Homework 3 - Report

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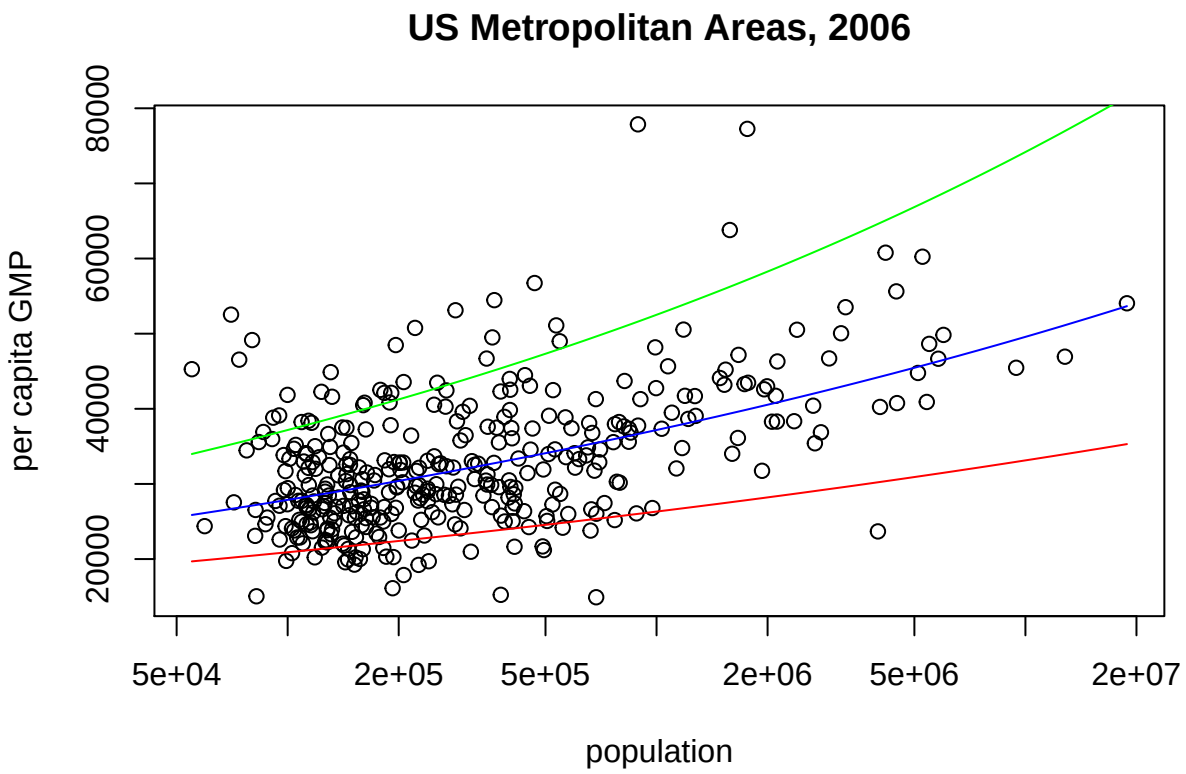
You will estimate the power-law scaling model, and its uncertainty, using the data alluded to in lecture, available in the file `gmp.dat` from lecture, which contains data for 2006.

```
gmp <- read.table("../data/gmp.dat")
gmp$pop <- round(gmp$gmp / gmp$pcgmp)
```

1. First, plot the data as in lecture, with per capita GMP on the y-axis and population on the x-axis. Add the curve function with the default values provided in lecture. Add two more curves corresponding to $a = 0.1$ and $a = 0.15$; use the `col` option to give each curve a different color (of your choice).

```
plot(gmp$pcgmp ~ gmp$pop, log = "x",
     xlab = "population", ylab = "per capita GMP",
     main = "US Metropolitan Areas, 2006")
curve(6611*x^(1/8), add = TRUE, col = "blue")
curve(6611*x^(0.1), add = TRUE, col = "red")
curve(6611*x^(0.15), add = TRUE, col = "green")
```


US Metropolitan Areas, 2006
per capita GMP
20000
40000
60000
80000
5e+04
2e+05
5e+05
2e+06
5e+06
2e+07
population