STA 108 Project 1

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Introduction

1

```
# 1
# a
cdi = read.table("CDI.txt")
colnames(cdi) <- c("id_num", "county",
                   "state", "land_area",
                   "pop_total", "pop_18_34",
                   "pop_65_old", "active_physicians",
                   "hospital_beds", "serious_crimes",
                   "pct_hsgrad", "pct_bachelors",
                   "pct_poverty", "pct_unemp",
                   "income_percap", "income_total",
                   "region")
model_1 = lm(active_physicians ~ pop_total, data = cdi)
model_2 = lm(active_physicians ~ hospital_beds, data = cdi)
model_3 = lm(active_physicians ~ income_total, data = cdi)
```

a

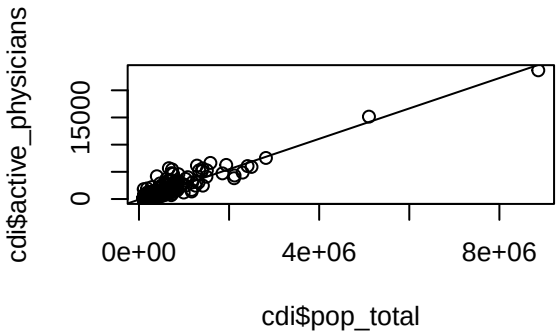
The estimated regression functions are:

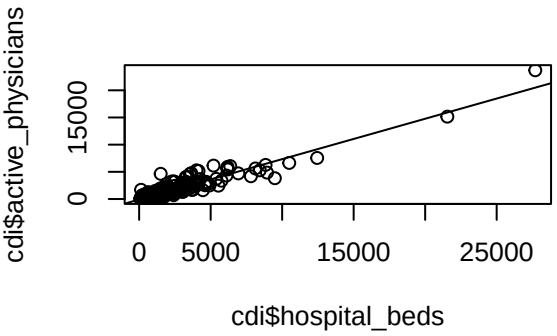
1. The number of active physicians in relation to total population is estimated by $\hat{Y}$ =-110.6347772+0.0027954X.
2. The number of active physicians in relation to number of hospital beds is estimated by $\hat{Y}$ =-95.9321847+0.7431164X.
3. The number of active physicians in relation to total peronsal income is estimated by $\hat{Y}$ =-48.3948489+0.1317012X.

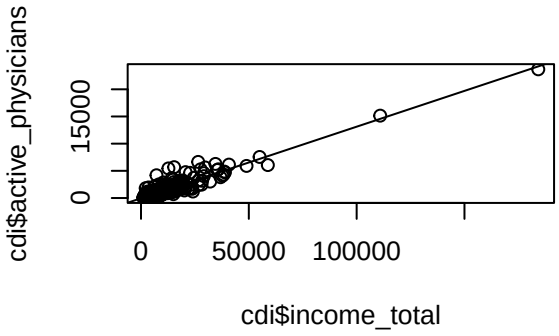
```
#b
par(mfrow = c(2,2))
plot(cdi$pop_total, cdi$active_physicians)
abline(model_1)


plot(cdi$hospital_beds, cdi$active_physicians)
abline(model_2)
```

```
plot(cdi$income_total, cdi$active_physicians)
abline(model_3)
```







b

```
# c
```

c