ProviderScoring

Rohan

```
library(plyr)
```

```
nyopth <- read.csv("nyopth.csv")
agi <- read.csv("agi.csv")
```

```
nyopth.zip = nyopth[,c(2,12)]
func <- function(x){
  substr(x,1,5)
}
nyopth.zip$nppes_provider_zip <- lapply(nyopth.zip$nppes_provider_zip,FUN = func)
nyopth.zip$nppes_provider_zip <- as.numeric(nyopth.zip$nppes_provider_zip)
nyopth.zip = nyopth.zip[!duplicated(nyopth.zip),]
```

```
agi <- agi[,c(1,5)]
```

```
nyopth <- nyopth[,c(2,8,12,16,17,18,20,21,22,23,24,25,26,27,28,29)]

tophcpcs <- names((sort(table(nyopth$hcpcs_code),decreasing = TRUE))[1:10])

#scores<-vector(mode="list",length = length(unique(nyopth$npi)),x=0)
scores<-rep(x = 0,times = length(unique(nyopth$npi)))

names(scores) <- unique(nyopth$npi)
```

```
scoreFunction <- function(rowdiff, q, col){
  score = 0

  rowscore = rowdiff[col]
  if (rowscore>=q[1] && rowscore<q[2]){
    score = 0
  }
  else if (rowscore>=q[2] && rowscore<q[3]){
    score = 1
  }
  else if (rowscore>=q[3] && rowscore<q[4]){
    score = 2
  }
  else{
    score = 3
  }
  score
}
```

We loop over all the top hcpcs codes and add to the scores based on the spread of the submitted - payment amount and based on the beneficiaries counts.

```
for (i in tophcpcs){
  tmp = nyopth[nyopth$hcpcs_code==i,]
  tmp.avgpayment <- ddply(tmp,~npi,summarise,mean=mean(average_medicare_payment_amt))
  tmp.avgsubmitted <- ddply(tmp,~npi,summarise,mean=mean(average_submitted_chrg_amt))
  tmp.spread <- merge(tmp.avgpayment,tmp.avgsubmitted,by.x = "npi",by.y = "npi")
  #TODO:Need to reassess agi index to be >=1
  tmp.spread$diff = tmp.spread$mean.y - tmp.spread$mean.x

  t1 = join(x = tmp.spread, y = nyopth.zip, by = "npi")
  colnames(t1)[5] <- "ZIP"
  t2 = join(x = t1, y = agi)

  t2 = transform(t2, diff2 = diff/Indx)
  t2 = t2[complete.cases(t2),]

  #some kind of function that will give out points
  #depending on the quartile that the npi falls under
  q<-quantile(t2$diff2)
  t2$sc <- apply(t2, 1, FUN = scoreFunction,q = q, col = 7)
  for (j in 1:nrow(tmp.spread)){
    scores[as.character(t2[j,1])] = scores[as.character(t2[j,1])]+t2[j,8]
  }

  #TODO:Need to dispense points based on number of beneficiaries

}
```

```
## Joining by: ZIP
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```

```
sort(scores,decreasing = TRUE)[1:10]
```

```
## 1053315416 1104800143 1437119559 1710121934 1801981683 1053588632
##         30         30         30         30         30         29
## 1790746220 1053325563 1356542591 1477649424
##         29         28         28         28
```

```
prov <- nyopth[nyopth$npi==1053315416,]
prov
```

```
##             npi nppes_entity_code nppes_provider_zip
## 1035 1053315416                 I              11590
## 1036 1053315416                 I              11590
## 1037 1053315416                 I              11590
```

```
## 1038 1053315416                 I             11590
## 1039 1053315416                 I             11590
## 1040 1053315416                 I             11590
## 1041 1053315416                 I             11590
## 1042 1053315416                 I             11590
## 1043 1053315416                 I             11590
## 1044 1053315416                 I             11590
## 1045 1053315416                 I             11590
## 1046 1053315416                 I             11590
## 1047 1053315416                 I             11590
## 1048 1053315416                 I             11590
## 1049 1053315416                 I             11590
## 1050 1053315416                 I             11590
## 1051 1053315416                 I             11590
## 1052 1053315416                 I             11590
## 1053 1053315416                 I             11590
##      medicare_participation_indicator place_of_service hcpcs_code
## 1035                                Y                F      65855
## 1036                                Y                F      66711
## 1037                                Y                F      66821
## 1038                                Y                F      66982
## 1039                                Y                F      66984
## 1040                                Y                O      67820
## 1041                                Y                O      76514
## 1042                                Y                O      92004
## 1043                                Y                O      92012
## 1044                                Y                O      92014
## 1045                                Y                O      92020
## 1046                                Y                O      92083
## 1047                                Y                O      92133
## 1048                                Y                O      92134
## 1049                                Y                O      92136
## 1050                                Y                O      92225
## 1051                                Y                O      92226
## 1052                                Y                O      92250
## 1053                                Y                O      99204
##      hcpcs_drug_indicator line_srvc_cnt bene_unique_cnt bene_day_srvc_cnt
## 1035                    N            20              16                20
## 1036                    N            19              14                19
## 1037                    N            50              34                50
## 1038                    N            45              36                45
## 1039                    N           110              69               110
## 1040                    N            14              11                13
## 1041                    N            28              28                28
## 1042                    N            25              25                25
## 1043                    N           345             245               345
## 1044                    N           903             737               903
## 1045                    N           135             125               135
## 1046                    N           121             119               121
## 1047                    N           351             318               351
## 1048                    N            91              89                91
## 1049                    N           162             136               160
## 1050                    N            12              12                12
## 1051                    N            24              22                22
```

```
## 1052                    N           166             161               166
## 1053                    N            56              56                56
##      average_medicare_allowed_amount stdev_medicare_allowed_amount
## 1035                        343.3300                       0.00000
## 1036                        350.4400                       0.00000
## 1037                        358.0900                       0.00000
## 1038                       1212.8600                       0.00000
## 1039                        875.6400                       9.08212
## 1040                         56.3050                       7.51757
## 1041                         16.9500                       0.00000
## 1042                        166.1700                       0.00000
## 1043                         95.6900                       0.00000
## 1044                        138.1100                       0.00000
## 1045                         30.3600                       0.00000
## 1046                        106.0300                       0.00000
## 1047                         51.9900                       0.00000
## 1048                         51.9900                       0.00000
## 1049                         76.6454                      33.61590
## 1050                         59.7800                       0.00000
## 1051                         48.9683                       9.95423
## 1052                         80.2200                       0.00000
## 1053                        183.0300                       0.00000
##      average_submitted_chrg_amt stdev_submitted_chrg_amt
## 1035                  1350.0000                357.0710
## 1036                  2336.8400                285.0860
## 1037                  1350.0000                518.1700
## 1038                  3688.8900                166.2960
## 1039                  3063.6400                498.6760
## 1040                   186.4290                 15.7467
## 1041                    62.5000                 19.4798
## 1042                   462.0000                 21.3542
## 1043                   240.5800                 83.6120
## 1044                   318.7210                 95.5041
## 1045                    97.3704                 13.5377
## 1046                   226.3640                 82.0225
## 1047                   196.8660                 59.8801
## 1048                   176.7030                 43.9044
## 1049                   263.1170                 70.9395
## 1050                   208.3330                 33.6237
## 1051                   209.1670                 50.1387
## 1052                   212.4400                 50.8978
## 1053                   475.8930                124.9970
##      average_medicare_payment_amt stdev_medicare_payment_amt
## 1035                     274.6600                   0.000000
## 1036                     280.3500                   0.000000
## 1037                     286.4700                   0.000000
## 1038                     969.9110                   2.513265
## 1039                     695.5030                  52.752406
## 1040                      45.0421                   6.013544
## 1041                      13.5600                   0.000000
## 1042                     132.9400                   0.000000
## 1043                      66.6171                  25.345616
## 1044                      96.7680                  35.306004
## 1045                      23.8742                   2.941493
```

```
## 1046  82.3146  8.775476
## 1047  40.5647  5.468038
## 1048  41.1341  3.701657
## 1049  60.5712 27.138537
## 1050  47.8200  0.000000
## 1051  37.3975 12.717694
## 1052  63.5849  3.961095
## 1053 143.1160 12.999336
```