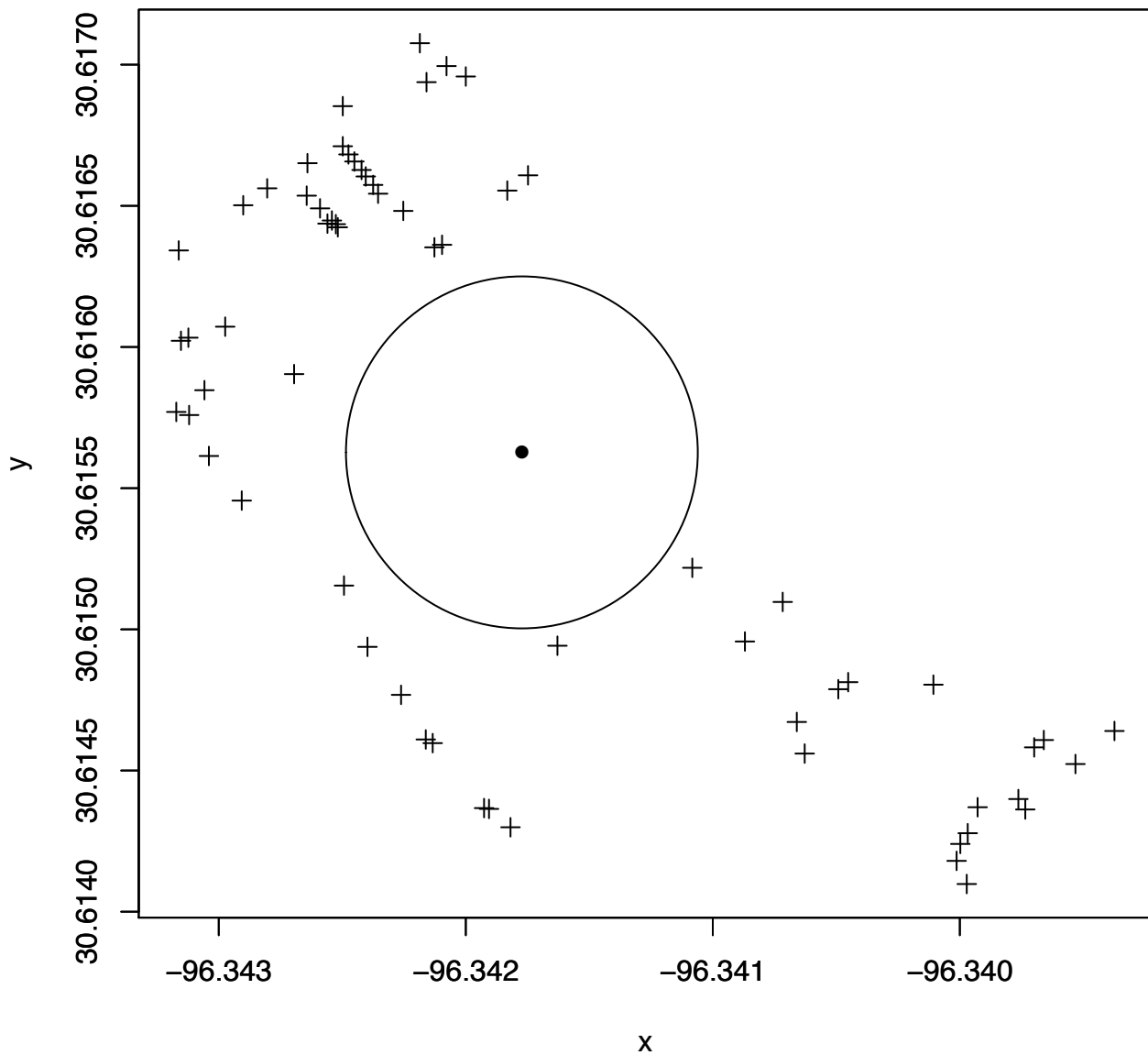
assignment05_covers.csv



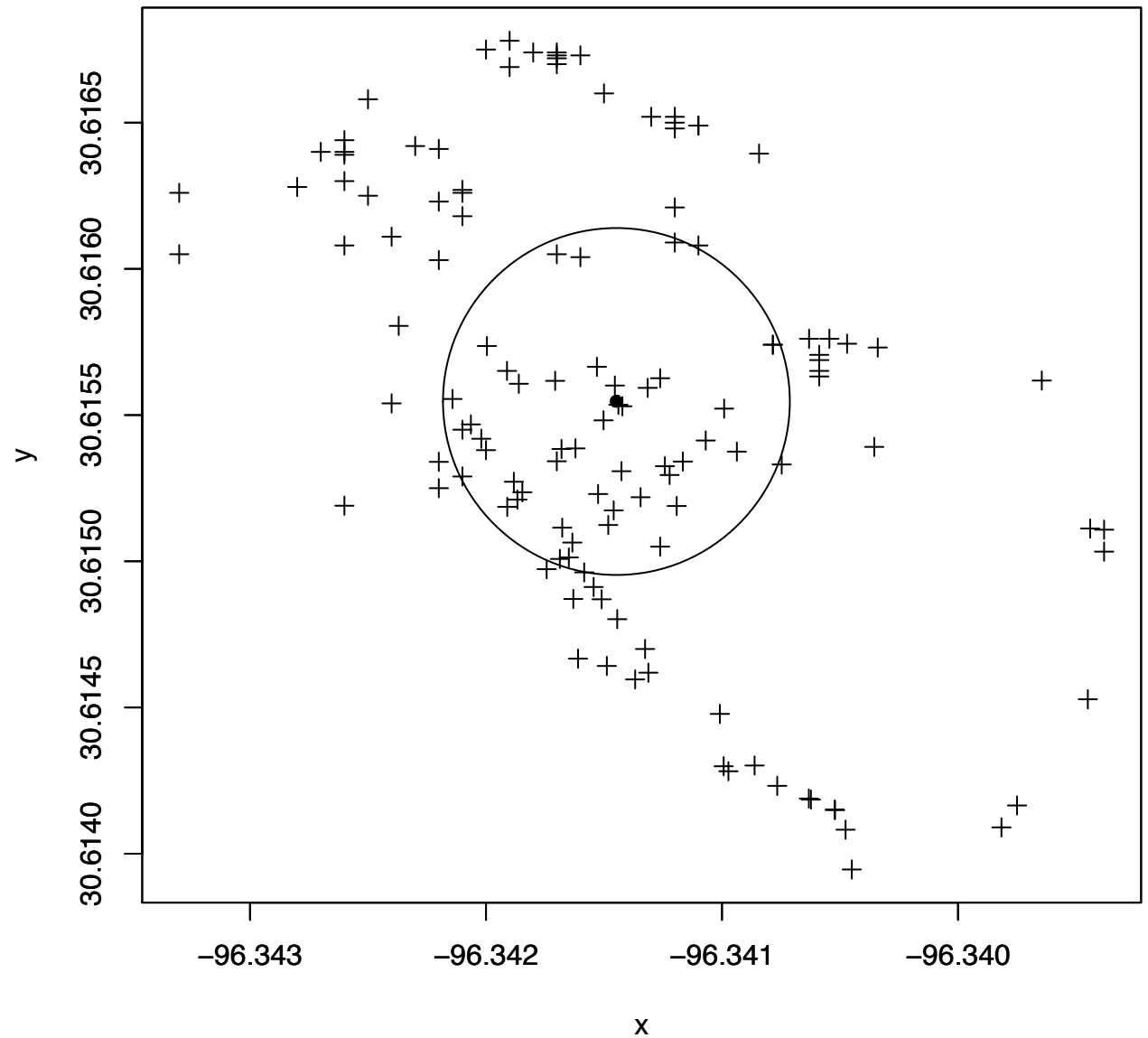
assignment05_lampsrackshydrants.csv



assignment05_signs.csv



assignment05_stairsbenches.csv



assignment05_trash.csv

