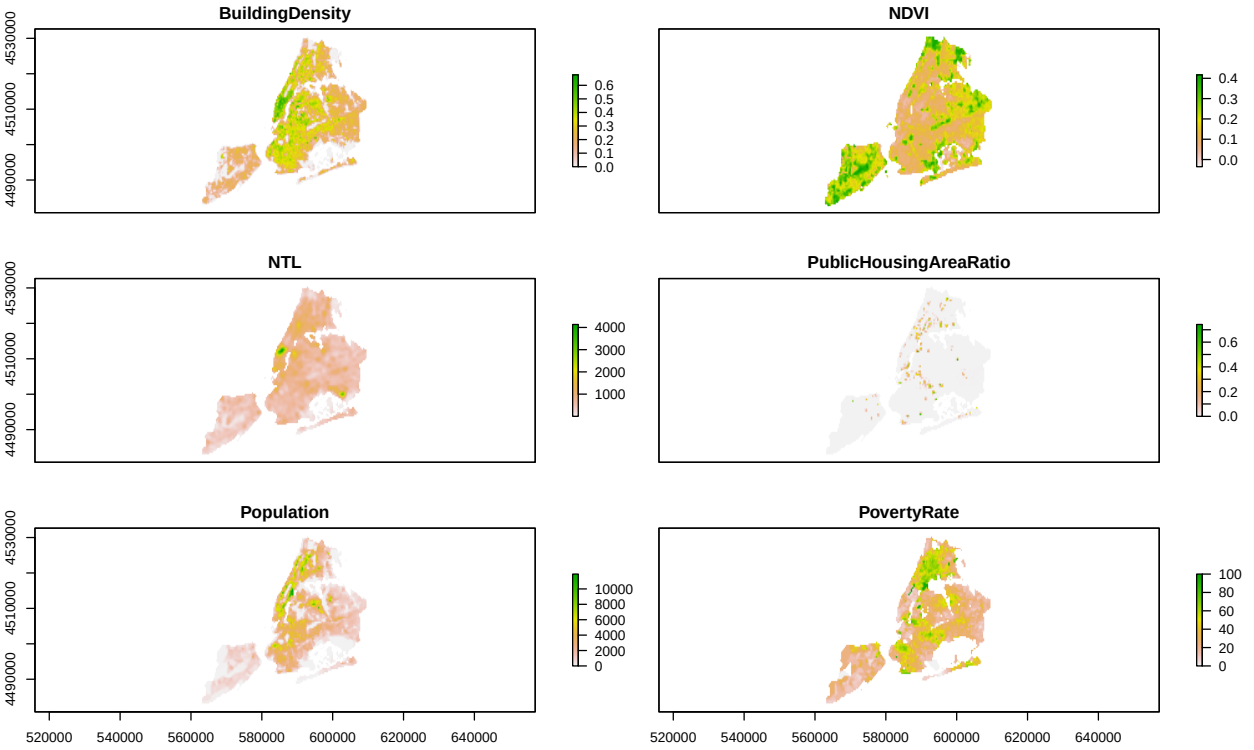
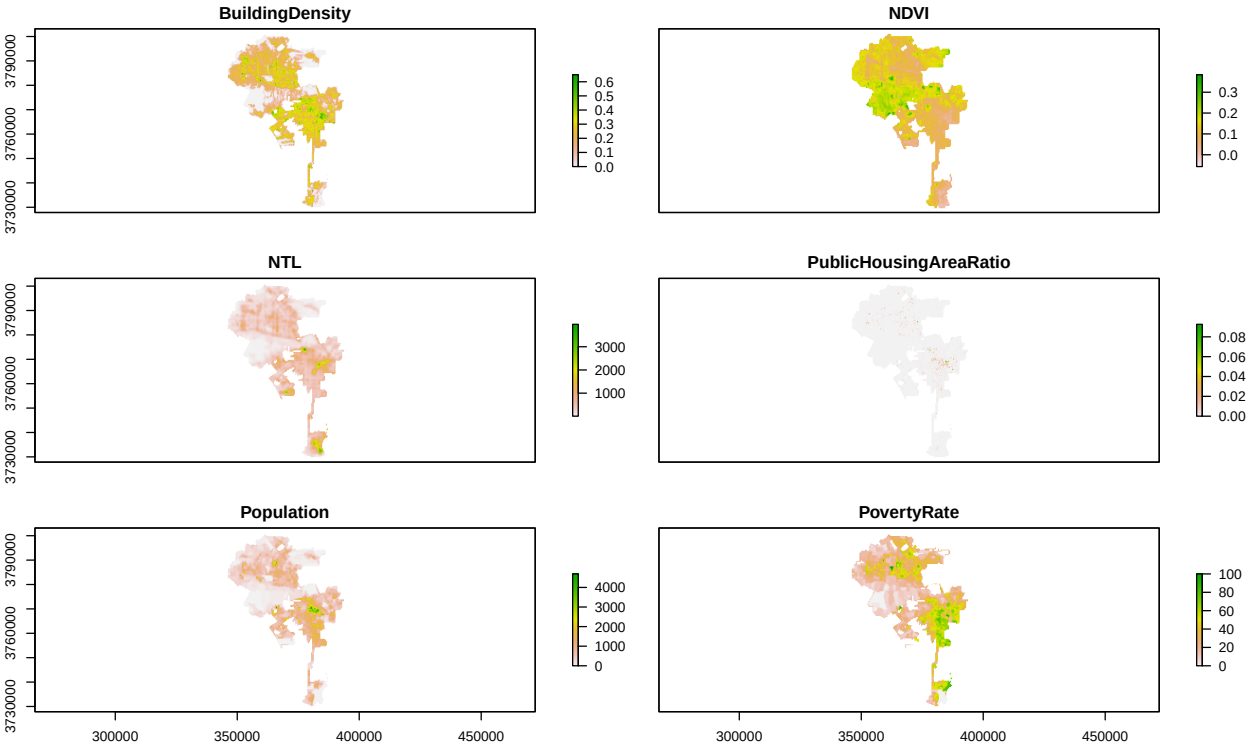
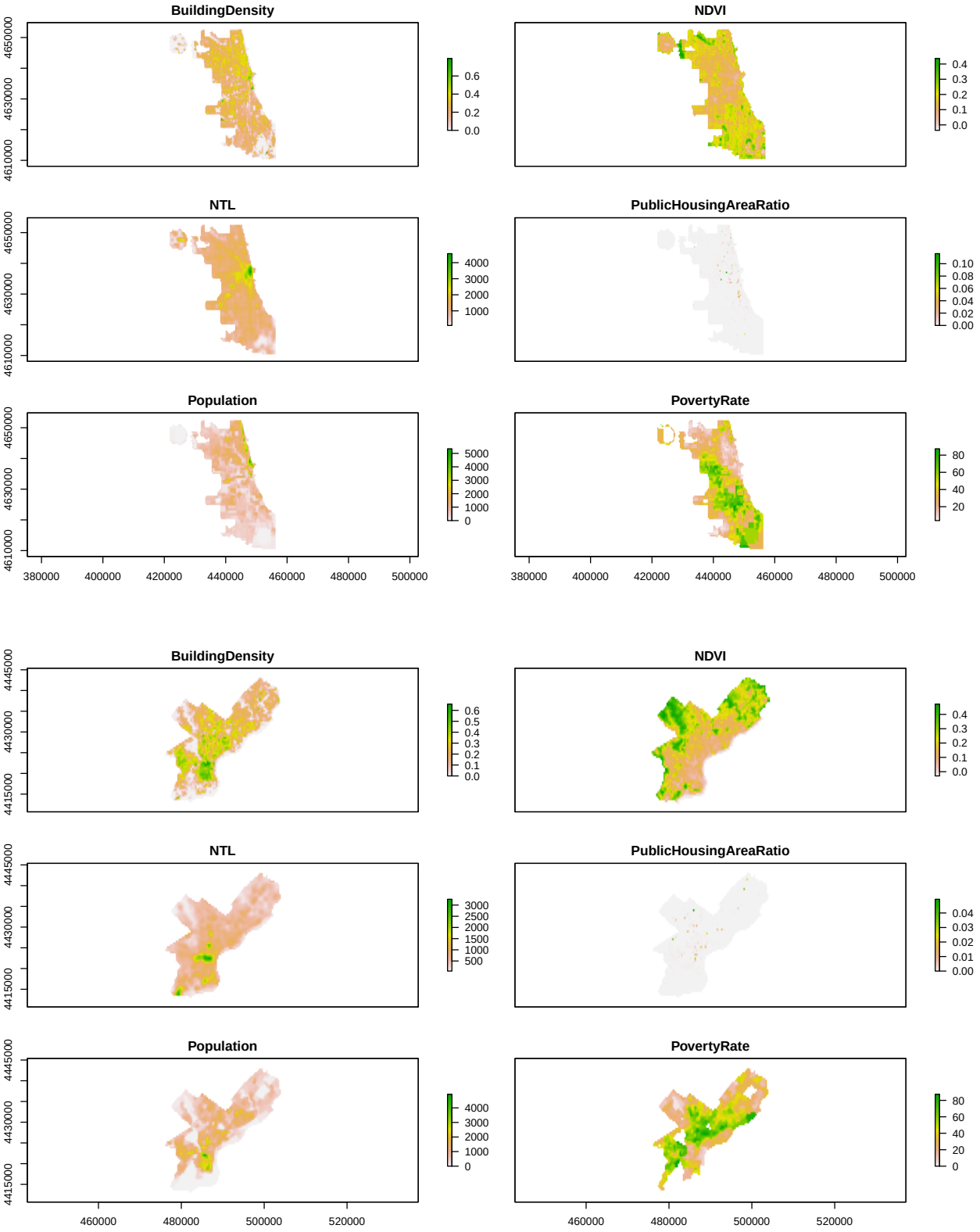
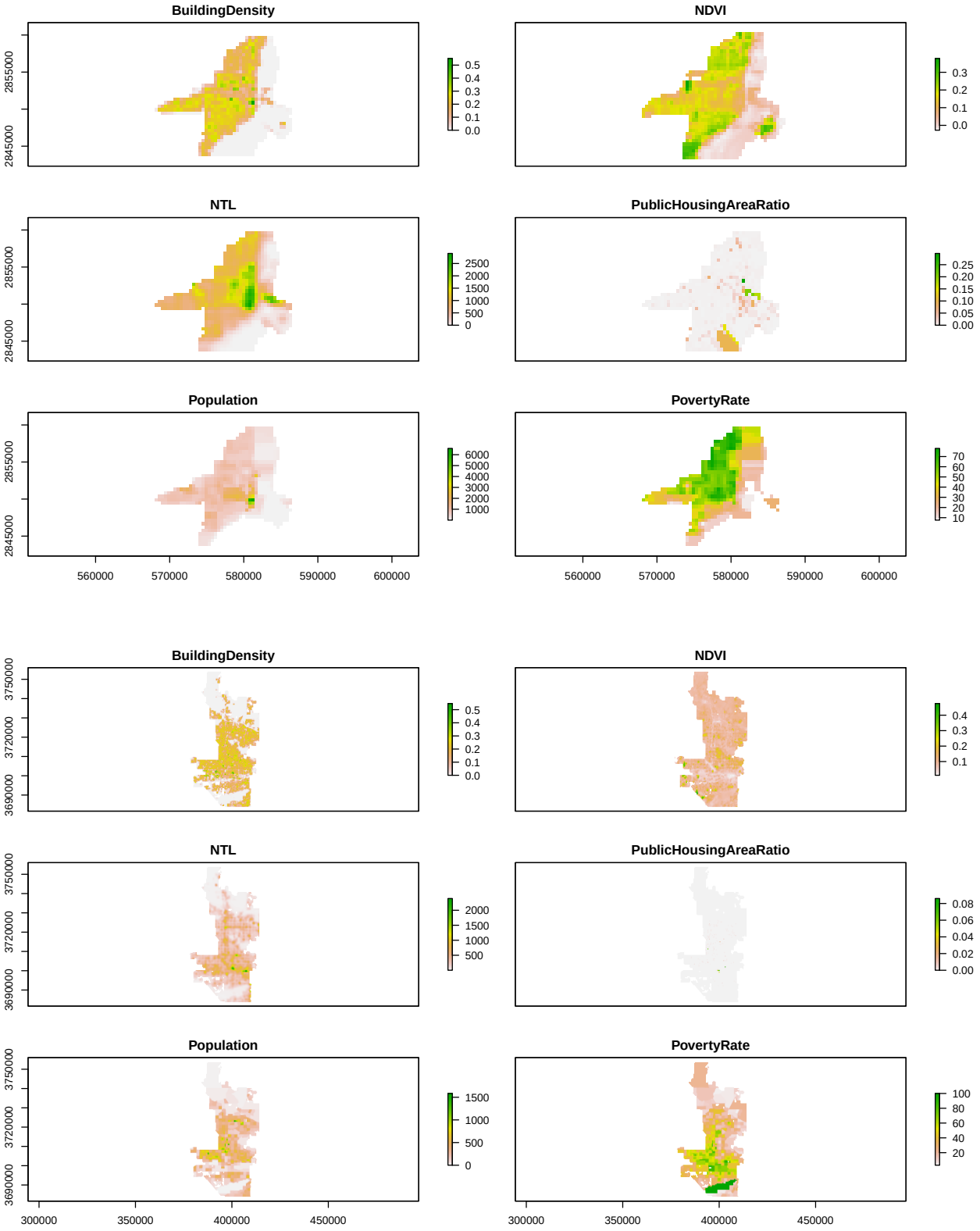
Import Libraries & Data

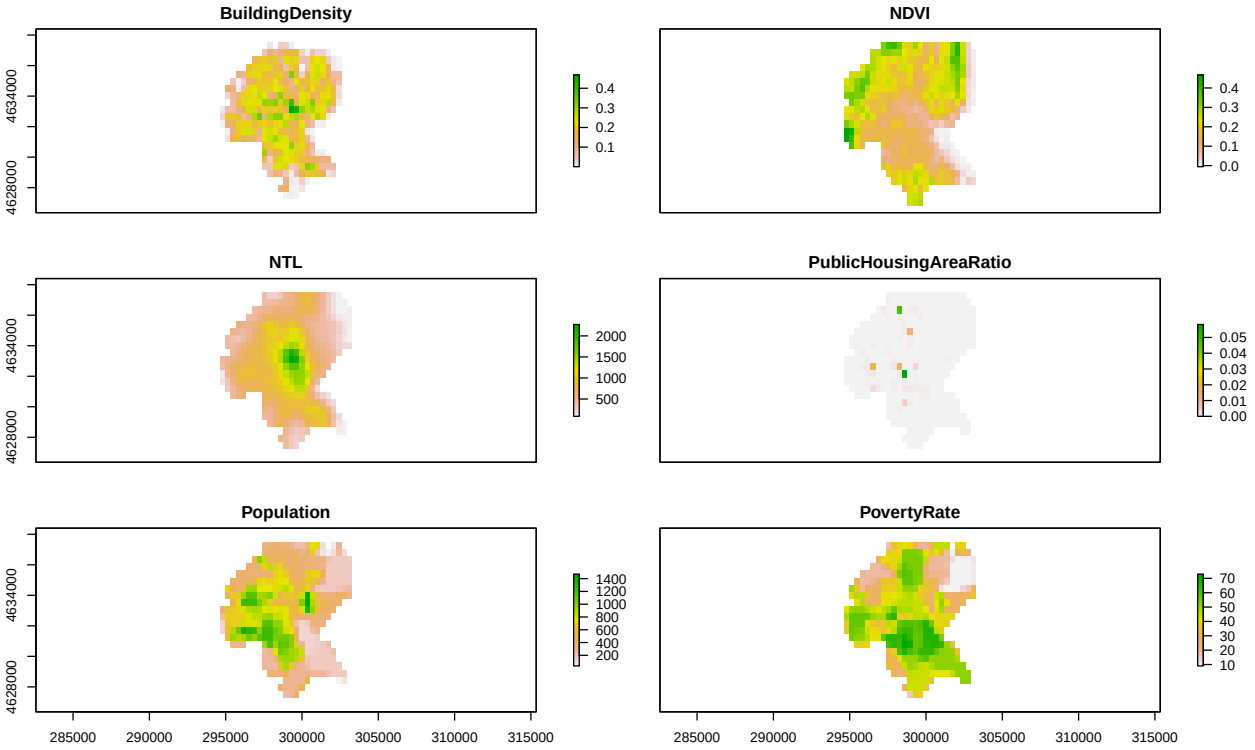
```
# READ LIBRARIES AND RASTER####
# Read Libraries====
library(raster)
library(tidyr)
library(readr)
library(tinytex)

# Read Raster as Brick====
readBrick <- function(x){
  # List files from the specified city name----
  list.files(path = "../data",
                  pattern = x,
                  full.names = T) %>%
    # Read rasters as brick----
    raster::stack(.) %>%
    raster::brick(.)
}

# Apply the Function====
nyc <- readBrick("nyc*")
la <- readBrick("la")
chicago <- readBrick("chicago")
philly <- readBrick("philly*")
miami <- readBrick("miami*")
phoenix <- readBrick("phoenix*")
providence <- readBrick("providence*")

# PLOT RASTER####
l <- list(nyc, la, chicago, philly, miami, phoenix, providence)
name <- c("BuildingDensity", "NDVI", "NTL", "PublicHousingAreaRatio", "Population", "PovertyRate")

# Apply a Plot Function to the Raster List====
l %>%
  lapply(.,
         function(x){
           # Specify names appearing as titles----
           names(x) <- name
           plot(x,
                nr = 3)
         })
```


BuildingDensity
NDVI
NTL
PublicHousingAreaRatio
Population
PovertyRate
4530000
4510000
4490000
520000
540000
560000
580000
600000
620000
640000


BuildingDensity
NDVI
NTL
PublicHousingAreaRatio
Population
PovertyRate
3790000
3760000
3730000
300000
350000
400000
450000


BuildingDensity
NDVI
NTL
PublicHousingAreaRatio
Population
PovertyRate
BuildingDensity
NDVI
NTL
PublicHousingAreaRatio
Population
PovertyRate


BuildingDensity
NDVI
NTL
PublicHousingAreaRatio
Population
PovertyRate
BuildingDensity
NDVI
NTL
PublicHousingAreaRatio
Population
PovertyRate




```
## [[1]]
## NULL
##
## [[2]]
## NULL
##
## [[3]]
## NULL
##
## [[4]]
## NULL
##
## [[5]]
## NULL
##
## [[6]]
## NULL
##
## [[7]]
## NULL
```

Save RDS File

```
# SPECIFY CITY NAMES AND SAVE AS RDS####
cities <- list("nyc.rds", "la.rds", "chicago.rds", "philly.rds", "miami.rds", "phoenix.rds", "providenc

for (i in 1:length(l)){
```

```
  names(l[[i]]) <- name
  print(l[i])
  saveRDS(l[i],
          paste0("../data/",
                 cities[i]))
}
```

```
## [[1]]
## class      : RasterBrick
## dimensions : 112, 149, 16688, 6  (nrow, ncol, ncell, nlayers)
## resolution : 352, 463  (x, y)
## extent     : 560340.8, 612788.8, 4480792, 4532648  (xmin, xmax, ymin, ymax)
## crs        : +proj=utm +zone=18 +datum=WGS84 +units=m +no_defs
## source     : memory
## names      : BuildingDensity,         NDVI,          NTL, PublicHousingAreaRatio,   Population,  Pove
## min values :      0.00000000,  -0.03537664,   1.00833333,             0.00000000,   0.00000000,   0.0
## max values :    6.769994e-01, 4.169407e-01, 4.133908e+03,           7.426893e-01, 1.192750e+04, 1.000
##
##
## [[1]]
## class      : RasterBrick
## dimensions : 163, 137, 22331, 6  (nrow, ncol, ncell, nlayers)
## resolution : 385, 462  (x, y)
## extent     : 343237.2, 395982.2, 3727854, 3803160  (xmin, xmax, ymin, ymax)
## crs        : +proj=utm +zone=11 +datum=WGS84 +units=m +no_defs
## source     : memory
## names      : BuildingDensity,         NDVI,          NTL, PublicHousingAreaRatio,   Population,  Pove
## min values :      0.00000000,  -0.05664302,   7.57920265,             0.00000000,   0.00000000,   0.0
## max values :    6.498073e-01, 3.838231e-01, 3.966299e+03,           9.261276e-02, 4.688555e+03, 1.000
##
##
## [[1]]
## class      : RasterBrick
## dimensions : 101, 115, 11615, 6  (nrow, ncol, ncell, nlayers)
## resolution : 346, 463  (x, y)
## extent     : 419160.2, 458950.2, 4608084, 4654847  (xmin, xmax, ymin, ymax)
## crs        : +proj=utm +zone=16 +datum=WGS84 +units=m +no_defs
## source     : memory
## names      : BuildingDensity,         NDVI,          NTL, PublicHousingAreaRatio,   Population,  Pove
## min values :      0.00000000,  -0.03573617,  90.30989838,             0.00000000,   0.00000000,   3.8
## max values :       0.7924677,    0.4360199, 4561.8457031,              0.1163090, 5345.6840820,   87
##
##
## [[1]]
## class      : RasterBrick
## dimensions : 75, 90, 6750, 6  (nrow, ncol, ncell, nlayers)
## resolution : 356, 462  (x, y)
## extent     : 473988.2, 506028.2, 4410729, 4445379  (xmin, xmax, ymin, ymax)
## crs        : +proj=utm +zone=18 +datum=WGS84 +units=m +no_defs
## source     : memory
## names      : BuildingDensity,         NDVI,          NTL, PublicHousingAreaRatio,   Population,  Pove
## min values :      0.00000000,  -0.02954241,  51.33823776,             0.00000000,   0.00000000,   0.0
## max values :       0.6571759,    0.4717878, 3260.9306641,              0.0494631, 4926.7573242,   87
```

```
##
##
## [[1]]
## class      : RasterBrick
## dimensions : 42, 52, 2184, 6  (nrow, ncol, ncell, nlayers)
## resolution : 418, 461  (x, y)
## extent     : 566382, 588118, 2842313, 2861675  (xmin, xmax, ymin, ymax)
## crs        : +proj=utm +zone=17 +datum=WGS84 +units=m +no_defs
## source     : memory
## names      : BuildingDensity,         NDVI,          NTL, PublicHousingAreaRatio,   Population,  Pove
## min values :     0.000000000, -0.027617389,  0.000000000,            0.000000000,  0.001287412,  7.55
## max values :       0.5509165,    0.3781165, 2908.2893066,              0.2964574, 6575.9335938,   77
##
##
## [[1]]
## class      : RasterBrick
## dimensions : 161, 110, 17710, 6  (nrow, ncol, ncell, nlayers)
## resolution : 387, 462  (x, y)
## extent     : 374306.6, 416876.6, 3681648, 3756030  (xmin, xmax, ymin, ymax)
## crs        : +proj=utm +zone=12 +datum=WGS84 +units=m +no_defs
## source     : memory
## names      : BuildingDensity,         NDVI,          NTL, PublicHousingAreaRatio,   Population,  Pove
## min values :     0.000000000,  0.010944362,  0.004707027,            0.000000000,  0.000000000,  3.03
## max values :    5.467387e-01, 4.754717e-01, 2.391342e+03,           8.596269e-02, 1.583459e+03, 1.000
##
##
## [[1]]
## class      : RasterBrick
## dimensions : 26, 31, 806, 6  (nrow, ncol, ncell, nlayers)
## resolution : 346, 463  (x, y)
## extent     : 293594, 304320, 4626363, 4638401  (xmin, xmax, ymin, ymax)
## crs        : +proj=utm +zone=19 +datum=WGS84 +units=m +no_defs
## source     : memory
## names      : BuildingDensity,          NDVI,           NTL, PublicHousingAreaRatio,    Population,
## min values :    2.463251e-05, -5.666090e-03,  8.889701e+01,           0.000000e+00,  3.411071e+01,  9
## max values :    4.682539e-01,  4.674520e-01,  2.271711e+03,           5.823025e-02,  1.471503e+03,  1
```