

Visualizing_LU_and_Business

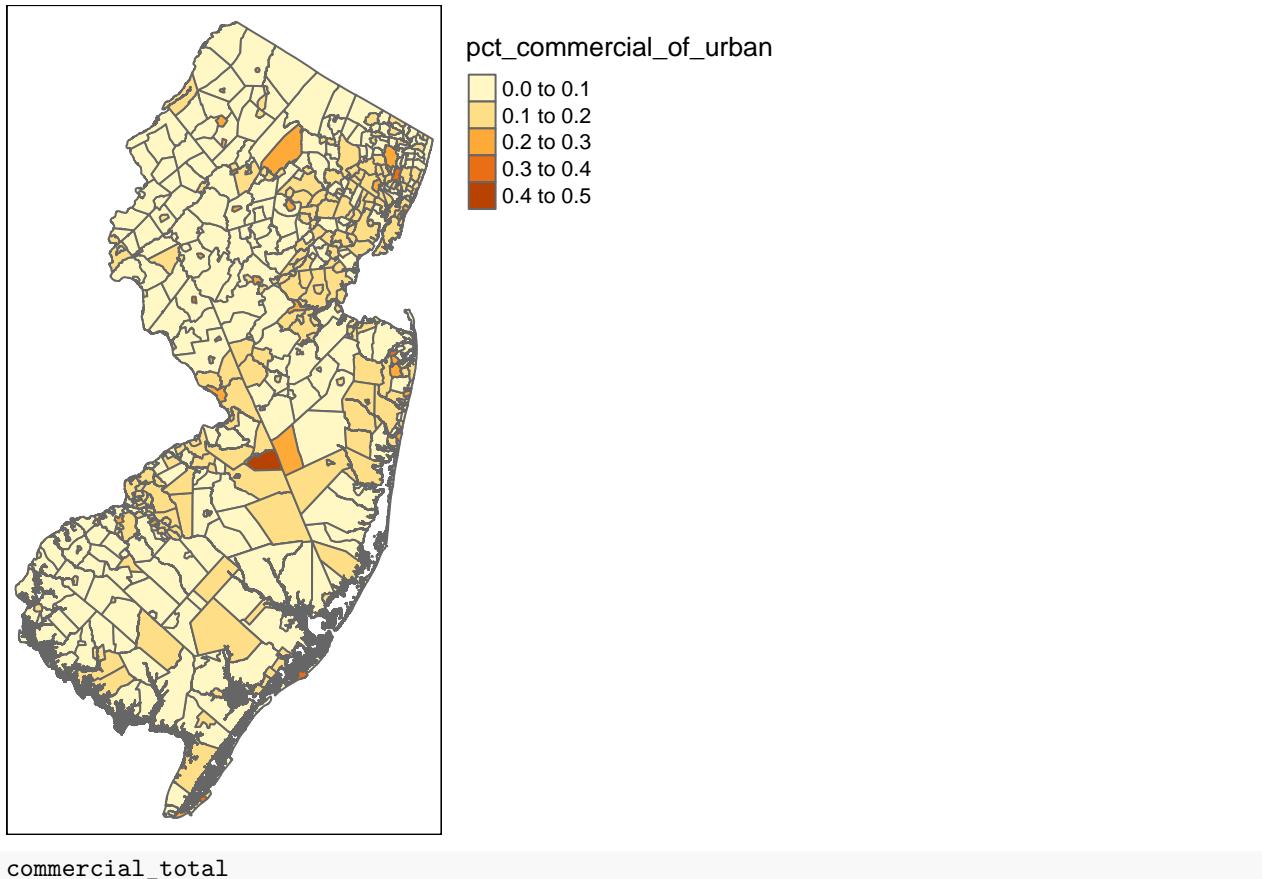
Gabe Morrison

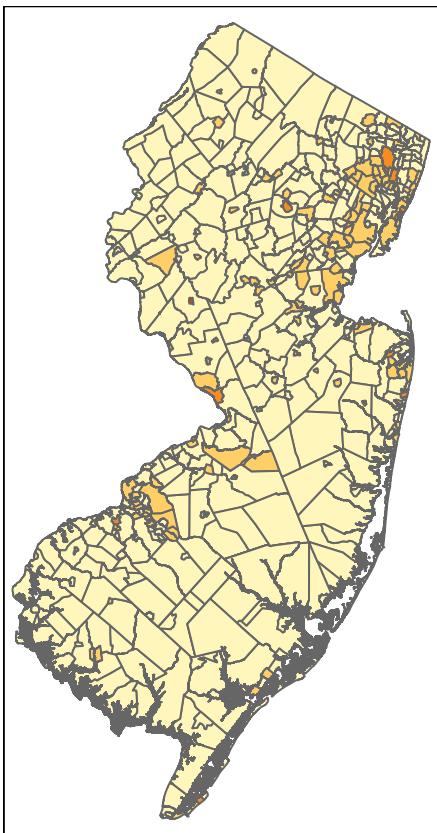
10/18/2020

##Task 1: Visualize Land Use to compare urban vs total area measures Specifically, try to answer question: which measure should we use?

####Commercial:

```
commercial_urban <- tm_shape(pe) + tm_borders() + tm_fill(col = "pct_commercial_of_urban") + tm_layout()  
commercial_total <- tm_shape(pe) + tm_borders() + tm_fill(col = "pct_commercial_of_total") + tm_layout()  
commercial_urban
```



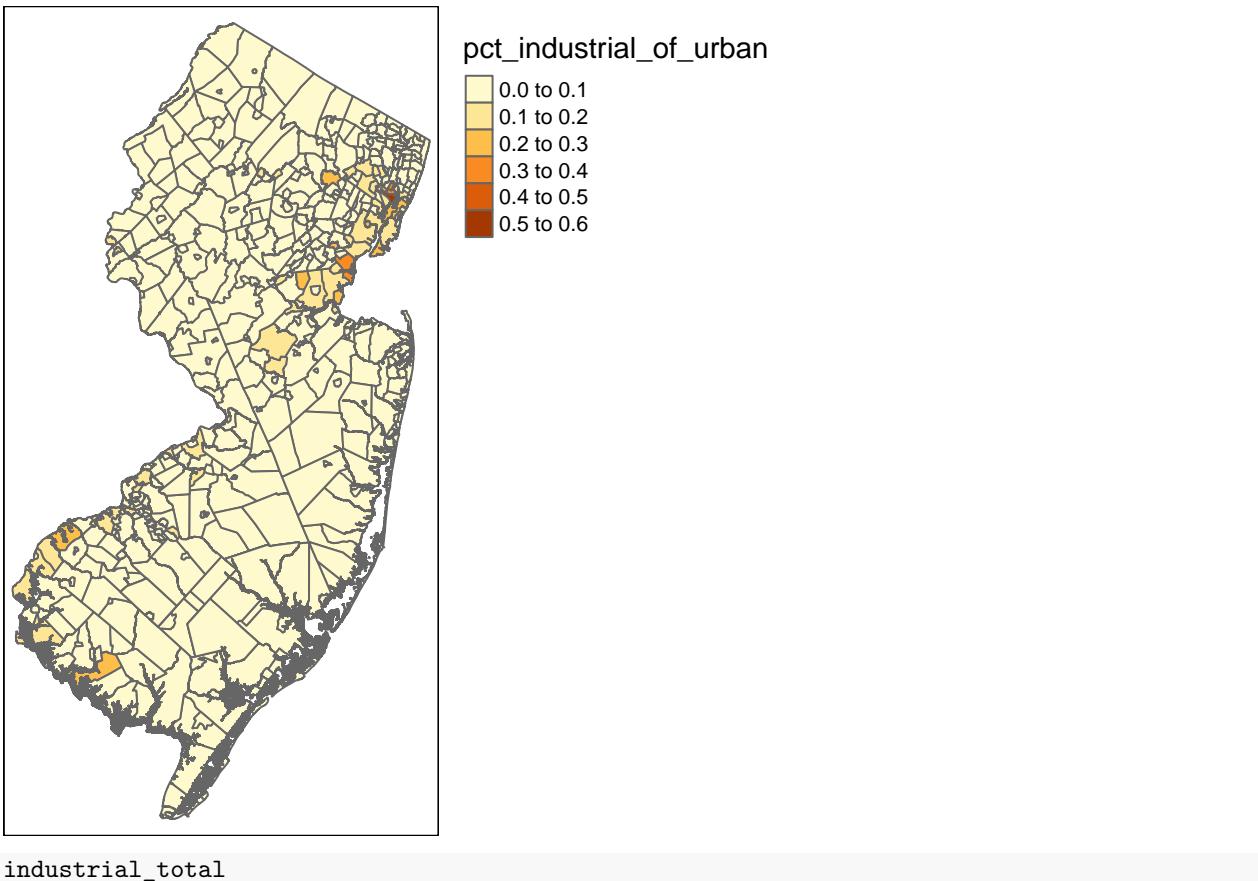


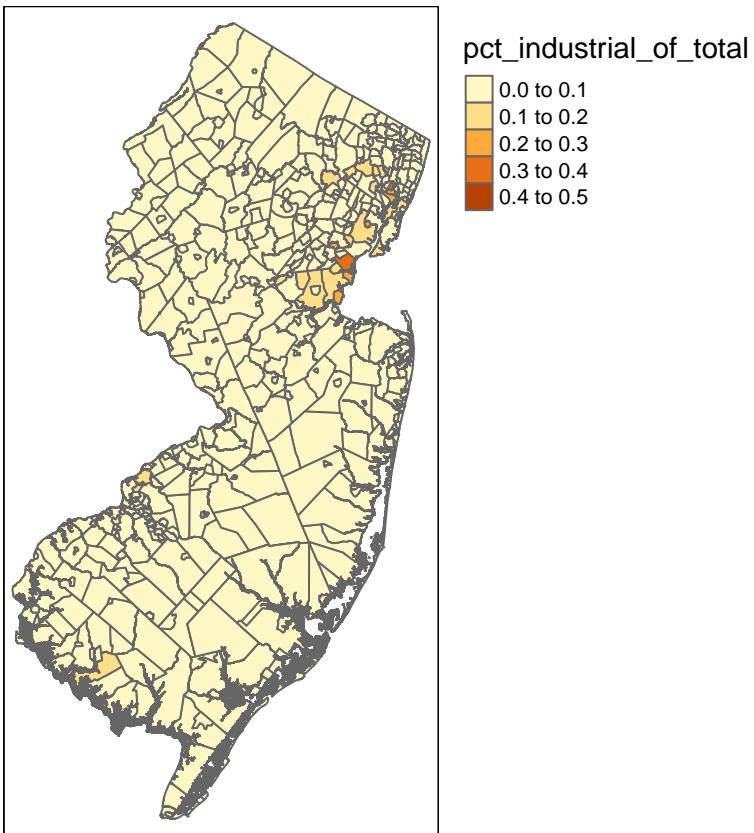
pct_commercial_of_total

0.0 to 0.1
0.1 to 0.2
0.2 to 0.3
0.3 to 0.4

####Industrial:

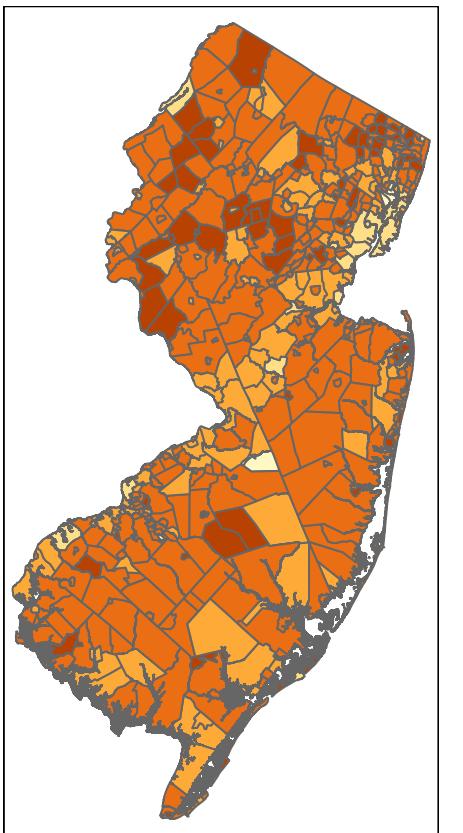
```
industrial_urban <- tm_shape(pe) + tm_borders() + tm_fill(col = "pct_industrial_of_urban") + tm_layout()  
industrial_total <- tm_shape(pe) + tm_borders() + tm_fill(col = "pct_industrial_of_total") + tm_layout()  
industrial_urban
```





####Residential:

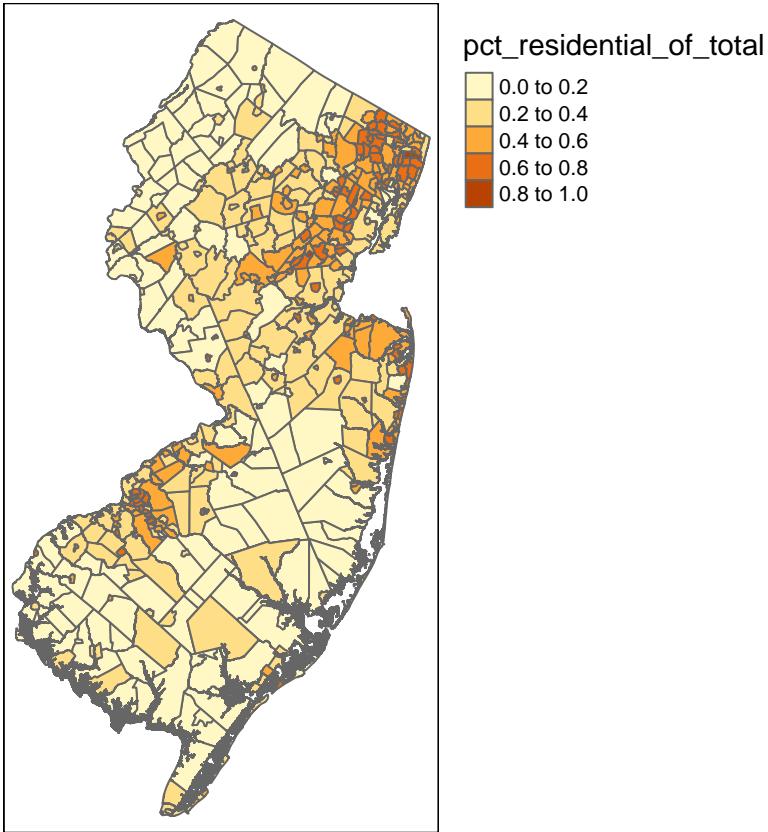
```
residential_urban <- tm_shape(pe) + tm_borders() + tm_fill(col = "pct_residential_of_urban") + tm_layout(residential_total <- tm_shape(pe) + tm_borders() + tm_fill(col = "pct_residential_of_total") + tm_layout(residential_urban
```



pct_residential_of_urban

- 0.0 to 0.2
- 0.2 to 0.4
- 0.4 to 0.6
- 0.6 to 0.8
- 0.8 to 1.0

residential_total



####Takeaway: Huge left skew in commercial and residential of low values. This makes sense; in rural areas there are not very many major commercial/industrial areas. Visualizing the residential land, unsurprisingly in much of the rural areas, there were substantially higher percents of residential land use/urban. This was not as high for residential/total.

- (1) Considering total area considers nature (ie places where people just don't live)
- (2) Less-skewed distributions, especially for commerical and industrial

###Task 2: Commerical Districts:

```
pe <- pe %>%
  mutate(mun_type_num = case_when(
    mun_type == "Township" ~ 1,
    mun_type == "Borough" ~ 2,
    mun_type == "City" ~ 3
  ))

### mutate: new variable 'mun_type_num' (double) with 4 unique values and 3% NA
nominal_density <- tm_shape(pe) + tm_fill(col = "mun_type_num")
nominal_density
```

